Interventions to reduce worker injury and illness in the homecare setting

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Table of Contents

Introduction

Homecare workers assist the sick, frail, elderly, and disabled with personal care services, allowing them to remain at home rather than moving into long-term care facilities (Markkanen et al., 2007), as well as allows them to receive appropriate support and medical care that would otherwise not be provided in a hospital setting. As the rise of workers in the homecare setting increases due to the rapidly aging population, workplace injury and illness of homecare workers has become a critical concern in the healthcare industry (Fazzone, Barloon, McConnell, & Chitty, 2000). More specifically, homecare nurses, and homecare support workers, also regularly referred to as personal care attendants, homemakers (Markkanen et al., 2007) and/or homecare aids (Czuba, Sommerich, & Lavender, 2012) may have unique risks of workplace injury and illness due to the limited security measures (Canton et al., n.d.) and numerous challenges they face in a relatively uncontrolled environment (Chalupka, Markkanen, Galligan, & Quinn, 2008).

There are a range of obstacles that may make homecare workers more vulnerable to worker injury and illness including isolation, neighborhood and in-home hazards, unstable walking surfaces, absence of devices and resources to assist with lifting, as well as a lack of tools to dispose of sharp object disposal (Markkanen et al., 2007). Moreover, there is a lack of typical occupation safety support structures, strategies and processes which can subsequently put homecare workers at further risk for injuries and illnesses including a lack of supervision and safety training (Olson et al., 2015), and minimal social support and community culture (Amuwo, Lipscomb, McPhaul, & Sokas, 2013).

The challenges homecare workers face can have negative effects on their mental health, including increased fear, anxiety, reduced job performance and depression (Canton et al., 2009; Fazzone et al., 2000; Galinsky et al., 2010; Geiger-Brown et al., 2007; Polivka et al., 2015), as well as consequential impact on their physical health (Olson et al., 2015). Research suggests that the most prominent consequences on homecare workers' physical health include increased risk of musculoskeletal and other physical injuries from patient handling, performing dangerous tasks without assistance, (McPhaul, Lipscomb, & Johnson, 2010), slips, trips and falls (Polivka et al., 2015), as well as heightened exposure to bloodborne infectious diseases including HIV, Hepatitis B, and Hepatitis C from unsafe sharps disposal practices (Amuwo et al., 2013).

Even though there is rapid growth of workers in the home setting, there is still a lack of sufficient training and supervision of homecare workers compared to other health-care professionals (Olson et al., 2015). Homecare workers face severe occupation health and safety hazards including risk factors associated with the environment, equipment, tasks, and the patient caregiver relationship such as building design, communication, provision of equipment and clinical tasks (Hignett, Edmunds Otter, & Keen, 2016). Is vital to examine what potential interventions are effective in reducing worker injury and illness due to the wide range of hazards related to working in the homecare environment (Olson et al., 2015).

Purpose

The purpose of this evidence synthesis is to examine specific interventions that are shown to be effective in reducing worker illness and injury in the homecare setting, as well as explore potential enablers and supports to ensure these interventions are effective. "Interventions" refers to a variety of practices, strategies, and initiatives intended to eliminate, minimize or reduce the harm of a potential hazard in the home setting. The scope of this work was defined in collaboration with members of the Workplace Safety Action Plan for Nova Scotia's Health and Community Services Sectors' Project Team.

Methods

Searching Strategy

The project was supported by a scan of peer reviewed and grey literature. Snowball sampling of review articles was also used, whereby references of articles were hand searched and included in the review of the literature.

Peer reviewed literature was found through searches of the following sources: Academic Search Premier, CINAHL, PubMed, Embase, PAIS, ABI/INFORM, Scopus, Web of Science and Google Scholar. Key search terms included, but were not limited to: "home care", "intervention", "workplace safety", "home health care", and "workplace violence". The search was filtered to only include articles published from 2000 forward. After title and abstract were reviewed, relevant articles were exported to Mendeley reference management software and duplicates were detected and deleted.

Inclusion and Exclusion Criteria

The inclusion and exclusion criteria for the evidence synthesis is outlined in **Table 1** and is based on the review of the article's title and abstract when available. Inclusion and exclusion criteria were determined in collaboration with the Workplace Safety Action Plan for Nova Scotia's Health and Community Services Sectors' Project Team.

Table 1. Criteria to determine which articles should be considered for inclusion in this report

INCLUDE	EXCLUDE
English	Non-English
Since 2000	Focus on legal aspect
Focus on specific interventions	Focus on patient
	Focus on nursing homes
	Prior to 2000

Interpretation of Evidence

A frequent observation of researchers considering workplace hazards in healthcare is that more research is needed on a variety of issues, especially in the efficacy of interventions (Robinson & Tappen, 2008). In particular, research indicates that safety and health interventions for homecare workers are

scarce, yet some relevant work has been conducted (Amuwo et al., 2013). In many cases, definitive evidence to support or reject a proposed intervention is not available. Therefore, evidence of effectiveness should be interpreted with a critical eye as the level of rigor across studies and evaluation reports can vary based on numerous factors including the population under investigation, sample size, study/evaluation design, data collection/analysis and interpretation of findings.

Interventions in Homecare Settings

Though there is limited evidence of well-defined interventions, the literature does mention a variety of risk mitigation strategies for homecare workers in an uncontrolled environment. These include:

- multi-facetted programs that focus on a unique combination of physical and psycho-social hazards (Olson et al., 2015);
- single interventions that aim to reduce a specific risk such as physical injury from awkward patient handling (Johnsson, Carlsson, & Lagerstrom, 2002); and
- precise strategies such as safe medical devices (Leiss, 2014) to mitigate worker injury and illness in the homecare setting.

Olson et al. (2015) broadly categorized interventions for homecare workers into two categories: safety oriented and wellness oriented interventions. Although few safety oriented interventions for homecare workers have been evaluated, there are a wide array of strategies. These include ergonomic assessments and other resources, including best practices, programs and initiatives to alleviate workers risk of musculoskeletal injuries (Nelson & Baptiste, 2006) and exposure to blood and body fluids (Amuwo et al., 2013).

While research indicates the potential benefits of multi-component intervention strategies, the majority of safety interventions aim to pin-point particular factors in the homecare environment. Specific training can be especially beneficial for managing hazards in the homecare setting that address a particular point of care, yet engagement of agencies and organizational work factors should also be considered (Polivka et al., 2015).

The majority of wellness interventions focus on mental health issues, psychosocial factors, and stress-inducing factors (Olson et al., 2015).

In this report, specific interventions for safety and wellness are presented separately. However, it should be noted that an array of interventions may touch and attempt to reduce a wide-range of risk factors in the home and have both safety and wellness implications.

Safety Oriented Interventions

The isolated environment of the homecare worker creates unique challenges which makes it difficult to deliver programs that result in sufficient change to reduce workplace injury and illness (Olson et al., 2014). Research suggests that due to the complexity of this high-risk environment, multi-facetted programs may be more likely to be effective than single intervention strategies. Multi-component safety

interventions aim to reduce risks factors for workplace injury and illness through a widespread range of initiatives.

As an example of a multi-component intervention, a pilot study conducted by Czuba et al. (2012) focused on reducing ergonomic and safety risk factors using a number of strategies. home support workers were provided with cleaning supplies, gait belts, care plans, and strategies for patient workload distribution management. Fewer work hours, visits and tasks performed in a day by homecare workers was significantly linked to reduced fatigue ratings, while patients spoke positively about care plans. Participants spoke about the positive affect of cleaning supplies and gait belts, yet there was minimal practical use of these tools. The findings indicate potential benefits of a scheduling system to manage exposure of homecare workers to physically challenging patients, and minimize physically demanding tasks in an aim to decrease fatigue and risk of developing musculoskeletal injuries (Czuba et al., 2012).

Physical Injuries

Lifts, and slips, trips and falls are identified as the most common safety hazards with severe physical consequences in the homecare setting (Polivka et al., 2015), including physical pain injuries (e.g. musculoskeletal injuries and low back pain), and skin tears, as well as psycho-social effects including fear, loss of dignity, and reduction of quality of care to the patient (Nelson & Baptiste, 2004). In particular, Nelson and Baptiste's (2006) review categorizes strategies to reduce workplace lift injuries from patient handling into three control groupings outlined in **Table 2**, yet these strategies are regularly referenced in the literature to manage other risks for worker injury and illness.

Table 2. Evidenced-based controls for high risk patient handling tasks (Nelson & Baptiste, 2006)

Engineering Controls	• Patient handling equipment and devices • Back belts*
Administrative Controls	• No lift policy • Patient care ergonomic assessment protocols • Patient lift teams
Behavioral or work practice controls	• Manual patient handling and lifting • Traditional training • Education and training in proper use of patient handling equipment • Peer leaders as new education model • Clinical tools

Nelson and Baptiste (2004) define engineering controls as changes made to the surrounding environment including layout, tools, or equipment used on the job and/or changes made to how the equipment is utilized. Administrative controls are system driven work practices that reduce or prevent exposure to risk factors based on adaption of policies, guidelines and strategies (Nelson & Baptiste, 2004), while behavioral or work practice controls include training of homecare workers in body mechanics and joint protection principles in aim to reduce physical injuries to home care workers (Nelson & Baptiste, 2006).

Patient Handling Equipment and Devices

Effective practices that are generally used throughout homecare work environments include adaptions to the layouts of bed and bathrooms, and installation of equipment to reduce patient handling including shower chairs and raised toilet seats (Czuba et al., 2012). Engineering controls such as grab bars (Markkanen et al., 2014), and compliant flooring that decreases the stiffness of the ground surface (Lachance, Jurkowski, Dymarz, & Mackey, 2016) are considered effective strategies to reduce slips, trips and falls. These strategies can be defined as passive interventions, that once installed do not need to be attended to by workers or administered by the organization (Lachance et al., 2016), making them a cost-effective solution to reduce safety hazards (Czuba et al., 2012). Barriers to using such equipment in homecare settings include unsuitable flooring surfaces, stairs, narrow doorways, and small rooms (bathrooms and others) (Czuba et al., 2012).

Back Belts*

A common engineering control used to reduce lower-back pain of homecare workers are back belts, yet the evidence on the effectiveness of this practice is controversial (Kraus, Schaffer, Rice, Maroosis, & Harper, 2002; Nelson & Baptiste, 2004). Back belts are generally described as lightweight bands that can be altered to ensure different levels of pressure and tightness (Nelson & Baptiste, 2004) and are purported to decrease the use of spinal cord forces during forceful movements of the back. Kraus et al. (2000) conducted a randomized control trial to examine the effectiveness of back belts to reduce low back injury on home attendants (n = 12,772) in nine agencies in New York City. The sample under examination was separated into three groupings: 1) received back belts with instructions, 2) received lifting advice only, and 3) control group. The researchers found that home attendants with back belts had marginally significant lower rates of back injury compared to the advice-only and control group, suggesting some reduction of risk to low back injury due to the use of a back belt (Kraus et al., 2002). Kraus et al. (2002) outlines numerous past studies that indicate the potential effectiveness of back belts (Kraus et al., 1996; van Poppel, Koes, van der Ploeg, Smid, & Bouter, 1998), yet there is an opposing view that there is minimal effectiveness that back belts reduce forces associated with back extension activities (Maher, 2000; Nelson & Baptiste, 2004; Wassell, Gardner, Landsittel, Johnston, & Johnston, 2000). The National Institute for Occupational Safety and Health (NIOSH, 2014) concluded that there is a lack of scientific evidence to support or oppose the use back belts for injury reduction. Kraus et al. (2002, pg. 97) suggests that "the conclusions from these two reports were based on a few small studies, which were suboptimal because of problems in back belt use compliance and ascertainment of exposures and injury outcomes". As, noted by the conflicting research there are varying views on the effectiveness of back belts as an intervention to reduce worker's injuries.

No-Lift Polices

A common administrative control includes no-lift policies, also referred to as, "zero-lift" or "lift free" policies (Nelson & Baptiste, 2004). No-lift policies have resulted in reduced fatigue of health care workers, as well as decrease of injuries and injury related costs (Czuba et al., 2012). Detailed by Nelson and Baptiste (2004), the definition of no-lift policy is a commitment from administrators that equipment will be attained and properly used to reduce the risk associated with manual patient handling. No-lift policies have been internationally adopted to reduce injury rates associated with patient handling (Nelson & Baptiste, 2004). Though there are benefits of no-lift policies there are barriers to implementing this strategy in the homecare environment, as workers spend the majority of their time

independently, and even when equipment is provided may not have the opportunity to ask for assistance with patient handling from a teammate or use of a patient handling device (Czuba et al., 2012).

Training Programs

Nelson and Baptiste (2004) outline a variety of key behaviour controls used to reduce risk to homecare workers, yet suggest training programs are among the few intervention strategies for patient handling that have evidence to support their effectiveness. Training programs for homecare workers are a common practice to reduce physical pain, strain and prevent musculosketal disorders, yet there is controversy to what form of training is the most effective (Nelson & Baptiste, 2004). Nelson and Baptiste (2004) outline several studies that support the signifigance of training on equipment related to patient handling for a successful prograin injury prevention (Collins, Wolf, Bell, & Evanoff, 2004; Lynch & Freund, n.d.). Similarly, conflicting evidence was found by Hignet (2003) review on intervention strategies to reduce musculoskeletal injuries assocaited with patient handling. The findings indicate that interventions that predominately focus on technique training for patient handling have controversial evidence for their effectiveness to reduce injury rates, yet the strongest evidence outlined in the review suggests these training techniques have minimal impact (Hignet, 2003). On the contrary, some research has indicated that potential benefits of training programs to reduce worker injury in the homecare setting (Johnsson, Carlsson, & Lagerström, 2002). A study to evaluate a training program in patient handling and moving skills according to the Stockhold Training Concept was conducted to examine the effectiveness of the program on hospital and homecare personnel (n = 51) (Johnsson, Carlsson, & Lagerstrom, 2002). The program was developed by a group of health professionals specializing in back care and nursing personnel. Content of the program included theortical and practical components, while the evaluation aimed to understand the effectiveness of particpants' work techinuque, musculoskeletal problems, job strain and the experience of the person being transferred. The results showed improvements in six of the seven work technique items, directly after training including participant comfort, transfer technique, perceived exertion, patient's comfort and safety, observer transfer technique and instrument use (Johnsson et al., 2002).

Clinical Tools

There is also evidence to suggest that clinical tools such as care plans and task lists are beneficial to physical health of homecare workers (Czuba et al., 2012). Czuba et al. (2012) study that explored potential interventions for ergonomic and safety factors, as well as pilot tested specific interventions strategies found that a set number of tasks were related to reduced pain and end-of-the-day fatigue. Providing homecare workers with care plans also allowed them to be better informed about patient needs prior to arriving at their home. Homecare workers voiced that enhanced understanding of patient's needs prior to visitation, may make them more informed and prepared for challenging situations that could decrease risk of musculoskeletal injuries (Czuba et al., 2012). Likewise, Markkanen et al. (2014) reiterated that the development of a care plan that includes homecare worker safety emerged as one the most vital opportunities to improve safety as it minimizes the fear of "entering the unknown."

A suggested extension from the care plan is a household safety check list. This could include worker safety check points or a client family checklist which could be used as a tool for monitoring safety features of the household (e.g. bathrooms, kitchens, staircases, and cluster management) (Markkanen

et al., 2014). It is suggested that a check list could help homecare workers more readily report changes to the homecare environment to their supervisors (Markkanen et al., 2014).

Sharps Injuries and Blood and Bodily Fluid Exposure

There is an increased risk of sharps injuries and exposure to blood and bodily fluids due to the nature of the health-care related work conducted by homecare workers including colostomy and urinary catheter care, as well as bowel stimulation (Olson et al., 2015). Olson et al. (2015) indicated that to their knowledge there are very few studies that have been conducted to examine the effectiveness of interventions to reduce the exposure of the blood and body fluid in the home care setting. The shortage of interventions may be partially from the lack of understanding on the frequency of exposure to blood-borne illnesses and sharps injuries in the homecare setting due to limited research efforts outside the hospital setting (Chalupka et al., 2008).

Nevertheless, Amuwo et al. (2013) conducted a stand-alone study that evaluated the effectiveness of an educational intervention to reduce blood and bodily fluid exposure among homecare workers. The intervention was a 1-day course to increase awareness about the risks of exposure to blood and bodily fluids, as well as a follow-up session to help homecare workers facilitate communication with clients about safe sharps disposal. The experimental group was a large organization of 1,200 unionized homecare workers, while the comparison group was a medium-size agency of approximately 200 homecare workers. Directly matched questionnaires reported an increase in client's use of proper sharps containers, and at follow up the intervention group reported increased use of sharps containers among their clients when compared to controls (Amuwo et al., 2013). The benefits of educational training to reduce sharps injuries is supported throughout the literature (Amuwo et al., 2013; Markkanen et al., 2007).

Beyond educational support, safe medical devices (e.g. safe needle devices) are shown to be an effective strategy to reduce exposure, with 62% to 88% of sharps injuries projected to be prevented using these forms of safety tools (Chalupka et al., 2008). However, Chalupka et al. (2008) argues that safe medical devices are only useful to an extent, as a safe and supportive culture needs to be put in place to help sustain an environment to prevent the occurrence of injuries and exposure to blood and bodily fluids. Likewise, Leiss (2014) conducted a survey that was completed by homecare and hospice nurses (n = 833) in North Carolina to examine the link between a strong safety climate and the use of personal protective equipment and safety-engineered medical devices. The study found that nurses were two to three times more likely to use safe medical devices if they reported being part of a strong safety climate.

Chalupka et al. (2008) expanded on this notion by suggesting that injury prevention will only be sustained through a multidisciplinary approach to support an organizational work climate to reduce sharps injury and exposure to blood and bodily fluids. As outlined in **Table 3**, various health organizations in the United States have followed the hierarchy of controls concepts to reduce exposure. The model takes the perspective that removing a hazard from the workplace is a more effective strategy than relying solely on changing working behaviours or practice to reduce exposure (Chalupka et el., 2008).

Table 3. Injury Prevention Using the Hierachy of Controls (Shortened version adapted from Chalupka et al., 2008, pg. 26)

Controls	Examples
Elimination	Remove all unnecessary sharps; eliminate all unnecessary injections; use alternate routes for medication delivery when available.
Engineering Controls	Employ safety-engineered products that obliterate the sharp feature immediately after completing its useful function, including needle devices that sheath, blunt, or retract the needle immediately after use.
Administrative Controls	Provide appropriate allocation of resources to support a safety climate, including adequate personal protective equipment, sharps injury prevention program, exposure control plan, removal of all devices that pose risk, comprehensive, interactive, annual training for all employees.
Work practice controls	Replace sharps containers before full; establish a mechanism in each home to handle and dispose of sharps safely before beginning a procedure; no needle re-capping; ask patients about their own sharps disposal practices.
Personal protective equipment	Provide quality, readily available gowns, gloves, masks, face shields, and other barriers or filters between the worker and the hazard to be used appropriately.

Other supports to increase the use of personal protective equipment and other safe medical devices to reduce exposure include adequate training for assessing the potential for exposure (Amuwo et al., 2013; Leiss, Sitzman, & Kendra, 2011), strategically reducing excessive workload (Leiss et al., 2011) and further understanding the unique conditions of the homecare setting that may restrict the effective use of safe medical devises (e.g. pets, and clutter) (Leiss et al., 2011).

Workplace Violence

Violence as defined in NSHRF's June 1st, 2017 report "Interventions to Reduce Workplace Violence" refers to any act of aggression or assault that results in physical or psychological harm. Violence towards homecare workers is an important safety risk factor to take into consideration as it can lead to physical injuries, stress, anxiety and in severe cases death of the worker (McPhaul, 2005). The referenced report outlines intervention strategies unique to homecare settings to help mitigate violence in the workplace

setting including assessment protocols, instruction, advisement and guidelines. Training and educational programs to reduce patient to staff violence in the homecare setting can be reviewed in NSHRF's asset map completed on May 12th, 2017 titled, "Workplace Violence Training/Education Programs," which placed particular focus on the home environment.

McPhaul (2005) outlines general strategies used to reduce violence in the homecare setting that can supplement more traditional security services employed in hospital settings;

1. *Effective decisions:* adaption of the visitation to increase security such as visiting in pairs, modification of the schedule to visit at a safer time, rescheduling the visit and/or abandoning the visit.
2. *Workplace violence safety climate*: employer policies and activities that eliminate the risk of violence. See the report created by NSHRF, "Interventions to Reduce Workplace Violence," for additional information on specific homecare policies.
3. *Psychological job demands:* modification of the amount of workload given on a job.
4. *Social Support:* helpful interactions from coworkers and supervisors.
5. *Decision latitude:* Decision authority to choose to use the skills on the job, commonly referred to as "control" or "autonomy".

While violent assaults to homecare workers is a significant factor in worker injury, illness, and job satisfaction, relatively little work has been done to research interventions intended to reduce such violence (Vladutiu, Casteel, Nocera, Harrison, & Peek-Asa, 2016). Campbell et al's, (2014) systematic review of violence enacted by clients in "non-institutional" care settings found that explanatory research and controlled studies on the topic are lacking and that more rigorous research is needed to provide an effective base of evidence on which to build policies and strategies.

Vladitiu et al.'s (2016) study on workplace violence training for homecare workers demonstrates the limited knowledge and evidence available on the topic. Worker training and education is generally recommended as a strategy to address the risk of violence in the homecare workplace. For example, Hanson, Perrin, Moss, Laharnar, and Glass's, (2015) survey of 1,214 homecare found that confidence in addressing workplace aggression mitigated some of the negative consequences, leading researchers to conclude that preventive safety training with supportive policies for workers who experience violence is critical (Hanson et al., 2015).

Yet, Vladitius et al.'s (2016) study that attempted to determine what training homecare workers receive in conjunction with violent event rates found that such training is not always implemented. The study included 191 nurses, therapists, social workers, and support workers from six homecare organizations, including for-profit and not-for-profit, in northern California. The participants provided information on 3,438 home visits between 2008-2009. More than thirty percent (33.5%) of homecare workers in the study reported they did not receive any workplace violence prevention training while more than a quarter reported having experienced at least one violent episode while in a patient's home. The violence was most common in homes of people with psychiatric disorders, substance abuse disorders, and histories of violence. The authors suggest that more training is needed as well as more comprehensive evaluation of what training is most effective. In addition, given that risk factors have been identified, the authors recommend training should be offered in conjunction with violence risk assessments (Vladutiu et al., 2016)

Wellness Oriented Interventions

Even though wellness oriented strategies may not be as thoroughly developed compared to safety interventions in the health-care settings, they are considered essential to develop an environment that promotes a supportive and safe culture to enhance workers' well-being (Olson et al., 2015). The unique mixture of physical and psychosocial hazards in homecare suggests there is a need for socially supportive interventions for homecare workers that integrate health promotion with injury prevention strategies (Olson et al., 2015). Wellness oriented interventions tend to target mental health, psycho-social and stress-related hazards in the homecare setting that may lead to workplace injury and illness (Olson et al., 2015). A survey examining the mental health and well-being of homecare workers (n = 674) in Ontario, Canada, in collaboration with 9 focus groups (n = 50) found that extensive workload, difficult clients, safety hazards and work related injuries were associated with poorer mental health and well-being, while fair pay, good benefits, organizational supports, including education and peer support, were associated with better health (Denton, Zeytinoglu, & Davies, 2002). Common methods in wellness-oriented interventions have included weekly check-in phone calls, individual and family counseling, education, and support group participation (Olson et al., 2015).

The COMPASS (Community of Practice and Safety Support), within the National Institute for Occupational Safety and Health (NSIOSH) Total Worker Health™ initiative is an example of a multi-component intervention research project that aims to change homecare workers' well-being, health and safety behaviours by focusing on the overall physical and psycho-social hazards of the homecare setting (Olson et al., 2015; Olson et al., 2014). The intervention includes a team-based approach grounded in evidence-based tactics that include a community of practice, educational component and social support elements. A pilot study using pre- and post-intervention measures to evaluate the effectiveness of the COMPASS intervention on homecare workers (n = 16) found moderate changes in well-being, as well as a range of changes in psychosocial, stress, and behavioral outcomes (Olson et al., 2015).

Social and Educational Support

Social and educational support are shown to enhance employee and patient safety, increase job satisfaction, and better employee health (Olson et al., 2015), while low-social support is associated with increased risk of injuries and illnesses (Amuwo et al., 2013). Just as the "community of practice" tactic of the COMPASS program described above shows promising results, (Olson et al., 2015), Toseland, Rossiter, and Labrecque's (1989) study that evaluated the effectiveness of peer-led and professionally led groups to support caregivers found that tactics including discussion of educational topics (e.g. wellness, communication, and caregiving issues) were effective in reducing stress, and increasing interpersonal competence. Though support tactics may not be observantly linked to reduction in workplace injury and illness, lack of a supportive environment can lead to an array of negative physical and psychological outcomes (Olson et al., 2015).

Safe Work Climate

Beyond social and education support, a safe climate in the work environment can critically enhance employee and patient safety, and have beneficial outcomes for homecare workers' mental health and well-being, job satisfaction, retention and recruitment (Chalupka et al., 2008). The development of a safe work climate is complex and is dependent on an array of levels of influence including governmental

policies, organizational factors, and program supports. Work and program organizational factors that increase risk to worker injury and illness include inadequate staffing, low morale, and lack of administrative support (Chalupka et al., 2008). Though organizational and policy changes are outside the scope of the current report, specific intervention tactics to assist in building a safe work climate are outlined in Cloutier et al.'s (2008) study on the effectiveness of government policies on the work of home care workers in Quebec, Canada. Based on an analysis of 66 interviews, 22 observed workdays and 35 observed multidisciplinary or professional meetings, as well as on administrative documents, the study found reduction in physical workload, stabilization of clienteles, organization of itinerary and follow-up tools were potential strategies to reduce risk to injuries and negative psychological effects in the homecare setting. Other effective strategies to promote a safe work climate include sufficient government funding, avoiding continuous changes to the work environment and promoting a supportive culture among homecare workers (Chalupka et al., 2008).

Resources

Resources including wellness training programs, check lists and guides for homecare workers are linked to reductions in workplace injury and illness (Olson et al., 2015). As outlined by Gong et al. (2009), a wellness task checklist and safety guide titled "*Caring for Yourself While Caring for Others: Practical Tips for Home Care Workers,*" aims to help patients and homecare workers collaboratively discuss ways to obtain effective tools and mitigate hazards within the homecare setting. Another effective tool is self-assessment and guides for homecare workers to understand boundaries of their job to protect their professional stance and client vulnerability (Anewalt, 2009). Guides for homecare workers to explicitly understand the boundaries of their role is a useful tool, as conveying these boundaries to others may not come naturally. If boundaries are not made clear at the onset, there can be negative impacts to homecare workers physical, emotional and cognitive health (Anewalt, 2009;Turner, 2000).

Summary of Interventions

As noted, the majority of interventions for homecare workers have not been evaluated for their effectiveness at changing behaviours, work conditions and health outcomes (Olson et al., 2015), yet the literature suggests there are potential benefits of using safety and wellness tactics to reduce worker injury and illness in the home setting. The report outlines effectiveness of available intervention strategies that show significant or promising results in mitigating risks factors for worker injury and illness, with three major themes arising from the literature including:

1) **Safety equipment and devices** installed in the household to alleviate injuries and illnesses including patient handling equipment such as shower chairs (Czuba et al., 2012), grab bars (Markkanen et al., 2014), and back belts (Kraus et al., 2002; Nelson & Baptiste, 2004), as well as safe medical devices to reduce sharps injuries and exposure to blood and body fluids (Chalupka et al., 2008).
2) **Traditional training and support groups** (Amuwo et al., 2013; Johnsson et al., 2002**;** (Ryan Olson et al., 2015; Toseland et al., 1989) to educate and connect with homecare workers on the use of equipment, devices as well as safety and wellness strategies to help homecare workers make knowledgeable and informed decisions in the homecare setting (Chalupka et al., 2008)

3) **Clinical tools and resources** such as care plans (Czuba et al., 2012; Markkanen et al., 2014), safety and wellness check or task lists (Markkanen et al., 2014) scheduling systems and guidelines (Czuba et al., 2012) to ensure homecare workers have concrete itineraries and boundaries when entering a potential high impact, uncontrolled home environment.

The report focuses on specific strategies and tactics that are instilled in the homecare environment to reduce worker injury and illness, yet a common factor across the majority of interventions was the importance of developing a safe work climate to ensure homecare workers adopt the strategies implemented to reduce worker illness and injury (Chalupka et al. 2008; Olson et al. 2015; Olson et al. 14). To create a supportive culture where strategies to promote safety and wellness in an environment in which workers are regularly isolated is complex and multi-facetted. Intervention tactics are one of various levels that need to be taken into consideration when producing a safe climate (Chalupka et al. 2008; Leiss, 2014), as well as policies initiatives, systematic issues (Cloutier et al., 2008) and organizational factors (Polivka et al., 2015).

Challenges in Evaluating Home Care Work Environments

Understanding what mechanisms are effective in reducing worker injury and illness in the homecare setting is challenging as homes are an unpredictable environment (Markkanen et al., 2007), the workforce is geographically dispersed (Markkanen et al., 2007; Markkanen et al., 2008), and tends to be part-time and mobile in nature (Markkanen et al., 2008). These factors make it difficult to capture information from a large sample size as the population is not in a condensed setting and are often isolated from one another. Markkanen et al. (2008) suggests that data collection for this population must adapt to the complex homecare environment and use methods of recruitment and data collection customized to homecare workers. Continuous personal contact with workers, incentives and promotion of the research project being conducted are identified as key components to achieve a high response rate (Markkanen et al. 2008).

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