The COMPASS Pilot Study

A Total Worker Health™ Intervention for Home Care Workers

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Objective: To develop a team-based Total Worker Health™ (injury prevention + health promotion) intervention for home care workers and estimate intervention effects on workers' well-being and health and safety behaviors. **Methods:** Home care workers ($n = 16$) met monthly in teams for education and social support using a scripted, peer-led approach. Meeting process measures and pre-/postintervention outcome measures were collected. **Results:** Knowledge gains averaged 18.7% (standard deviation = 0.04), and 62.0% (standard deviation = 0.13) of participants reported making safety or health changes between meetings. Workers' well-being improved significantly (life satisfaction, $d = 0.65$, $P < 0.05$; negative affect, $d = 0.64$, $P < 0.05$), and the majority of other safety and health outcomes changed in expected directions. **Conclusions:** COMPASS is a feasible intervention model for simultaneously preventing injuries and promoting health among home care workers.

The demand for in-home care among the elderly and adults with disabilities is increasing dramatically in the United States. The current population of personal care and home health aides is approximately 2.1 million and is projected to grow by 48% by 2022 (v 11% for growth for all occupations).[1] Nevertheless, providing in-home care is physically and emotionally demanding, and home care workers (HCWs) commonly cope with poor working conditions that include limited training and benefits, low wages, and precarious employment.[2] Lack of training, supervision, and coworker assistance result in an injury rate that is approximately four times the US average for all occupations[3] and 25% higher than hospital-based workers who perform similar tasks (eg, nursing aides and orderlies).[4] Psychosocial demands of the occupation and the demographics of the HCW population also place them at elevated risk for depression and poor physical health.[5] In all, high job demands and low wages fuel elevated turnover among HCWs,[6] which further reduces our national capacity to provide home care services for our growing elderly population. Thus, it is socially important that we develop and evaluate new methods to improve working conditions, health, and safety for this isolated or lone working population.

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TOTAL WORKER HEALTH™

In this article, we report the results of the COMPASS (Community of Practice and Safety Support) pilot study with HCWs. COMPASS is an intervention effectiveness research project within the Oregon Healthy Workforce Center, which is one of four Centers of Excellence to Promote a Healthier Workforce funded by the National Institute for Occupational Safety and Health (NIOSH). NIOSH defines Total Worker Health™ as "... a strategy integrating occupational safety and health protection with health promotion to prevent worker injury and illness and to advance worker health and well-being."[7] The COMPASS project was designed from this perspective, and aims to reduce injuries and improve health among HCWs by addressing the unique mixture of physical and psychosocial hazards in-home care environments.

THE UNIQUE HAZARDS POSED BY THE ORGANIZATION OF HOME CARE WORK

Home care services are provided by a diverse workforce under a variety of work arrangements.[1] Home care workers are predominantly female and older than 40 years and have a current median hourly wage of $10.01.[1,2,8,9] Providing in-home care has common, challenging features across many settings, but the physical and psychological demands of the job vary greatly on the basis of the needs of care recipients (referred to hereafter as consumer-employers). In most states no formal training is required to perform the job. Home care workers may be employed by private home care agencies or work as independent contractors employed directly by the consumer-employer (either for private pay or publicly funded pay). When employed by a private agency, workers benefit from a degree of supervision and safety support structures. The current project is focused on independent contractors who provide in-home care for consumer-employers in publicly funded programs.

Home care workers employed as independent contractors face a work structure that exposes them to a range of consequential physical and psychosocial hazards. In contrast to hospital or long-term care facility caregivers, HCWs lack typical occupational safety support structures and processes, such as supervision, regular safety training, safety committees, and access to equipment to reduce ergonomic exposures. Therefore, HCWs often perform dangerous tasks without assistive tools or help from peers, such as moving heavy objects or physically transferring consumer-employers from one position to another.[9–11] Although relationships with consumer-employers can be meaningful and highly rewarding for HCWs,[12] it can be stressful and demanding to care for individuals with disabilities and those who are nearing the end of their life. In traditional work environments the employer is responsible for providing a safe environment in which to work. Nevertheless, as private citizens, consumer-employers are not likely to be aware of safety hazards in their homes or appreciate the importance of providing special equipment for protecting worker health. Thus, independently contracted HCWs often find themselves alone in advocating for safe work conditions with consumer-employers and/or consumer-employers' family members. Moreover, unsafe work conditions may be particularly hard to remedy when a consumer-employer is cognitively disabled

or when a consumer-employer does not qualify for or cannot afford assistive devices. In some cases, consumer-employers themselves pose occupational health hazards through demanding, rude, or even physically dangerous behaviors,[13–16] which can also lead to work injuries.[17]

THE IMPACT OF SOCIAL SUPPORT ON WORKPLACE HEALTH AND SAFETY

Among hospital-based caregivers, low general social support from coworkers is correlated with increased risk of injuries and illnesses.[18,19] Similar effects of low social support have been observed among isolated caregivers: McCaughey et al[20] found that "HHA (Home Health Aide) perceptions of poor training and poor supervisory support were significantly related to higher risk for workplace injuries."

Strong social support networks have a number of health benefits. For example, social networks promote the transmission of work-related knowledge that can improve efficiency, safety, and employees' well-being.[21,22] Social support provides a buffer against the harmful effects of job stress in both remedial (eg, coping) and preventive directions.[23–25] Social support is also associated with health behaviors and outcomes of health promotion interventions, including higher general physical activity levels,[26–28] behavior change and weight loss,[29–34] and improved long-term weight loss maintenance.[30,32] Additional evidence suggests that socially supportive interventions are more effective when education or training is included. For example, in a meta-analysis that reviewed 78 intervention studies with family (unpaid) caregivers, multicomponent interventions that combined education, social support, and other tactics (12 studies) produced the largest mean effects for improved well-being ($g = 0.75$) and knowledge ($g = 0.86$).[35]

PREVIOUS INTERVENTIONS FOR CAREGIVERS AND THE RESEARCH AND PRACTICE GAP

Safety and health interventions for HCWs are scarce, but some relevant work has been conducted. In the health promotion domain, interventions for HCWs have primarily targeted dimensions of subjective well-being, including mental health, psychosocial, and stress-related factors.[36–38] Statistically significant improvements have been produced in such outcomes as stress and mental health,[39–41] wellness and quality of life,[39,42] and social support network size.[43,44] Common methods in wellness-oriented interventions have included weekly check-in phone calls, individual and family counseling, education, and support group participation. Most relevant to the current project, Toseland et al[41] evaluated a social support group intervention for family caregivers under professional and peer-led conditions.[44] Both professional and peer-led processes were described as "facilitated self-help groups," and involved eight weekly 2-hour meetings.[44] Leaders received 4 to 6 hours of training on meeting facilitation on a protocol guide to run meetings. The first half of each group meeting focused on an unscripted discussion of a specific educational topic, including wellness, communication, and practical caregiving issues (but not eating, exercise, or occupational safety). The second half of each group meeting focused on helping up to three participants used a six-step problem-solving model to address issues they were dealing with as family caregivers. Both formats were effective at producing short- and long-term improvements in stress reduction, interpersonal competence, and social support network size.[43,44]

In the safety domain, most research with HCWs has focused on the surveillance of risk factors and injury rates. Nevertheless, in a rare intervention evaluation study with HCWs, Amuwo et al[45] tested an educational intervention to reduce bodily fluid exposure for HCWs, and intervention participants showed increased use of sharps containers at follow-up relative to the control group.[45] Although few safety interventions for HCWs have been evaluated, a range of intervention resources have been developed, including task exposure and ergonomic assessment resources to guide interventions.[46] Some state and county authorities running publicly funded home care services have developed training programs that include safety topics (eg, Oregon Home Care Commission [OHCC] and Alameda County In Home Support Services). Other safety resources include safety checklists and guides for HCWs. As described by Gong et al,[47] community-based participatory research methods were used to produce the task checklist and safety guide titled "Caring for Yourself While Caring for Others: Practical Tips for Home Care Workers," which helps HCWs review demanding tasks with consumer-employers and discuss ways to obtain tools or correct hazards.[47,48] To our knowledge, aside from the Amuwo et al[45] intervention to reduce body fluid exposure, most HCW safety interventions have not been evaluated for their effectiveness at changing HCW behavior, work conditions, or safety and health outcomes.[45]

To summarize, previous health promotion interventions for HCWs have improved wellness and reduced stress, but have neglected lifestyle factors such as exercise and diet. Safety interventions are scarce and have not been thoroughly evaluated. To our knowledge, there are no interventions that target both safety and health changes together. The unique mixture of physical and psychosocial hazards in-home care suggests that there is a particular need for socially supportive interventions for HCWs that integrate health promotion with injury prevention.

THE COMPASS INTERVENTION MODEL

To address gaps in research and practice, we developed an intervention to enhance HCWs' professional community of practice and improve Total Worker Health™. Our team-based approach is based on evidence-based tactics, and integrates peer-led, scripted education with elements of effective social support groups. The intervention approach also incorporates goal setting and behavioral self-monitoring activities modeled on best clinical practices.[49,50] Specific intervention steps are described in the Methods section. Below we summarize the conceptual and empirical origins of the COMPASS intervention model.

A community of practice is a formal or informal peer-to-peer collaborative network within a technical specialty that is characterized by willing participation of members who share work-related knowledge, develop expertise, and help each other solve problems.[51,52] As noted above, home care is characterized by a lack of such social support structures. We strategized that a team-based intervention model, implemented with groups of HCWs who work or live in the same area, could bring isolated individuals together and foster the development of communities of practice.

The educational component of the intervention model is a scripted, peer-led approach that does not require an expert trainer or advanced preparation by the team leader or team members. In these peer-led teams, coworkers meet regularly and read through a scripted workbook together. Workbooks include facts, activities, games, and goal setting with social commitments for follow-up. Team members work on their goals between meetings, and then report back at subsequent meetings. This scripted team-based model has reduced disordered eating and the use of performance enhancing drugs among teenaged athletes,[53,54] and improved health behaviors and safety among firefighters and police officers.[55–57] For example, over a 1-year period with firefighters, the team-based intervention increased fruit and vegetable consumption from 5.8 to 7.4 (standard deviation [SD] = 0.30) servings per day and arrested weight gain, and ultimately produced an annual savings of $714 per firefighter in reduced workers' compensation costs.[56]

Social support group elements in the COMPASS intervention model included adapted structured problem-solving steps from Toseland et al.[44] Additional elements were informed by a supportive group process developed for employees at Santa Clara University by Andre Delbecq and colleagues in 2002 called the Ignatian Faculty

Forum (IFF).[58] The IFF group process integrates an Ignatian focus on the health and development of the "whole person" with elements of a supportive group process established for small business leaders in 1957 called TEC (The Executive Committee, now implemented as Vistage International) (A. Delbeq, personal communication, December 14, 2010). IFF creators state that "Specifically, the Forum provides a small community of trust in which faculty share joys and struggles as they engage in reflective discernment."[59] Elements from TEC and/or the IFF that were integrated into the COMPASS model include confidentiality, a premeeting "check in" by all members before proceeding with the meeting, learning and discussion, a shared simple meal, problem solving and social support, and reflection before adjourning.

THE COMPASS PILOT STUDY

The purpose of the COMPASS pilot study was to develop and test the feasibility of a Total Worker Health™ intervention for HCWs and estimate intervention effects on workers' well-being and health and safety behaviors in order to inform sample size in a planned prospective randomized efficacy trial. The study lasted 6 months and included pre- and postintervention evaluation measures, as well as process measures collected at each intervention team meeting. All study procedures were reviewed and approved by the Oregon Health and Science University institutional review board.

METHODS

Participants

Pilot participants were recruited from among HCWs who completed a prior ergonomic self-assessment study,[46] and through referrals from the Service Employees International Union (SEIU) Local 503 and the OHCC. Eligibility criteria included residing or working within the Portland Oregon metropolitan area and having at least one current consumer-employer who was enrolled in a publicly funded home care program in the state of Oregon. Consumer-employers in these public programs are individuals who qualify for in-home services that are paid for by the Oregon Department of Human Services Aging and People With Disabilities. A total of 19 eligible HCWs volunteered and consented to participate, and 16 completed the 6-month process and postintervention assessments. Among dropouts, one participant developed a schedule conflict after baseline data collection and was unable to attend any team meetings, and two participants dropped out after attending the team-building workshop for unknown reasons. Participants were paid $22 for completing each 2-hour health assessment, and $28 for each 2-hour intervention meeting (an additional $6 was added to cover additional time spent collecting process measures before and after each session).

Consumer-employers of pilot participants were also invited to participate in the study by completing a short survey after the intervention. A total of 21 consumer-employers provided surveys out of 32 who were invited to participate (66% response rate). Study participants helped recruit consumer-employers by delivering sealed survey packets (to protect confidentiality) that included information about the study; a short survey, and a pre-paid return envelope addressed to the research team. Surveys asked consumer employers questions about their satisfaction with their HCW, interpersonal conflict with their HCW, and HCW safety behaviors. Consumer-employers were compensated with a $10 gift card for completing and returning each survey.

Design

The study used a 6-month pre-/posttest design with additional monthly process measures. Pre- and postintervention measures included a survey and a physical health assessment conducted at the SEIU Local 503 Portland office building. Researchers collected process measures before and after each meeting, including reaction, learning, and behavior change criteria. Researchers observed each meeting process unobtrusively by sitting outside the team seating arrangement. Researchers engaged with a team only to prompt the leader if a consequential part of a scripted activity was missed, or if a member asked for clarification on part of the script or process.

Intervention

After enrollment, participants were divided into two teams ($n = 8$ and $n = 11$, respectively) on the basis of meeting schedule availability. Each team participated in the COMPASS pilot program, which involved a 4-hour team-building workshop followed by six monthly 2-hour meetings. During the initial workshop, researchers modeled the team leader role, and thereafter, at the monthly meetings, participants alternated serving as the team leader, using the scripted team leader manual, whereas other team members used a corresponding workbook (see Figure 1 for the COMPASS session steps). Researchers developed scripted lessons one at a time using a "just-in-time" approach. The teams would complete one lesson and then work on their goals for a month, whereas investigators produced the planned topic for the upcoming meeting.

The team-building workshop was designed to help participants get to know each other and learn the COMPASS meeting process. Content included team-building activities, short "welcome"

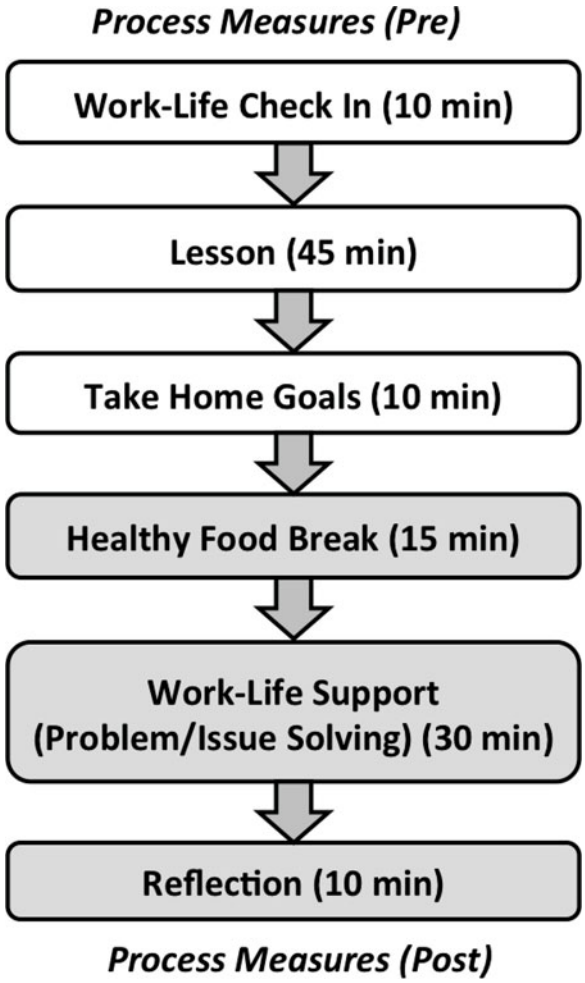

FIGURE 1. COMPASS team meeting steps. White and gray indicate educational and social support elements, respectively.

presentations by researchers and leaders from the SEIU Local 503 and the OHCC, and a scripted workbook lesson that described the COMPASS monthly meeting structure and guided the team through practicing each meeting component. An example of a team-building activity was called "Fact or Fiction" and involved having each person take a turn telling two facts and one fiction about themselves, and letting the group vote on which story they thought was the fiction. An example of a practiced meeting component was a structured group problem-solving exercise using example issues provided within workbooks.

Each subsequent monthly COMPASS session followed a standardized format including both education and social support. The first half of each meeting focused on learning and behavior change, and involved a Work-Life check-in, a scripted workbook lesson on a health promotion or occupational safety topic, and setting behavioral "take home" goals. In the Work-Life check-in, participants wrote their names on the board and provided separate ratings on a scale of 1 to 10 for their current work and life status. Before proceeding with the workbook lesson, each team member briefly talked about why they rated themselves as they did. Each scripted lesson began with follow-up on goals from the prior meeting. Then, each monthly lesson alternated between health promotion and occupational safety topics on the basis of known high-risk tasks and health problems among HCWs. Topics were planned in advance, but with some adjustments added as the project was implemented on the basis of input from pilot teams (see Table 1 for the schedule of topics). Each topic was segmented into participatory learning activities, such as games, guided tool demonstrations, and role-play. After the educational lesson, participants set specific "take home goals" related to the topic (eg, increase walking and increase tool use) to complete before the next meeting. This included an assigned shared team goal and individual goals that were selected from a menu of options. Goal options were designed by researchers using the SMART framework (Specific, Measureable, Assignable, Realistic, and Time-Related), and involved social commitments to engage in activities or behaviors related to injury prevention or health promotion. Many goal options involved having workers complete a period of behavioral self-monitoring and then report back results to the group.

The second half of the meeting focused on social support, and began with a simple meal that emphasized fruits, vegetables, and whole foods (eg, vegetable soups, kale salads, and fresh fruit). After the meal, the COMPASS team completed a structured problem-solving activity adapted from a process used with family caregivers.[44] Each team member wrote a problem or opportunity on the board and rated it on a scale of A through F, with A being most urgent to talk about. The process was to (1) follow up on action plans from the prior meeting's problem, (2) choose one or more health or safety issues to discuss, (3) brainstorm potential solutions, (4) allow the person with the problem to select a solution, and (5) form an action plan. Each scripted lesson then concluded with a review of take home goals and a team reflection on favorite aspects of the meeting.

Measures

Process Measures

At each team meeting, participants' reactions, learning, and reports of behavior changes were collected with TurningPoint (Turning Technologies, Youngstown, OH) for PowerPoint® using radio-frequency response cards. At the beginning of each meeting, participants completed a 10-item multiple-choice knowledge pretest and ratings of the previous month's topic ("I enjoyed the material" and "the material was useful to me") using a five-point Likert-type scale (1 = strongly disagree; 5 = strongly agree). Behavior change was assessed with three questions including "I made changes for my health since the last meeting," "I made changes for my safety since the last meeting," and "I changed <take home goal from the last session>." Monthly well-being was assessed with separate ratings of physical health and mental health. Knowledge items were readministered at the end of each session to measure within-session learning.

Survey Measures

The HCW survey included demographic and work-health history questions and a battery of measures to assess well-being, psychosocial and stress factors, safety and health behaviors, physical and health symptoms, and safety outcomes. The survey emphasized measures with established reliability and validity.

Work history questions included numbers of consumer-employers, hours worked per week, and years of experience as an HCW. Health history questions included smoking status, caffeine and alcohol consumption, and self-reports of being diagnosed and/or treated for diabetes, sleep apnea, depression, and anxiety.

Well-being is a multidimensional and evolving construct.[60] Diener[37] defined subjective well-being as being comprised of "... life satisfaction (global judgments of one's life), satisfaction with important domains (e.g., work satisfaction), positive affect (experiencing many pleasant emotions and moods), and low levels of negative affect (experiencing few unpleasant emotions and moods)." Sears and colleagues recently conceptualized and developed a new well-being index with five dimensions, including purpose, social, financial, community, and physical well-being.[38] Given that our intervention was explicitly focused on developing social capital (community of practice) and promoting behavior change through social processes, we selected and distinguished between measures of individual-level well-being and measures related to social resources, interpersonal factors, and stress.

For the purposes of our project, individual-level well-being was conceptualized as self-ratings of life satisfaction, affect, and mental and physical well-being.[36,37] Specifically, these measures included five items regarding satisfaction with life (rating scale 1 to 5; 1 = strongly disagree; 5 = strongly agree)[61]; negative and positive affect over the past month using the 8-item Positive and Negative Affect Schedule (rating scale 1 to 5; 1 = not at all; 5 = extremely)[62]; depressive symptoms during the past week using the Center for Epidemiologic Studies Depression five-item measure (rating scale 0 to 3; 0 = rarely or none of the time [<1 day]; 3 = most or all of the time [5 to 7 days])[63]; and the 12-item short form health survey, version 1 mental and physical health subscales.[64]

Subjective evaluations of social resources and stress may be considered subdomains of general well-being.[38] Nevertheless, as noted above, we sought to distinguish between individual-level well-being measures and related outcomes that possessed a strong social or stress component. These psychosocial and stress measures included the 12-item experienced community of practice measure (rating scale 1 to 5; 1 = strongly disagree; 5 = strongly agree)[65]; team cohesion using the six-item scale from Chin et al[66] (rating scale 1 to 5; 1 = strongly disagree; 5 = strongly agree); frequency of interpersonal conflict with consumer-employers over the past 3 months using 10 items on the basis of the Wright et al[67] measure (rating scale 1 to 5; 1 = never; 5 = very often); work–family and family–work conflict using the five-item Netemeyer et al[68] scales (rating scale 1 to 5; 1 = strongly disagree; 5 = strongly agree; life stress over the past 3 months using seven items from the Perceived Stress Scale (the shortened 5-item scale plus two items that had strong face validity for the population; rating scale 1 to 5; 1 = never; 5 = very often)[69]; and the job skill discretion, decision authority, and psychological job demands subscales (six, nine, and five items, respectively) from the Job Content Questionnaire (rating scale 1 to 5; 1 = strongly disagree; 5 = strongly agree).[70]

Behavioral items, unless otherwise noted, were anchored "in the past month." These included the 9-item National Cancer Institute (NCI) fruit and vegetable screener (10 frequency intervals ranging from never to five or more times/day)[71]; the 16-item NCI fat

TABLE 1. COMPASS Team Pilot Curriculum: Topics, Content, and Goals

Session Topic*	Content and Activities	Individual Goal Options†	Team Goals‡
Team building workshop	Team building	Track days with 5000 steps	Step count relay (team divided into two squads)
	How COMPASS teams work	Watch videos on safety and health	
	Fact or fiction activity	Track daily activities on iPod Touch app	
	Think, pair, share		
Fruits and vegetables	Fruit and vegetable serving sizes and recommendations	Track days with five or more servings of fruits and vegetables	Fruit and veggie relay Bring healthy recipe to share with the group
	Benefits and barriers to eating fruits and vegetables	Try one new fruit or vegetable daily for 1 week	
	Serving size quiz	Substitute water for sugary drinks	
	Nutrition jeopardy		
Back to healthy postures	Neutral spine postures Practice finding neutral spine and trying common activities with appropriate postures	Track neutral spine position several times a day by specific task Track neutral spine position several times a day by alarm	Track neutral spine postures by task or alarm
	Tools to avoid back strain		
Functional fitness	Core strength	Core exercise scavenger hunt	Repeat step count relay
	Sitting posture	Pair with teammate to exercise	
	Practice anywhere core exercises	Take part in an exercise-related activity in the community	
	ABLE (abdomen, back and leg exercises) stickers		
	Benefits of exercise quiz		
Take a load off with tools	Safety traps that lead to injuries	Attend OHCC class on tools	Complete a home hazard checklist in consumer–employers' homes‡
	Common injuries and how they occur	Read materials on tool use	
	Low-tech tool introduction and practice	Research tools online or at a medical supply store	
		Watch videos on tool use	
Communicating for hazard correction	Role-play communication with consumer–employer	Good day/bad day interview with consumer–employer	Discuss hazards identified with consumer–employer‡
	Learn PRAISE mnemonic	Attend OHCC class on communication	
	Plan consumer–employer interaction	Use PRAISE strategy with consumer–employer	
Mental health	Learn about mental health Practice total body relaxation	Schedule one fun thing per day for 1 week	Repeat any previous goal from other sessions
	Three blessing activities	Gratitude journal	
	Review of session topics and progress on goals	Practice relaxation activity daily for 1 week	

*Names for session titles are listed in their final form at the end of pilot testing.

†Although the table describes goals in general terms, goals were highly specified in workbooks in alignment with the SMART goals framework (specific, measureable, assignable, realistic, and time-related). Many goals involved 1 or more weeks of behavioral self-monitoring where individuals or teams chose (or were assigned) specific behavioral targets, recorded daily behaviors or conditions using cards or other tools, and then reported results back to the team at the next team meeting.

‡The hazard checklist and communication tools provided for team goals in this area were "Caring for Yourself While Caring for Others: Practical Tips for Home Care Workers" (Published by the Labor Occupational Health Program, accessed April 4, 2014, from http://lohp.org/caring-for-yourself/), and portions of the "Household Safety Checklist" developed and studied by Dr. Robyn Gershon (accessed June 6, 2014, from http://www.caring.com/articles/household-safety-checklist).

COMPASS, Community of Practice and Safety Support; OHCC, Oregon Home Care Commission.

screener (10 frequency intervals ranging from never to five or more times/day)[72]; four items on the frequency of eating sugary drinks, sugary snacks, and fast food, as well as frequency of bringing meals from home (10 frequency intervals ranging from never to five or more times/day)[73]; the four-item healthy physical activity scale regarding the frequency of moderate to intense physical activity (reports of 0 to 7 days for each type of activity)[55]; and sleep quality measured using the Pittsburgh Sleep Quality Index.[74] Safety behaviors were assessed with the three-item safety compliance scale (rating scale 1 to 5; 1 = strongly disagree; 5 = strongly agree)[75]; and a four-item scale, created for the study, where workers reported the occurrence (yes/no) of several safety actions in the past 6 months (corrected a home hazard, talked with a client regarding safety or health, adopted a new lift/transfer tool, or adopted a new housekeeping tool).

Physical symptom measures included an adapted 3-month prevalence of musculoskeletal pain and discomfort in four body regions (neck/shoulders, forearms/wrist, low back, lower extremities; rating scale 1 to 5; 1 = not at all; 5 = extremely)[76]; pain severity during the past 7 days (rating scale 0 to 10; 0 = no hurt; 10 = hurts worst)[76]; functional impairment over the past 7 days for nine common activities of daily living (rating scale 0 to 4; 0 = no difficulty; 4 = unable to perform); and eight items from the Swedish Occupational Fatigue Inventory physical discomfort and lack of energy subscales (rating scale 1 to 5; 1 = never; 5 = very often).[77]

The consumer-employer survey included demographic questions and ratings regarding their satisfaction with their HCW, relationship quality, and observations of safety behaviors. Client (consumer-employer) satisfaction was assessed using the 13-item

Home Care Client Satisfaction Inventory[78] on a five-point satisfaction scale (1 = very dissatisfied; 5 = very satisfied) and with space for free-response comments. Relationship quality was assessed by querying the frequency of interpersonal conflict with their HCW over the past 3 months using a 10-item scale on the basis of the Wright et al[67] measure. Observations of safety actions made by HCWs in the past 6 months were assessed using the same four yes/no items described above in the participant survey.

Physical Health Assessment Measures

Body measurements and fitness tests were conducted according to published professional standards.[79,80] Body measurements included height (SECA 213 stadiometer, SECA, Hamburg, Germany); weight and percent body fat (Tanita TBF-310GS, Tanita Corporation, Tokyo, Japan); and neck, waist, and hip circumference (Gulick II measuring tape, Country Technology Co, Gays Mills, WI). Fitness measures included grip strength (JAMAR hydraulic hand dynamometer, 200 lb, Lafayette Instrument Co, Lafayette, IN), hamstring flexibility (Cooper Institute/YMCA scale on the Flex-Tester Sit and Reach box, Novel Products, Inc, Rockton, IL), and a 6-minute walk test (a shorter 15-m course was used due to space limitations).[80] Other health measures included blood pressure (3 reading average; Omron HEM-907XL, Omron, Kyoto, Japan) and finger-stick blood sample measures of cholesterol, triglycerides, and glucose (Cholestech PA Analyzer, Alere, Waltham, MA). Blood samples were taken with an Autolet lancet (a standard 3-mm depth of puncture, F. Hoffman-La Roche Ltd, Basel, Switzerland) after a 3-hour food and exercise-free interval and immediately processed.

Statistical Analyses

Each process measure was analyzed with descriptive statistics by session and pooled across sessions (means and SD). For each measure in pre-/postintervention analyses, we calculated means and SDs at each time point, mean change scores, and standardized effect sizes where each change score was divided by the pooled SD of the change (Δd). We also computed dependent sample t tests for each measure, but with a pilot sample of 16 participants, Type II decision errors are probable. Therefore, our reports of results below emphasize effect sizes (and patterns in effects) over statistical inference.

RESULTS

Sample Characteristics

The HCW sample was predominately female ($n = 15$ of the 16), with a mean age of 57.81 (SD = 7.57) years. Minority representation was 33%, including participants identifying as African American ($n = 2$), Asian ($n = 1$), Native American ($n = 1$), and other ($n = 1$). At baseline, participants reported an average of 8.00 (SD = 4.61) years of home care experience, working an average of 21.67 (SD = 14.18) hours per week, and caring for an average of 2.13 (SD = 1.92) consumer-employers. The average body mass index for participants was 28.64 (SD = 9.02) kg/m^2, and one third of the sample smoked (31.25%). Self-reported diagnoses of depression and anxiety disorders were 50.00% and 31.25%, respectively. Baseline prevalence of musculoskeletal symptoms was 93.75%, both in the past 3 months and in the past 7 days.

The consumer-employer sample ($n = 21$) was 61.90% female ($n = 13$) and averaged 67.10 years (SD = 13.96) of age, with a self-reported body mass index of 30.98 (SD = 11.08) kg/m^2. Responding consumer-employers reported that their HCW had worked for them for a mean duration of 2.22 (SD = 2.32) years.

Attendance and Within-Session Outcomes

HCW participants ($n = 16$) attended 90% of possible meetings (mean = 6.31 out of the 7 possible meetings). Mean reactions were 4.02 (SD = 0.25) and 4.14 (SD = 0.21) for affective and utility responses, respectively, and the average increase in correct knowledge test responses from pre to posttest per session was 18.69% (SD = 0.04%). Self-reported completion of session-related behavioral take home goals between meetings was 65.17% (58 out of the 89 possible reports), and an average of 65.17% (SD = 0.18%) and 55.55% (SD = 0.19%) of participants agreed or strongly agreed that they made health or safety behavior changes between meetings. An average of 59.64% (SD = 0.18%) and 62.83% (SD = 0.15%) agreed or strongly agreed that their physical or mental well-being improved between meetings. See Table 2 to view a summary of process evaluation statistics.

Pre- to Postintervention Outcomes

Changes observed from baseline to postintervention revealed consistent small to moderate changes in well-being and target behaviors among participants (see Table 3 for statistics on changes). Among survey outcomes, 21 of the 28 changed in the expected direction, and of these, 11 outcomes had standardized effects $d > 0.20$ (max $d = 0.65$). The intervention produced statistically significant improvements in individual-level well-being as measured by increased life satisfaction ($d = 0.65$; $P < 0.05$) and reduced negative affect ($d = 0.64$; $P < 0.05$). Other indicators of well-being improved, including reduced depressive symptoms, increased job decision authority ($d = 0.48$), and reduced job psychological demands ($d = 0.39$). Fruit and vegetable consumption increased by 1.02 servings per day ($d = 0.34$), and participants also increased how often they brought meals from home to work ($d = 0.51$). Safety compliance increased ($d = 0.20$) and participants reported making more specific safety changes during intervention months than they did during the 6 months before intervention, including correcting home hazards (increased from six to nine occurrences), talking with clients regarding safety (increased from six to ten occurrences), and adopting new tools for lifts/transfers (increased from two to five occurrences; see Figure 2). Among psychosocial outcomes, most changes were small to moderate and in the expected directions, with experienced community of practice ($d = 0.32$) and team cohesion ($d = 0.45$) increasing, and interpersonal conflict with consumer-employers ($d = 0.46$) decreasing. Physical symptoms also all reduced in expected directions, with the largest effect being observed for reduced occupational fatigue ($d = 0.18$).

Objective physical health assessment results were mixed with 40% of the outcomes moving in the expected direction. These findings included statistically significant improvement in meters walked during the walk test ($d = 0.63$; $P < 0.05$), and a statistically significant worsening (increase) in triglycerides ($d = 0.63$; $P < 0.05$). Systolic blood pressure changed from a prehypertensive range at baseline (120 to 139 mm Hg) to a normal range (<120 mm Hg) after the intervention.

Consumer-Employer Survey

On average, consumer-employers ($n = 21$) were very satisfied with their HCWs' services (means = 4.77; SD = 0.42; the highest rating was 5 = very satisfied) and reported low levels of interpersonal conflict with their worker (means = 1.22; SD = 0.34; the lowest rating was 1 = never). Consumer-employers indicated their workers spoke with them on a near-monthly basis about safety at work (means = 2.80; SD = 1.67; rating of 3 = three to five times in past 6 months). Consumer-employers also reported their workers using new housekeeping tools (10 total times or 0.63 times per worker), new transfer tools (10 total times or 0.63 times per worker), new bathing tools (7 total times or 0.44 times per worker), and correcting a hazard (11 total times or 0.69 times per worker). These data suggest that participants had good relationships with their consumer-employers and provide an additional source of evidence that COMPASS team participants were engaging in safety behaviors at work.

TABLE 2. Monthly Process Evaluation Summary Statistics

Criteria	Workshop ($n = 13$)	Nutrition ($n = 11$)	Neutral Spine ($n = 11$)	Fitness ($n = 14$)	Tool Use ($n = 12$)	Communication ($n = 16$)	Mental Health ($n = 14$)	Total
Reaction								
Utility	4.18 (1.25)	4.50 (0.85)	3.91 (0.94)	4.17 (0.83)	4.25 (0.87)	3.94 (0.85)	4.00 (0.82)	4.14 (0.21)
Agree/strongly agree (%)	72.73 (0.19)	80.00 (0.28)	72.73 (0.13)	75.00 (0.06)	91.67 (0.06)	62.50 (0.00)	69.23 (0.05)	74.84 (0.09)
Affective	4.09 (1.22)	4.20 (1.32)	3.73 (0.65)	4.33 (0.78)	4.08 (1.16)	4.06 (0.85)	3.62 (1.61)	4.02 (0.25)
Agree/strongly agree (%)	81.82 (0.26)	80.00 (0.42)	63.64 (0.32)	83.33 (0.12)	83.33 (0.00)	68.75 (0.04)	69.23 (0.05)	75.73 (0.08)
Learning								
Correct gain (%)	NA	20.21 (0.24)	18.63 (0.15)	19.25 (0.21)	18.33 (0.13)	11.31 (0.35)	24.38 (0.30)	18.69 (0.04)
Behavior								
Health	4.08 (1.16)	3.80 (1.14)	3.91 (0.83)	4.14 (0.66)	3.33 (1.07)	3.69 (0.79)	3.43 (0.94)	3.77 (0.31)
Agree/strongly agree (%)	83.33 (0.00)	50.00 (0.21)	81.82 (0.32)	85.71 (0.20)	50.00 (0.17)	62.50 (0.27)	42.86 (0.10)	65.17 (0.18)
Safety	3.33 (1.07)	3.00 (1.15)	3.64 (0.81)	3.86 (0.53)	3.50 (1.00)	3.69 (1.01)	3.50 (1.02)	3.50 (0.28)
Agree/strongly agree (%)	33.33 (0.00)	30.00 (0.07)	63.64 (0.32)	78.57 (0.45)	58.33 (0.29)	75.00 (0.35)	50.00 (0.15)	55.55 (0.19)
Goal behavior	4.00 (0.77)	3.82 (1.54)	4.00 (1.00)	4.14 (0.66)	2.83 (1.11)	3.31 (0.95)	4.07 (0.62)	3.74 (0.49)
Agree/strongly agree (%)	72.73 (0.13)	72.73 (0.13)	72.00 (0.00)	85.71 (0.20)	25.00 (0.06)	43.75 (0.22)	85.71 (0.30)	63.43 (0.13)
Well-being								
Physical	3.23 (1.17)	3.64 (1.03)	3.82 (0.98)	4.07 (0.73)	3.83 (1.19)	3.19 (1.05)	3.71 (0.61)	3.64 (0.35)
Agree/strongly agree (%)	38.46 (0.05)	45.45 (0.06)	63.64 (0.06)	78.57 (0.15)	83.33 (0.24)	43.75 (0.22)	64.29 (0.35)	59.64 (0.18)
Mental	3.36 (1.03)	3.55 (1.04)	3.82 (0.87)	4.29 (0.73)	3.83 (1.03)	3.25 (1.34)	3.57 (1.02)	3.67 (0.32)
Agree/strongly agree (%)	54.55 (0.26)	54.55 (0.13)	54.55 (0.00)	85.71 (0.00)	83.33 (0.35)	50.00 (0.09)	57.14 (0.20)	62.83 (0.15)

Table cells are means (standard deviations) unless otherwise indicated. Reaction, behavior, and well-being questions used a five-point agreement scale ranging from one (strongly disagree) to five (strongly agree). Higher scores represented favorable reactions to material, positive changes in behavior, and improvements in health, respectively.
n, attendance at each meeting; NA, not applicable because data were not collected for that session.

DISCUSSION

The unique work conditions of HCWs require innovative models to promote the Total Worker Health™ of this rapidly expanding group of marginalized employees. We found that our scripted team-based program was feasible, acceptable, and resulted in a range of health and safety improvements. Consumer-employers were highly satisfied with the level of care they received during the intervention period and confirmed the occurrence of targeted HCW safety behaviors. These findings encourage larger-scale implementation and evaluation of the COMPASS intervention model and other similar approaches.

The COMPASS intervention provides a supportive work structure for an isolated and at-risk working population. Home care workers, especially those who work as independent contractors, lack traditional safety and health resources that are typically provided by employers (eg, supervision, safety committees, tools, and physical assistance). Our vision is that the COMPASS process may be used to create "communities of practice" for caregivers who can rely on each other for education and social support. Other strengths of the intervention model include integrated attention to both injury prevention and health promotion and strong dissemination potential. The Total Worker Health™ approach recognizes interactions between health and safety factors, and may be particularly efficient if simultaneous improvements in both domains are realized.[81] The importance of integrated interventions is illustrated in a recent study of more than 1 million workers' compensation claims in California, where researchers found that comorbid obesity was associated with 80% increases in lost work time and cost of injuries.[82] Nevertheless, integrated Total Worker Health™ interventions that address such interactions are exceedingly scarce, and COMPASS represents the first such intervention designed for HCWs.

The dissemination potential of our approach is high because of the established repeatability and affordability of peer-led, scripted workbooks.[56] The approach requires minimal training and preparation and integrates tactics from prior interventions with strong evidence-based track records.[44,55] There is also immediate dissemination potential within Oregon because of engagement of both union and government partners from the outset of the project. Both within and outside Oregon, the COMPASS model may generalize well to other caregiving populations (eg, HCWs in private agencies, family caregivers, and nurses) and to other groups of isolated workers in high risk or demanding jobs (eg, occupational drivers, service, and repair technicians). It may also be a useful model within work groups at more traditional worksites, but additional evaluation would first be needed.

Strengths of study methods include process measurement, the predominant use of established reliable and valid survey measures, directly measured physical and fitness health indicators, and measures collected from consumer-employers. Monthly process measures addressed three levels of training evaluation criteria (reaction, learning, and behavior change), and strongly support the acceptability and feasibility of the approach. We observed large and consistent

TABLE 3. Descriptive Statistics, Effect Sizes, and *t* Tests for Pre/Postintervention Changes ($n = 16$)[a]

Measure	Preintervention Mean (SD)	Postintervention Mean (SD)	Mean Δ (SD)	*t* (*df*)	Δ*d*	Expected?
Well-being						
Life satisfaction	2.87 (1.15)	3.19 (1.06)	+0.32 (0.49)	− 2.54 (14)***	0.65	Yes
Negative affect	2.38 (1.08)	2.08 (0.98)	− 0.30 (0.47)	2.54 (15)***	0.64	Yes
Positive affect	3.75 (0.91)	3.75 (1.02)	0.00 (0.67)	0.00 (15)	0.00	No
Depressive symptoms	4.25 (4.04)	3.50 (3.97)	− 0.75 (2.11)	1.42 (15)	0.35	Yes
Mental health (SF-12)	47.64 (16.34)	48.39 (15.36)	+0.75 (6.28)	− 0.45 (13)	0.12	Yes
Physical health (SF-12)	47.08 (10.80)	47.84 (11.23)	+0.76 (5.95)	− 0.48 (13)	0.13	Yes
Psychosocial and stress						
Community of practice	43.88 (7.51)	45.25 (8.43)	+1.38 (4.32)	− 1.27 (15)	0.32	Yes
Team cohesion	3.98 (1.07)	4.37 (0.83)	+0.39 (0.88)	− 1.68 (13)*	0.45	Yes
Interpersonal conflict	2.00 (0.97)	1.57 (0.17)	− 0.44 (0.94)	1.79 (14)**	0.46	Yes
Work–family conflict	2.15 (1.13)	2.41 (1.07)	+0.26 (0.86)	− 1.20 (15)	0.30	No
family–work conflict	1.61 (0.90)	1.58 (0.62)	− 0.03 (0.59)	0.19 (15)	0.05	Yes
Perceived stress	16.93 (6.66)	16.27 (6.24)	− 0.67 (4.94)	0.52 (14)	0.14	Yes
Job skill discretion	31.60 (7.60)	30.93 (7.52)	− 0.67 (5.64)	0.46 (14)	0.12	No
Job decision authority	39.20 (11.63)	43.20 (10.71)	+4.00 (8.28)	− 1.87 (14)	0.48	Yes
Job psychological demands	29.20 (10.48)	25.67 (7.84)	− 3.53 (8.98)	1.52 (14)	0.39	Yes
Behaviors						
Fruit/vegetable servings	5.78 (4.56)	6.81 (3.94)	+1.02 (3.03)	− 1.35 (15)*	0.34	Yes
Percentage of calories from fat	30.10 (4.19)	30.80 (5.56)	+0.70 (2.73)	− 0.73 (7)	0.26	No
Sugary snacks	4.25 (2.14)	4.25 (1.95)	0.00 (2.03)	0.00 (15)	0.00	No
Sugary drinks	3.38 (2.25)	3.81 (2.83)	+0.44 (2.78)	− 0.63 (15)	0.16	No
Fast food	2.25 (1.06)	2.06 (1.12)	− 0.19 (0.91)	0.82 (15)	0.21	Yes
Meals from home	4.81 (1.91)	6.06 (2.57)	+1.25 (2.46)	− 2.03 (15)**	0.51	Yes
Healthy physical activity	2.64 (1.42)	2.66 (1.50)	+0.02 (1.11)	1.11 (15)	0.01	Yes
Safety compliance	4.25 (0.75)	4.35 (0.56)	+0.10 (0.51)	− 0.81 (15)	0.20	Yes
Sleep quality	8.08 (4.52)	8.00 (5.61)	− 0.08 (3.28)	0.09 (12)	0.02	Yes
Physical symptoms						
Pain 3 mos	1.32 (0.95)	1.30 (0.84)	− 0.026 (0.88)	0.12 (15)	0.03	Yes
Pain severity 7 d	3.00 (2.51)	2.80 (2.24)	− 0.20 (2.07)	0.39 (15)	0.10	Yes
Functional impairment	1.07 (1.08)	1.17 (1.06)	+0.10 (0.73)	− 0.55 (15)	0.14	No
Occupational fatigue	19.63 (8.37)	18.56 (7.90)	− 1.06 (5.89)	0.72 (15)	0.18	Yes
Physical assessments						
Systolic BP, mm Hg	122.06 (17.15)	119.38 (17.60)	− 2.68 (9.96)	1.08 (15)	0.27	Yes
Diastolic BP, mm Hg	73.94 (7.17)	72.56 (7.34)	− 1.38 (3.90)	1.41 (15)	0.35	Yes
Total cholesterol, mg/dL	197.33 (27.39)	201.20 (25.20)	+3.87 (21.75)	− 0.69 (14)	0.18	No
HDL cholesterol, mg/dL	60.47 (19.03)	58.47 (17.84)	− 2.00 (5.88)	1.32 (14)	0.34	No
LDL cholesterol, mg/dL	112.53 (23.42)	110.33 (16.46)	− 2.20 (12.43)	0.69 (14)	0.18	Yes
Triglycerides, mg/dL	122.20 (50.31)	162.20 (94.82)	+40.00 (63.42)	− 2.44 (14)***	0.63	No
Glucose, mg/dL	88.87 (8.42)	93.27 (10.67)	+4.40 (10.38)	− 1.64 (14)	0.42	No
Weight, lb	170.34 (51.03)	171.38 (53.39)	+1.03 (5.11)	− 0.81 (15)	0.20	No
Body mass index, kg/m^2	28.68 (9.16)	28.71 (9.32)	+0.03 (1.06)	− 0.10 (15)	0.02	No
Body fat, %	35.19 (12.24)	35.40 (12.04)	+0.21 (2.74)	− 0.30 (15)	0.08	No
Waist circumference, in	35.48 (7.80)	36.90 (8.13)	+1.42 (2.10)	− 2.62 (14)	0.68	No
Waist−Hip ratio	0.82 (0.079)	0.83 (0.09)	+0.01 (0.04)	− 0.98 (15)	0.24	No
Grip strength, kg	26.12 (7.01)	27.08 (6.70)	+0.96 (4.07)	− 0.95 (15)	0.24	Yes
Flexibility, in	13.53 (6.60)	13.80 (6.42)	+0.27 (2.51)	− 0.42 (14)	0.11	Yes
Walk test, m	480.87 (100.77)	510.87 (121.82)	+30.00 (47.42)	− 2.45 (14)***	0.63	Yes

[a]Effect sizes are interpreted according to common convention: small is $d > 0.20$, medium is $d > 0.50$, and large is $d > 0.80$.
*$P < 0.15$; **$P < 0.10$; ***$P < 0.05$.
BP, blood pressure; HDL, high-density lipoprotein; LDL, low-density lipoprotein; SD, standard deviation; SF-12, 12-item short form health survey.

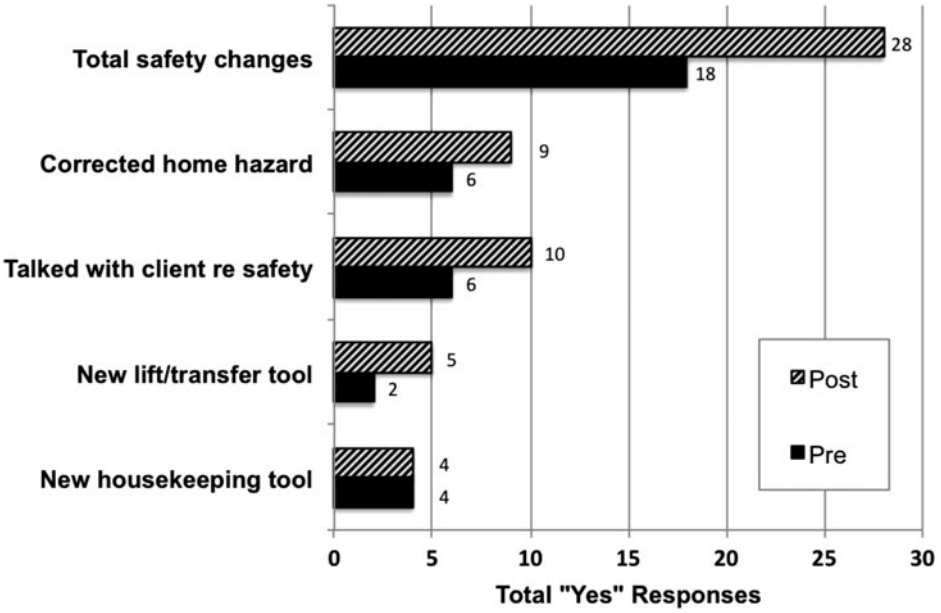

FIGURE 2. Reported counts of safety behaviors in homes during the past 6 months: changes from pre- to postintervention.

knowledge gains within sessions, and participants were engaged in goal setting and behavior change between sessions. The intervention produced changes in expected directions for the majority of outcome measures, including significant improvements in satisfaction and affective components of individual-level well-being. Several psychosocial and stress outcomes showed moderate improvements, including reduced interpersonal conflict with consumer-employers and improved team cohesion and experienced community of practice, which is a measure of one's interpersonal support system in the work role. If replicable, observed well-being and related psychosocial improvements are important for a population that is known to be socially isolated, lacking normal social support structures, and at risk of mental health problems.[5] Other results observed may have practical or clinical implications. For example, fruit and vegetable consumption increased by one serving per day. For every one serving of fruits and vegetables above five servings per day, the risk of coronary heart disease and ischemic stroke is reduced by 4% and 6%, respectively.[83,84] Specific safety behavior changes reported, such as correcting hazards in homes and adopting new ergonomic tools for physically demanding tasks, may result in reduced injuries if larger samples of workers participated and were observed for longer periods.

Limitations and Future Directions

Lessons learned and results of the COMPASS pilot study directly informed methodological adaptations and design of an ongoing randomized controlled trial. We review some of these lessons learned and limitations of the pilot study below so they may inform future research and practice broadly. Limitations include our single-group pre-/post-test design and the small and special nature of the sample. In a design like this one, it is possible that some other variable that co-occurred with the intervention (eg, a change in seasons) could explain some of the observed changes in outcome measures. The small sample size means that Type II errors are probable for statistical inference tests, and that intervention outcomes should be viewed as estimates (rather than conclusive tests) of effects. The nature of the sample, which was composed of workers who were recruited mostly through referrals from a single metropolitan area, increases the possibility that the intervention may not have the same effects with workers recruited from the general population or from other areas. Fully powered evaluation studies, preferably using randomized controlled designs and workers recruited from a more general population, are required to determine intervention effectiveness and generality.

Another potential limitation is our mixed findings in directly measured physical health assessments, including a statistically significant increase in triglycerides. When findings are mixed, it is possible that the true effect of an intervention could be positive, null, or negative. We think a negative effect of the intervention is unlikely given the strong positive pattern in well-being and behavioral outcomes. In addition, in a meta-analysis it was shown that effect sizes for training interventions decline in average magnitude across knowledge, behavior, and results criteria.[85] Therefore, smaller and more mixed effects should be expected for lagging physical health results, especially in a small sample that was observed only for 6 months. To illustrate, consider our triglyceride finding in greater detail. Three participants had increases in triglycerides of more than 100 mg/dL from pre- to postintervention. With these outliers removed, the mean change in triglycerides reverses directions.

Other measurement issues observed in the current study should be addressed to enhance future evaluation of intervention effects with HCWs. The improvement we observed in self-reported generic safety compliance was small ($d = 0.20$), and although workers reported more safety behaviors during the intervention period than at baseline on our second safety question set, these were yes/no responses that limited the number of behaviors workers could report. Generic safety compliance scales may be inadequate for measuring behavior change within interventions, especially if workers "re-calibrate" their view of what is and what is not safe during intervention. In the future, we recommend measuring safety changes with more sophisticated safety behavior frequency scales, perhaps anchored in a similar fashion to dietary screeners.[71] In addition, although it was a strength that we measured HCW behaviors via consumer-employer surveys, these surveys were only administered postintervention, which precludes an evaluation of changes in satisfaction with care or safety communication over time. Measuring the effects of HCW interventions on the consumer-employer experience may be critical for encouraging adoption and dissemination of such programs. Finally, the short 6-month study period with a small sample necessarily focused predominantly on leading indicators of health and safety rather than long-term or lagging indicators, such

as lost work time injuries and health care costs. Although short-term changes to leading indicators are critical for prevention, the economic benefit of safety and health interventions typically requires evaluating savings because of changes in health care costs or workers' compensation injuries over very long periods. Therefore, future studies should follow larger groups of HCWs for longer periods to effectively evaluate impact on both leading and lagging indicators of Total Worker Health™.

CONCLUSIONS

The COMPASS intervention was designed to prevent injuries and promote health among HCWs. The intervention integrated evidence-based tactics, including scripted, peer-led teams,[55,57] as well as elements of successful social support group formats.[44,58] Process results of the COMPASS pilot support intervention feasibility. Workers enjoyed and learned from team meetings, and they reported high levels of engagement with monthly behavioral goals. After 6 months, the intervention produced statistically significant improvements in individual-level well-being, as well as small to moderate changes in a wide array of psychosocial, stress, and behavioral outcomes (including safety changes). Although the study includes limitations inherent to small pilot studies, strong process results and patterns in effects encourage replication and extensive research and application. The COMPASS model has the potential to provide a supportive work structure for isolated and at-risk populations, and possesses appealing features for adoption and dissemination (eg, cost-effectiveness of team-based approach and low technology requirements). The intervention also provides a rare integration of injury prevention with health promotion (eg, Total Worker Health™), which may be a particularly efficient intervention approach in settings where health and safety factors are known to interact. These findings and intervention characteristics of the project strongly support further development and study of the COMPASS intervention and similar approaches with HCWs and other isolated working populations.

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