

Workforce Implications of Injury Among Home Health Workers: Evidence From the National Home Health Aide Survey

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Received July 11, 2011; Accepted October 25, 2011
Decision Editor: Rachel Pruchno, PhD

Purpose of study: The direct care workforce continues to rank as one of the most frequently injured employee groups in North America. Occupational health and safety studies have shown that workplace injuries translate into negative outcomes for workers and their employers. The National Institute for Occupational Safety and Health (NIOSH) Organization of Work and Occupational Safety and Health framework is used to examine (a) relationships between injuries and work outcomes as reported by home health aides (HHAs) and (b) the likely efficacy of employee training and supervisor support in reducing worker risk for injury. **Design and Methods:** Data for this analysis were drawn from the 2007 National Home Health Aide Survey, a nationally representative survey. Ordinary least squares regression and multinomial logistic regression were used to examine relationships between worker injury and (a) worker outcomes and (b) organizational outcomes and to examine ratings of training and supervisory support relative to risk of injury. **Results:** Injured aides had lower job satisfaction, higher turnover intent, and poor employment and care quality perceptions. HHA perceptions of poor training and poor

supervisory support were significantly related to higher risk for workplace injuries. **Implications:** The current study suggests that workplace training has an important role in helping reduce direct care worker injuries, thereby decreasing organizational expenses related to injury, such as workers' compensation, sick time, and turnover. The NIOSH Organization of Work and Occupational Safety and Health framework offers a mechanism by which occupational health and safety interventions may be derived to reduce incidents of injury.

Key Words: Workplace injury, Home health aides, Worker training, Long-term care

In 2009, the U.S. Bureau of Labor Statistics (2009c, 2009d) reported a direct care workforce (e.g., nursing assistants and home health aides [HHAs]) of approximately 2.3 million workers. Several reports project home health worker shortages as demand continues to grow in conjunction with annual turnover rates estimated at 50%–75% (Institute of Medicine, 2008; U.S. General Accounting Office, 2001). With increasing worker

shortages and high turnover, recruitment and retention are key factors in meeting the home health care needs of a rapidly aging population (U.S. Bureau of Labor Statistics, 2009c, 2009d). One contributor to the difficulties of recruiting and retaining home care workers is the cumulative effect of the work environment on their health and well-being. The physical and emotional demands of working directly and alone with disabled clients are substantial, and workers often cite these factors as reasons for leaving caregiving work (Mittal, Rosen, & Leana, 2009). The high injury rates in this occupation suggest that it is, indeed, hazardous work (U.S. Bureau of Labor Statistics, 2009b).

The National Institute for Occupational Safety and Health (NIOSH) specifically identifies the health care sector as a high risk industry (Sauter et al., 2002). Worker injury/illness and compensation statistics illustrate that workers in the health care sector remain among those with the highest rates of workplace injuries and illnesses in North America (Statistics Canada, 2005; U.S. Bureau of Labor Statistics, 2009b). Long-term care worker injury rates are among the highest subgroups in health care, and the outcomes of frequent injuries include negative repercussions for the organizations, the workers, and the clients/residents (Castle, Engberg, Mendeloff, & Burns, 2009; Dawson & Surpin, 2001; Institute of Medicine, 2008).

If injury is associated with home care workforce development, retention, and turnover, the relationship between injury and the related mechanisms that affect commitment to the employer and the job need to be fully understood. The purpose of this paper is twofold: (a) to explore the relationship between reported injuries and work perceptions related to turnover as evidenced in the 2007 National Home Health Aide Survey (U.S. Department of Health and Human Services, 2007) and (b) to explore the roles of training and supervision in managing workplace hazards.

Negative Effects of Occupational Health and Safety Hazards

Organizational research has identified various physical, ergonomic, and psychosocial factors found within the workplace environment that influence employee well-being (Carr, Schmidt, Ford, & DeShon, 2003; Parker et al., 2003). Workplaces that are characterized by abuse, high physical strain, chronic stress, and low decision autonomy have been linked to adverse health

outcomes for the employee (Jackson, Clare, & Mannix, 2002; Taylor, Repetti, & Seeman, 1997). In many settings, health care workers are frequently exposed to occupational health hazards, including emotional demands, psychosocial work stress, aggressive patients, and workplace violence (Mittal et al., 2009; P. W. Stone, Du, & Gershon, 2007).

Targeting occupational health and safety within health care is important for several reasons. First, many of the workplace injuries in health care occur as a result of interaction with the clients/residents/patients (Mittal et al., 2009; Newhouse, 1997). Second, studies have shown that injury within the health care workforce is related to high turnover rates, burnout, poor job satisfaction, and leaving the health care workforce permanently, thereby cumulatively contributing to the existing health care workforce shortages (Aiken et al., 2001; Castle et al., 2009; Charney & Schirmer, 2007; Collins, 2006; Collins, Wolf, Bell, & Evanoff, 2004; R. I. Stone, 2004). Finally, many studies have argued that the relationship of injury to health care worker job performance is such that instances of injury negatively contribute to safety outcomes, patient outcomes, and quality of care (Aiken et al., 2001; Castle et al., 2009; Charney & Schirmer, 2007; Clarke, 2006).

Not surprisingly, these factors contribute to the ongoing turnover problems in the direct care workforce (Charney & Schirmer, 2007; Institute of Medicine, 2008) that underpins long-term care. In home-delivered care, the task environment itself is a concern as HHAs cite the uncertainty of entering a client's home as a major source of concern related to their satisfaction and overall safety (Markkanen et al., 2007). Additionally, overexertion, falls, pets, and physically violent patients pose significant risks to health care workers. These are exacerbated when the worker is alone in a client's home without peers, equipment, or supervisory support. The process of driving to clients' homes also threatens home care worker safety. An analysis of a survey of 1,200 provider organizations and Medicare cost reports estimated that more than 428 million home health care visits were made to 12 million homebound clients in the United States during 2006. Collectively, these workers drove some 4.8 million miles in delivering care that year, more than twice the 2 million miles logged by UPS worldwide (Thomas, Dombi, Forster, & Halamandaris, 2008).

In one report, home care workers suffered some 50% more injuries than did health care workers in hospitals and 70% more than the national rate for

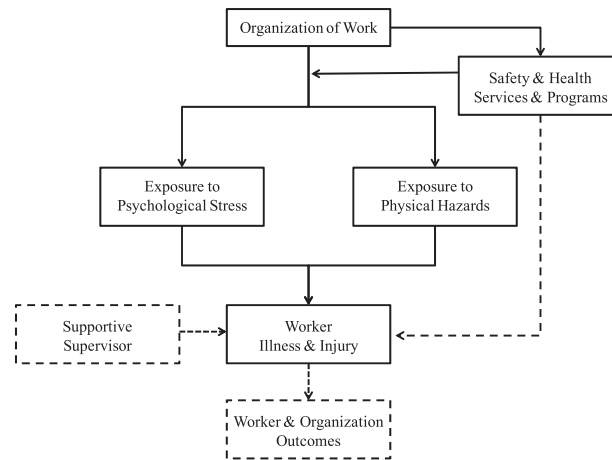
total private industry (U.S. Bureau of Labor Statistics, 1997). Since then, NIOSH has supported research, and industry leaders have tested and implemented programs and issued standards to address this multifaceted problem in the health care industry (Sauter et al., 2002). Although home care injury rates have declined, they are still above average. 2008 Bureau of Labor Statistics data show approximately 15.3 nonfatal illnesses and injuries per 100 workers (home health care employees) compared with 3.9 per 100 workers in the general private section (U.S. Bureau of Labor Statistics, 2009a).

Although research targeted on home care work is scarce, evidence indicates that negative and/or unsafe work environments exert a strong influence on long-term care workers and hold the potential to negatively influence well-being, work performance, and work commitment (Bishop, Squillace, Meagher, Anderson, & Wiener, 2009; Morris, 2009; P. W. Stone et al., 2007). These factors combined with the economic, political, and demographic contexts that influence both the supply of and demand for workers make the hazardous nature of home care a continuing source of concern.

Conceptual Framework

In this study, we employ the framework posited by NIOSH to guide research and interventions designed to understand and reduce work-related illness and injury.

The NIOSH Organization of Work and Occupational Safety and Health framework (see Figure 1) highlights the cascading relationships in which work is organized, to worker exposure to hazards, and to worker injury/illness (Sauter et al., 2002). We suggest that the unique workplace context and job demands of HHAs equates to the NIOSH concept of “organization of work” which perpetuates workplace hazards. The workplace safety climate literature offers support for the relationship of the workplace environment to worker hazards and subsequent worker injury in the health care industry (Clarke, 2006; Flin, 2007). The paper proposes an outcome effect to the NIOSH Organization of Work and Occupational Safety and Health framework that is inclusive of the effects of worker injury (see dotted lines Figure 1). We hypothesized that compared with noninjured workers, injured HHAs are more likely to be dissatisfied with their jobs, have greater turnover intent, and perceive both their jobs and the quality of the care offered by their employer as being poor. The following hypotheses are tested:



Adapted from: Sauter et al., 2002
 — Solid lines = original framework
 --- Dotted lines = proposed relationships

Figure 1. Proposed model: Adapted from National Institute for Occupational Safety and Health, Organization of Work and Occupational Safety and Health framework. Adapted from Sauter and colleagues (2002). — Solid lines = original framework; --- Dotted lines = proposed relationships.

Hypothesis 1: The number of reported on-the-job injuries will be 1a) negatively related with job satisfaction; 1b) positively related with turnover intent; 1c) negatively related with willingness to recommend the agency as a place to work; and 1d) negatively related with willingness to recommend the agency as a place to seek care.

Positive Effects of Safety Training and Supervisor Support

A unique contribution of the NIOSH Organization of Work and Occupational Safety and Health framework (Sauter et al., 2002) is the inclusion of “safety and health services programs” as a variable that can mitigate the work organization/work hazards relationship as well as the work hazards/worker injury relationship (Figure 1). This suggests that there is a place within occupational health and safety to enact programs and training directed toward reducing the incidents of worker injury (McPhaul & Lipscomb, 2004; Sauter et al., 2002). Standard training for HHAs frequently fails to adequately prepare these workers for managing the complex nature of their jobs (R. I. Stone, 2004), despite the fact that effective training has been found to be valuable. For example, in one study, home care workers who believed they were properly trained and confident to do their jobs were less likely to report turnover intentions (Morris, 2009). To account for training and the high injury rates

experienced by direct care workers, we argue that research directed at understanding how the work environment influences the occupational health and safety of direct care workers needs to include consideration of the efficacy of training in reducing or preventing injuries for workers in health care (Institute of Medicine, 2008; Sauter et al., 2002).

Our literature review located only a few studies that examined the efficacy of training programs on prevention of injuries sustained by HHAs. Results from these studies were mixed and offered no consistent training/injury relationships (Craib, Hackett, Back, Cvitkovich, & Yassi, 2007; Massy-Westropp & Rose, 2004), but the findings do suggest that interventions and training directed at improving direct care worker knowledge, skills, and abilities regarding care provision and workplace safety may be more effective than recognized, offering some empirical support for the above-cited NIOSH framework (Sauter et al., 2002).

Work relationships encompass both the quality of the employees' relationships with others in their workplace and the degree of perceived support from colleagues (Cooper, Dewe, & O'Driscoll, 2001). These types of support are readily available in the workplace and a key component to workplace success (Castle, Degenholt, & Rosen, 2006; Institute of Medicine, 2008). Studies have found that many of the detrimental effects of poor work environments are ameliorated by the presence of a supportive supervisor (Cooper et al., 2001; Institute of Medicine, 2008). In the presence of stressors, supervisor support has been found to reduce levels of occupational stress and enhance health and well-being (McGilton, McGillis, Wodchis, & Petroz, 2007). With respect to the health care environment, higher levels of perceived support in the workplace have been shown to be associated with lower reported stress levels, increased workplace motivation, and reduced injuries and exhaustion (Hemingway & Smith, 1999; Joiner & Bartram, 2004). In a study investigating the job satisfaction determinants of direct care workers, Castle and colleagues (2006) found that although workers were satisfied with coworker relations, they reported lower ratings of supervisor satisfaction, ultimately reducing reported levels of job satisfaction. Brannon, Barry, Kemper, Schreiner, and Vasey (2007) found that the supervisor-employee relationship governed direct care worker outcomes and that workers with higher supervisor ratings reported being less likely to leave their position. As supervisor support can positively contribute

to the occupational health of health care workers, it intimates that the relationship will be valid for HHAs. Thus, we hypothesize the following:

Hypothesis 2a: Home health aides who rate their initial job-preparedness training as poor will have higher risk of injury than home health aides who rate their job-preparedness training as good or excellent.

Hypothesis 2b: Home health aides who rate their supervisor support as poor will have higher risk of injury than home health aides who rate their supervisor support as good or excellent.

Methods

Data and Sampling

Data for this analysis are from the 2007 National Home Health Aide Survey, a national probability survey of HHAs sponsored by the United States Centers for Disease Control and Prevention and conducted by the Division of Health Care Statistics (U.S. Department of Health and Human Services, 2007). A total of 3,377 interviews were completed providing data on a wide variety of work-related and demographic factors. The survey instrument included sections on recruitment, training, job history, family life, management and supervision, client relations, organizational commitment and job satisfaction, workplace environment, work-related injuries, and demographic statistics (see U.S. Department of Health and Human Services, 2007 for complete data and sampling information).

Measures

Number of Injuries.—HHAs were asked how many times they were hurt or injured on-the-job since starting their position or in the past twelve months. Response categories include 0 injuries, 1 injury, 2 injuries, and 3 or more injuries.

Overall Ratings of Training.—A single item was used; participants were asked how well their home health training prepared them for work in a home health setting. Respondents rated this item on a 3-point Likert scale ranging from *not at all prepared* (1), *somewhat prepared* (2), to *well-prepared* (3).

Supervisor Support.—Four items about supervisors' openness and guidance were used: (a) My supervisor provides clear instructions when assigning work; (b) My supervisor is supportive of progress in my career, such as further training; (c) My

supervisor listens to me when I am worried about a patient's care; and (d) My supervisor tells me when I am doing a good job. Respondents rated this item on a 4-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (4). The internal consistency reliability estimate for this scale was $\alpha = .73$.

Worker and Organizational Outcomes.—Four single-item measures were used in this study to measure worker outcomes and organizational outcomes. The two worker outcome measures were (a) job satisfaction (4-point Likert scale ranging from *extremely dissatisfied* [1] to *extremely satisfied* [4]) and (b) turnover intent (3-point Likert scale ranging from *not at all likely* [1] to *very likely* [3]). The two organizational outcome measures were (a) willingness of the worker to recommend her/his health care agency as a place to work and (b) willingness of the worker to recommend her/his health care agency as a place to receive care. Respondents rated these items on a 4-point Likert scale ranging from *definitely not recommend* (1) to *definitely recommend* (4).

Control Variables.—The scarcity of research about the nature of work and workers in the home care setting was the impetus to test the need to control for the range of likely influential demographic and organizational factors. Using “The Direct-Care Workforce” chapter of the recent Institute of Medicine’s Report (2008) *Retooling for an Aging America: Building the Health Care Workforce*, the following were identified as being important control variables: age, education level, household income, primary language at home, and minority ethnicity. These control variables are similar to ones used by other researchers examining comparable workforce issues of other direct care workers (Castle, Engberg, Anderson, & Men, 2007; Castle et al., 2009).

Moreover, although not directly related to HHAs, recent work by Castle and colleagues (2009) investigating organizational factors related to workplace injuries for direct care workers does support inclusion of profit and chain status as control variables. The study found that for-profit facilities were less likely to have high injury rates, whereas chain facilities were more likely to have higher injury rates (Castle et al., 2009). As such, we have included organizational control variables for chain membership status, profit status, and type of care provision (hospice vs. home care).

Table 1. HHAs’ Overall Ratings of Their Training by Number of Injuries in Percentages

	Number of injuries per year			
	None	One	Two	Three
Overall rating of training				
Well-prepared	76.6	71.1	61.1	51.3
Somewhat prepared	22.5	25.7	36.1	43.6
Not at all prepared	0.9	2.6	2.8	5.1
Total (%)	100	99.4	100	100
Total responses	2,329	421	72	39

Note: Data were collected from 3,377 HHAs participating in the National Home Health Aide Survey. Total percentages may not add up to 100 due to rounding. Chi-square test statistics were significant, $p < .001$. HHAs = Home Health Aides.

Analysis

Multivariate ordinary least squares regression analysis (Cohen & Cohen, 1983; Tabachnick & Fidell, 2001) was used to analyze the relationships between HHA injury and individual and organizational outcomes. To examine the relative risk of injury at each of the three frequency categories and HHAs’ ratings of training and supervisory support, multinomial logistic regression (MLR) for each of the three incidence categories was conducted. MLR can be used to analyze responses that have more than two categories, and it is well-suited to this type of analysis (Statistical Consulting Group, University of California, Los Angeles: Academic Technology Services, 2009; Tabachnick & Fidell, 2001). The beta estimates and exponential beta from MLR analysis show the relative risk of injury incidence given the HHAs’ overall ratings of training and supervisor support (Statistical Consulting Group, University of California, Los Angeles: Academic Technology Services, 2009).

Results

The majority of HHAs (81.5%) did not report injuries during the past year (see Table 1). Of the 3,375 HHA participants, only 624 (18.5%) reported having had at least one injury. Most workers rated their training as effective, saying it either made them “well-prepared” or “somewhat prepared” for their responsibilities. Seventy-seven percent of the HHAs without an injury rated their training as making them “well-prepared” and approximately half (49%) of injured HHAs rated their training as being less than “well-prepared.”

Table 2 shows the basic descriptive statistics of the variables and correlations. Fifty-six percent of

HHAs reported that they had fair or good supervision. Twenty-three percent of the agencies were members of a chain and 31% were for-profit. For the HHAs, 29% provide hospice care, whereas 71% provide standard home health care. Sixty-three percent of the sample had an education level of high school or less, and they had a mean age of 45.6. Seven percent were Hispanic/Latino, 6% of the sample had English as a second language, and the average respondent indicates a household income between \$30,000 and \$40,000. An analysis of the descriptive table identified no multicollinearity issues (Cohen & Cohen, 1983; Tabachnick & Fidell, 2001).

We hypothesized that the number of injuries HHAs experience would have a significant relationship with their job satisfaction, turnover intent, willingness to recommend their agency as a place to work, and willingness to recommend their agency as a place to seek care services. As shown in Table 3, multivariate regression analysis showed that the number of injuries reported by HHAs is negatively related to job satisfaction ($\beta = -.119$, p value $< .001$) and willingness to recommend their agency both as a place to work and to seek care ($\beta = -.099$ & $-.111$, p value $< .001$ for both). In addition, the number of injuries was found to be positively associated to turnover intent ($\beta = .069$, p value $< .001$).

The significance of associations between injury and the control variables differ by dependent variables (see Table 3), and only the control variables having significant relationships with two or more of the dependent variables are highlighted below. For-profit status was found to be significantly and positively related to turnover intent ($\beta = .077$, p value $< .001$) and negatively related to job satisfaction ($\beta = -.087$, p value $< .001$) and the two recommendation variables ($\beta = -.143$, p value $< .001$ & $\beta = -.086$, p value $< .001$, respectively). Providing hospice care, versus home care, has significant relationships with three dependent variables: job satisfaction, willingness to recommend as a place to work, and willingness to recommend as a place to seek care. HHAs who provide hospice care have less job satisfaction ($\beta = -.060$, p value $< .001$) and have a lower willingness to recommend their agency as a place to work or seek care ($\beta = -.073$ & $-.046$, p value $< .001$ & $.014$) than workers in nonhospice care. The older HHAs are more satisfied ($\beta = .063$, p value $< .001$), less likely to leave their job ($\beta = -.047$, p value = $.008$), and are more willing to recommend their agency as a

place to seek care ($\beta = .035$, p value $< .05$). Finally, higher income is positively related to job satisfaction ($\beta = .044$, p -value = $.013$) and negatively related to turnover intent ($\beta = -.033$, p value = $.063$).

The results of MLR (see Table 4) show that HHAs in the “not at all prepared” training group relative to “well-prepared” training group (the reference group) have a 3.05 times higher likelihood of being injured relative to the noninjured group (exp $\beta = 3.05$, p value $< .001$). For the “not at all prepared” training group, the relative risk for being injured due to lack of/poor training increased as the number of injuries increased (exp $\beta = 4.70$ for injury = 2, p value $< .05$, exp $\beta = 8.10$ for injury = 3, p value $< .001$). For aides who believe their training made them “somewhat prepared” to do their jobs, the odds ratio (OR) of being injured on-the-job once are not significant. However, the ORs of being injured at work two (exp $\beta = 1.83$ for injury = 2, p value $< .05$) or three times (exp $\beta = 2.41$ for injury = 2, p value $< .05$) were both significant. Overall, these findings offer support for the hypothesis that HHAs who do not believe their job training has prepared them to do their jobs have higher risk of injury than those who do believe their job training has prepared them to do their jobs.

HHAs' rating of supervisor support was found to have a significant relationship with two of the three injury groups. HHAs in the poor supervisor support group have a 1.5 times higher likelihood of having one on-the-job injury and a 3.1 times higher probability of having three or more injuries compared with those who rated supervisory support as good. Although the relative risk in the injury = 2 group was not significant, the estimated coefficients showed the overall relative risk of being injured on-the-job increases when supervisory support is poor. These findings offer support for H2b, HHAs who rate their supervisor support as poor will have higher risk of injury than those who rate their supervisor support as good (see Figure 2 for results).

Discussion

Using the NIOSH Organization of Work and Occupational Safety and Health framework (Sauter et al., 2002) as a basis, a number of occupational health and safety factors including relationships among worker injuries and perceptions about the job and the employer were examined. Unique to the study was the investigation of these factors with HHAs, an infrequently studied group of long-term

Table 2. Descriptives and Correlations of Study Variables

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 No. of injuries	0.24	0.57	1.00														
2 Overall ratings of HHA training	2.74	0.47	-.101**	1.00													
3 Supervisor support	0.56	0.50	-.096**	.142**	1.00												
4 Job satisfaction	3.51	0.65	-.108**	.115**	.371**	1.00											
5 Turnover intent	1.35	0.64	.063**	-.044*	-.204**	-.419**	1.00										
6 Recommend agency for care	3.83	0.48	-.089**	.039*	.245**	.420**	-.317**	1.00									
7 Recommend agency for job	3.60	0.68	-.098**	.122**	.316**	.529**	-.368**	.545**	1.00								
8 Chain membership	0.23	0.42	-.036*	0.03	-0.03	-.070**	.080**	-.092**	-.080**	1.00							
9 For-profit	0.31	0.46	-.058**	.060**	-.044*	-.124**	.108**	-.176**	-.115**	.443**	1.00						
10 Care type: Hospice	0.29	0.45	-.083**	0.02	-0.02	-.084**	.050**	-.105**	-.068**	.151**	.322**	1.00					
11 Age	45.6	11.67	-0.03	-0.02	0.03	.080**	-.068**	.053**	.038*	-.053**	-.102**	0.03	1.00				
12 High school or less	0.63	0.48	-0.02	0.01	.067**	.064**	-.100**	-0.01	.035*	0.00	0.00	0.01	.079**	1.00			
13 Hispanic/Latino	0.07	0.26	-0.03	0.00	0.01	-0.01	0.02	0.01	0.03	-0.01	.064**	0.03	-0.02	0.02	1.00		
14 English as primary language	0.96	0.18	0.02	-.039*	-0.02	0.03	-.063**	0.01	0.00	0.00	-.045**	-0.01	-0.01	.051**	-.458**	1.00	
15 Income	4.08	1.89	.017	-.048*	-0.006	.056**	-.037*	.040*	.044*	-.075**	-.102**	-.074**	.048**	-.078**	-.048**	.012	1.00

Note: ***p < .01. **p < .05. *p < .10. HHA = Home Health Aide.

Table 3. Effect of Injuries on HHAs' Outcomes: Job Satisfaction, Turnover Intent, Recommend Agency for Job, and Recommend Agency for Care

Variables	Dependent variables			
	Job satisfaction	Turnover intent	Recommend agency for job	Recommend agency for care
	Std. β coeff.	Std. β coeff.	Std. β coeff.	Std. β coeff.
No. of injuries	-.119***	.069***	-.111***	-.099***
Chain membership	-.019	.038**	-.030	-.015
For-profit	-.087***	.077***	-.086***	-.143***
Hospice type	-.060***	.029	-.046**	-.073***
Age	.063***	-.047***	.022	.035**
High school or less	.053***	-.095***	.032*	-.020
Hispanic/Latino	.009	-.013	.033*	.028
English as primary language	.025	-.060***	.010	.018
Income	.044**	-.033**	.032*	.017
R^2	0.036	0.031	0.027	0.043
F value	16.558***	14.168***	12.278***	19.623***
Sample size	3,320	3,310	3,309	3,316

Notes: Data were collected from 3,377 HHAs participating in the National Home Health Aide Survey. HHAs = Home Health Aides.

*** $p < .01$. ** $p < .05$. * $p < .10$.

caregivers who are members of an occupational subgroup with one of the highest rates of workplace injuries (U.S. Bureau of Labor Statistics, 2009b). The results support the NIOSH Organization of Work and Occupational Safety and Health framework (Sauter et al., 2002) and the study's hypotheses (see Figure 2). Hypotheses suggesting relationships between workers' injuries and their job satisfaction and commitment to the employing agency were supported. Additionally, analyses revealed that worker perceptions of the quality of

her/his training and supervision have a significant relationship with the number of injuries direct care workers report. These relationships mirror the NIOSH framework's organization of work/worker hazards/injury relationships moderated by safety and health services/programs.

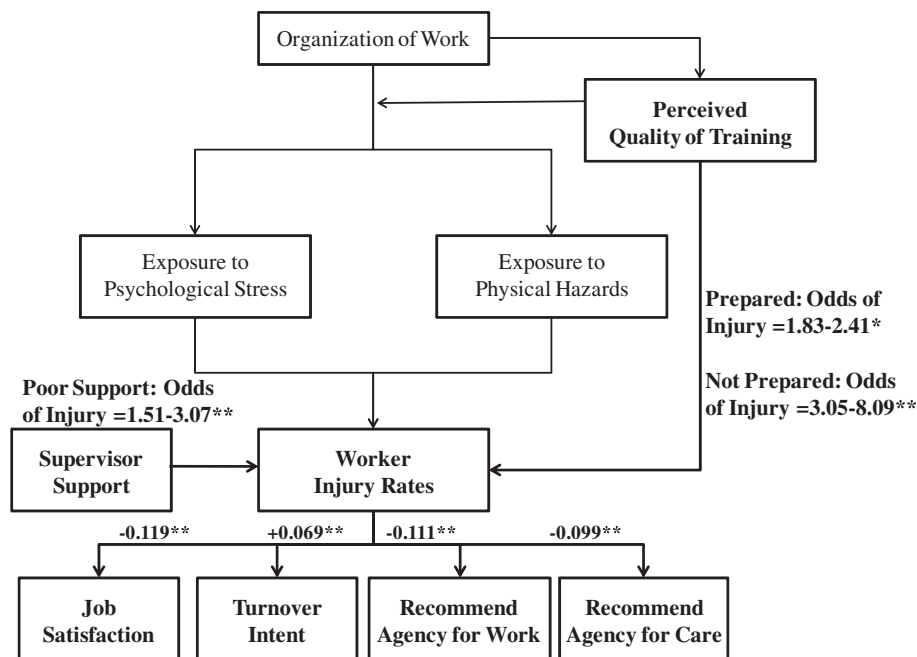
As other occupational health and safety studies have shown, repetitive worker injuries are detrimental to the worker, the organization, and performance outcomes (Burke & Sarpy, 2003; Burke et al., 2006). The current study's findings that HHAs

Table 4. Injury Odds Ratios per Home Health Aides' Ratings of Training and Supervisor Support

Variables	Dependent variable: No. of injuries		
	Injury = 1	Injury = 2	Injury = 3
	Exp (B)	Exp (B)	Exp (B)
Overall ratings of training (Ref. 3 = well-prepared)			
1 = Not at all prepared	3.050***	4.704**	8.093***
2 = Somewhat prepared	1.100	1.826**	2.406**
Poor supervisor support (Ref. group = good)	1.511***	1.392	3.096***
Not a member of chain (Ref. group = chain)	1.114	2.468*	.509
Not-for-profit (Ref = for-profit)	1.158	1.584	1.498
Home care type (Ref = hospice type)	1.575***	2.302**	1.706
Home health aid age	.999	.992	.970**
More than high school (Ref = high school or low)	1.071	.983	1.066
Not a Hispanic/Latino (Ref = Hispanic)	.823	3.198	3.258
English not primary language (Ref = is primary)	.902	1.676	1.944
Income	1.039	.919	.933

Notes: Data were collected from 3,377 home health aides participating in the National Home Health Aide Survey.

*** $p < .01$. ** $p < .05$. * $p < .10$.



Note: ^{**} $p < 0.01$, ^{*} $p < 0.05$

Figure 2. Final model results.

who experience job-related injuries have lower levels of job satisfaction and increased intentions to turnover mirror many studies investigating direct care worker experiences (Benjamin & Matthias, 2004; Dawson & Surpin, 2001; Yamada, 2002). Moreover, the findings also link HHA injuries to poor organizational outcomes; HHAs who have been injured are less likely to recommend their agency as a place to work or seek care services. The current finding that HHAs who perceive poor supervisory support are more likely to experience workplace injuries is in alignment with other direct care worker studies that offer evidence of the negative effects of poor supervisor support on direct care worker outcomes, including turnover, stress, and job dissatisfaction (R. I. Stone, 2004). These findings are also consistent with studies in acute care settings investigating the interlocking relationships among managerial actions, health care provider injuries, and poor employee/organizational outcomes (Burke et al., 2006; Charney, & Schirmer, 2007; Li, Wolf, & Evanoff, 2004; Vredenburg, 2002).

When direct care workers are injured, organizations bear not only the costs of absenteeism and turnover, but also workers' compensation, replacement staff, potential overtime, and sick pay among other expenses. Reducing these costs will benefit the organization directly (costs and expenses) and indirectly (quality of care, referrals, reputation, etc). As this study has shown, the link between worker

injury and negative outcomes for an organization is significant. Given that health and safety programs have been shown to be effective for achieving positive worker outcomes and reduce the incidence of injury (Burke et al., 2006; R. I. Stone & Wiener, 2001), organizations that provide home care services will benefit financially from investing resources into creating or adopting these interventions.

The relationship of training to worker and organizational outcomes cannot be overstated. The Institute of Medicine's (2004) study on transforming nursing practice to enhance quality of care and quality of life highlighted the importance of the work environment in promoting this quality. Training in the form of new employee orientation and continuing education for existing workers was cited as an important factor for retaining both nurses and nursing assistants. Other training interventions could include handling difficult clients, communication skills, and caring for frail older adults (Institute of Medicine, 2008). The importance of increased training in the health care industry is supported by numerous studies that show a significant relationship between worker training and individual outcomes, such as satisfaction, turnover, stress, and injuries; and between worker training and enhanced client/resident care (Benjamin & Matthias, 2004; Burke et al., 2006; Dawson & Surpin, 2001; Vredenburg, 2002).

In addition to training, the role of supervisor support is another critically important element of

direct care worker well-being that must be considered. Policy initiatives identify supervisor support as a much-needed variable, which has been shown to reduce turnover and enhance the care provided to clients/residents in long-term care (Dawson & Surpin, 2001; R. I. Stone & Dawson, 2008; R. I. Stone & Wiener, 2001). The current findings that HHAs who perceive poor supervisory support are more likely to experience workplace injuries is very much in alignment with other direct care worker studies that offer evidence of the negative effects of poor supervisor support on direct care worker outcomes, including turnover, stress, and job dissatisfaction (R. I. Stone, 2004).

From a public policy perspective, it is important to note that these data are from a survey of Medicare-certified home health agencies. These are likely among the most formally structured agencies in a complex array of alternatives that comprise the total field of providing services in the home setting. While NIOSH continues to study and develop processes and procedures to improve the safety of home care work (Galinsky et al., 2010), it is clear that these are not being implemented across all agencies (Sherman et al., 2008). The rapid expansion of home-based services is a highly fragmented process reflecting a disjointed policy environment. State variation in oversight and support for nonmedical home care is substantial, and low capital costs make entry to the market relatively easy. The increased demand for consumer directed care has raised a host of questions about the nature of the worker/client employment relationship that need to be addressed.

Finally, home health care is the most decentralized type of health care. While nurses supervise Medicare clients' care, they are not in the home on a daily basis. When HHAs are fearful or anxious about being in a home environment, they are more likely make adjustments that threaten the quality of care. These include shortening visits, reducing patient education, and ignoring medication administration schedules to avoid making visits after dark or at other threatening times (Fazzone, Barloon, McConnell, & Chitty, 2000). Adverse events for clients resulting from these accommodations may result in emergency room visits and hospital readmissions.

Limitations and Future Directions

We acknowledge the limitations of our study. The findings are derived from a secondary analysis of a national survey not specifically targeted at evaluating workplace injuries (U.S. Department of

Health and Human Services, 2007). As such, they represent an approximation rather than a full and precise portrayal of the NIOSH conceptual model. In addition, the constructs in this study share a common method of measurement, and as such, common-method bias could also be a concern resulting from the single-source data (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). However, the sample is nationally representative and the differentiated relationships between the variables reduce the possibility of this common-method bias. Having controlled for agency type and profit status suggests that the study has applicability to other home care settings.

The sample and data collection also contribute to the current study's limitations. The study investigates direct care workers who are employed by agencies and given the fact that many are hired privately; this sample may not be representative of all home health workers. Response bias may have been introduced, as workers with more severe injuries may not have responded to the survey. The survey only captures number of injuries and not type of injury, so the effect of type of injury is unknown. Another limitation is the use of a cross-sectional sample of home health workers. This limits our ability to make causal inferences from the data under investigation. Future studies employing a longitudinal design using a more representative sample would help to address these limitations.

A limitation of our findings is the intent to turnover measure. Unfortunately, we do not have access to actual turnover data, only the employees' reported intention to turnover, which is not the same outcome. However, we believe that intent to turnover is a reasonable proxy for turnover in studies, where actual turnover data is not available and a recent meta-analysis has shown support for this (Griffeth, Hom & Gaertner, 2000). A recent longitudinal study by Rosen, Stiehl, Mittal, and Leana (in press) offers evidence supporting the relationship between turnover intent and likelihood of actually leaving one's position. In the event, actual turnover data is not available, future studies might utilize more comprehensive turnover intent scales with greater breadth and depth, examining the various stages of turnover intent. For example, the scale developed by Mobley, Horner, and Hollingsworth (1978) measures the phases of thinking about leaving, thinking about job searching, and searching for a job. This scale has also been found to have a relationship with actual direct care worker turnover (Castle et al., 2007).

An additional limitation within the analysis is that a number of the key variables derived from actual measurement items used by the Centers for Disease Control and Prevention in the National Health Care Surveys. These measures are single-item (e.g., turnover intent and job satisfaction) and are therefore not as psychometrically rigorous as a multi-item scale nor do they capture the broader content within these workforce issues. More complex scales, such as the Nursing Home Nurse Aide Job Satisfaction Questionnaire (NHNA-JSQ; Castle et al., 2007), offer greater insight into these key constructs. For example, the NHNA-JSQ examines a number of subscales that contribute to overall job satisfaction. We recommend future studies examining the important workforce issues of direct care workers utilize more detailed scales.

Further research is needed to specifically examine the relationship of worker injury to workplace outcomes for direct care workers, specifically HHAs, as injury and worker outcomes are understudied with this occupational subgroup. As such, studies expanding on whether injuries are related to job satisfaction, turnover intent, and willingness to recommend one's agency as a place to work or seek care include explanations of the relationships about how injuries affect these outcomes and if they are different for diverse groups of workers would be beneficial. Additional research is needed to better understand the most efficacious types of worker training and administrative support to determine what forms of safety training reduce incidents of worker injury. Thus, to create successful training initiatives, research needs to establish how and when training occurs to help determine the content and structure of direct care worker training. Finally, we note that we have only examined a small subsection of the NIOSH Organization of Work and Occupational Safety and Health framework and encourage researchers to extend this framework by examining other key facets of the work environment as it relates to improved direct care worker outcomes.

Conclusion

The NIOSH Organization of Work and Occupational Safety and Health framework (Sauter et al., 2002) offers a foundation from which to develop occupational health and safety interventions derived from the work environment. This study found that injured HHAs had lower job satisfaction,

higher turnover intent, and poorer employment and care quality perceptions than noninjured workers. Additionally, HHAs perceptions of poor training and poor supervisory support were significantly related to higher risk for workplace injuries.

Improving training standards and safe work environments will aid the direct care work force in meeting its industry calls for fostering the essential elements necessary to frame a quality health care job (Dawson & Surpin, 2001; R. I. Stone & Wiener, 2001). Because direct care workers are now being referred to as a 'scarce resource' (Dawson & Surpin, 2001), strategic human resource management in the areas of training and worker safety is even more critical. Health care organizations pursuing an improved work environment will likely become an employer of choice and have greater access to the direct care worker resource pool in the form of recruitment and retention.

Health care managers and leaders interested in improving the work environment for their direct care workers should examine the results of programs that have directly linked occupational health and safety training to the reduction of worker injuries and worker training programs to enhanced worker, organizational, and client/resident outcomes. Following the concept of "safety and health services and programs" in the NIOSH report on workplace safety and health (Sauder et al., 2002) programs such as The Maine Department of Labor's Safety and Health Consultation Service (R. I. Stone & Wiener, 2001), Better Jobs Better Care (R. I. Stone & Dawson, 2008), and the Direct Service Workforce Demonstration Project (Institute of Medicine, 2008) have all incorporated numerous worker-directed programs that have proven to be successful in recruiting direct care workers, minimizing turnover, and reducing worker injury. In addressing direct care worker perceptions, this study initiates a roadmap to improve the quality of the unique work environment of home health care.

Funding

Funding for this project was provided by the Social Science Research Institute (SSRI) at The Pennsylvania State University.

Acknowledgments

We are grateful to Erin Walsh and Tom Knarr for research support. We thank the anonymous conference reviewers of the Health Care Management Division at the Academy of Management. An earlier draft of this manuscript was presented at the annual meeting of the Academy of Management in Montreal, Canada (2010) and published in the subsequent Best Paper Proceedings.

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