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Risk Factors Associated with Patient Assaults of Home Healthcare Workers

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KEY WORDS

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This study used surveys from 677 home healthcare aides and nurses to explore factors associated with assaults by patients. Among respondents, 4.6% reported one or more patient assaults (being hit, kicked, pinched, shoved, or bitten) during the past year. Logistic regression analysis examined associations between several potential risk factors and assaults. Three factors were significant, including having one or more patients with dementia (OR = 4.31, 95% CI 1.47–12.67), routinely handling patients (OR = 8.48, 95% CI 1.89–37.94), and perceiving threats of violence by others in and around patients' homes (OR = 4.45, 95% CI 1.75–11.32). Assaults were not significantly associated with worker age, gender, race, job title, hours of work, or use of needles during patient care. Assaulted workers and workers who perceived threats of violence by others were significantly more likely to have shortened home care visits. More detailed research is needed to confirm these results and evaluate methods to reduce assault risk.

Home healthcare (HHC) represents one of the primary frameworks with which to provide rehabilitation nursing services. Our research group in the Organizational Science and Human Factors Branch of The National Institute for Occupational Safety and Health (NIOSH) conducted a survey to explore health and safety hazards in HHC. This article describes a part of that study, focusing on violence initiated by patients in home settings. The main goals were to assess the extent to which HHC workers are subject to physical assaults by patients and identify risk factors that may precipitate such assaults.

HHC is the fastest growing sector of the healthcare industry, currently employing more than 1.7 million workers and projected to employ more than 2.5 million workers by 2018 (Bureau of Labor Statistics, 2009). Services provided in home settings for medically restricted people include cleaning; cooking; assistance in toileting, bathing, and dressing; physical and respiratory therapies; and various nursing procedures. A large proportion of HHC jobs can be described as home care positions that do not entail medical care. These positions primarily are staffed by women and minorities.

HHC Violence

HHC workers identify violence as their principal safety concern (Markkanen et al., 2007; NIOSH, 1999; Sherman et al., 2008). To date, however, only a few focus groups and surveys addressing violence against HHC workers have been conducted, and the need for more data on this topic has been emphasized by researchers and practitioners (Bussing & Hoge, 2004; Distasio, 2000; Gershon, Pogorzelda, et al., 2008). Violence against healthcare workers by patients is reported to be the most prevalent form of workplace violence in institutional settings such as hospitals and nursing homes (Brady & Dickson, 1999; Bussing & Hoge, 2004; McPhaul & Lipscomb, 2004). This article focuses on assaults perpetrated by patients in home settings.

Few published studies detail rates of assaults by patients against HHC workers. Barling, Rogers, and Kelloway (2001) conducted a study in which 399 HHC workers were surveyed about violence they had experienced in patients' homes during the past 6 months. They found that 3.2% of respondents had been kicked, bitten, or hit with a fist; 3.5% had been pushed, grabbed, or shoved; and 3.5% had been slapped. Using survey data from a sample of 738 HHC registered nurses, Canton and colleagues (2009) found that 58.9% had experienced verbal abuse, 16.3% had been threatened with assault, and 3.3% had been physically assaulted at some time during their HHC careers. In telephone interviews of 1,198 HHC workers, Geiger-Brown, Muntaner, McPhaul, Lipscomb, and Trinkoff (2007) found that 3.3% had experienced assaults or threats of assault in patient homes during a 6-month period. Sherman and colleagues (2008) found that 29.5% of the 823 home health aides they surveyed had experienced verbal abuse or threats of assault during their home care careers. Surveys from a larger sample of 1,561 HHC workers from the same study revealed that 7.8% had felt threatened by their patients (Gershon, Pogorzelda, et al., 2008).

None of the studies described above specifically quantified patient-on-worker physical assaults, however. Violence was defined as physical or verbal attacks, and the perpetrators were not specified as

patients or family members or others in the home. Further research is needed to develop reliable population estimates of patient assaults on HHC workers.

Effects on Workers and Patients

Although fatal and severe nonfatal assaults represent the most alarming violence-related concerns for healthcare workers, such incidents are the exception. Research in institutional healthcare settings indicates that most assaults by patients are of low severity and that physical injuries, when they result, typically are minor (i.e., bruises; Rippon, 2000). Similarly, Bussing and Hoge (2004) reported low levels of patient violence severity in HHC. Despite low levels of physical severity, however, patient violence and verbal aggression can have negative effects on workers including fear, anxiety, negative mood, cognitive difficulties, reduced job performance and satisfaction, and depression (Barling et al., 2001; Bussing & Hoge, 2004; Canton et al., 2009; Geiger-Brown et al., 2007; Sherman et al., 2008). Considering these effects, it is reasonable to expect a decline in the quality of care delivered to patients by victimized workers. Focus group and survey studies support this prediction. Patient violence is associated with shortened home visits, refusal of care, reduced patient and worker ratings of care quality, reduced job commitment, intentions to quit, and retaliatory violence against patients (Arnetz & Arnetz, 2001; Brillhart, Kruse, & Heard, 2004; Canton et al.; Fazzone, Barloon, McConnell, & Chitty, 2000; Gates, Fitzwater, & Succop, 2003; Gershon, Pogorzelda, et al., 2008; Kendra, Weiker, Simon, Grant, & Shullick, 1996; Sherman et al.).

Risk Factors for Patient Violence in Institutional Settings

To date, no quantitative data are available regarding factors that increase the risk of violence by HHC patients. Studies of risk factors in institutional healthcare settings are described below.

Patient Dementia

Studies in hospitals and nursing homes indicate that patients with dementia or psychiatric conditions are more likely to assault workers than patients without such symptoms (Gates, Fitzwater, & Meyer, 1999; Gates, Fitzwater, Telintelo, Succop, & Sommers, 2002; Gates et al., 2003; McPhaul & Lipscomb, 2004; Miller, 1997; NIOSH, 2002; Whittington & Wykes, 1996).

HHC workers in one focus group study who had cared for patients with dementia in both home and institutional settings suggested that patients with dementia are violent less frequently in their familiar home surroundings (Fitzwater & Gates, 2000). No objective studies have examined that possibility, however.

Patient Handling

Most assaults initiated by inpatients occur during patient handling activities such as bathing, dressing, turning and repositioning, and transferring, lifting, and moving (Fitzwater and Gates, 2002; Gage & Kingdom, 1995; Gates et al., 2003; Hagen & Sayers, 1995; Miller, 1997; Whittington & Wykes, 1994, 1996). Most of this research was conducted in either psychiatric settings or nursing home units primarily occupied by patients with dementia. No quantitative studies have shown whether these activities increase the risk of violence among patients without psychiatric diagnoses.

Using Hoists to Lift Patients. Patient handling tasks often are physically demanding for healthcare workers and can be especially challenging in home settings (Galinsky, Waters, & Malit, 2001). Several hospital and nursing home studies have demonstrated that using mechanized hoists to lift patients effectively reduces the risk of musculoskeletal injuries in healthcare workers (Hignett, 2003). Examples of hoists and other assistive devices suitable for lifting and moving patients in home settings are described by Parsons, Galinsky, and Waters (2006a, 2006b).

It is reasonable to expect that using hoists to minimize the strenuous aspects of patient transfers also may increase the patient's comfort and reduce the likelihood he or she will become aggressive. Evidence to support this possibility was found in a study evaluating hoist interventions in six nursing homes (Collins, Wolf, Bell, & Evanoff, 2004). In addition to significant reductions in workers' overexertion injuries, the hoist intervention also led to 30%–72% reductions in assaults during transfers.

Worker Age

Gates and colleagues (2002) observed a negative correlation between the number of assaults by patients and the age of nursing assistants. Because assault frequency was not significantly associated with employment duration, they concluded that the lower assault frequency among older workers was not attributable to more nursing experience. They speculated that behavioral factors possibly associated with older age such as increased adaptability and empathy might have accounted for the result.

Risk Factors Associated with Patient Assaults of Home Healthcare Workers

Risk Factors Examined in the Present Study

This study examined additional factors that may increase assault risk in HHC. One major concern for HHC workers is the threat of violence from nonpatients in patients' neighborhoods and homes (Brillhart et al., 2004; Fazzone et al., 2000; Gershon, Canton, et al., 2008; Kendra et al., 1996; Sherman et al., 2008). Dangerous neighborhoods tend to be characterized by a culture of violence, which in turn can generate a climate of fear. Consequently, neighborhood and home settings perceived as dangerous by workers may be associated with an increased risk of violence from HHC patients living in those settings. Accordingly, perceived threats of violence by other people in patients' neighborhoods and homes were assessed in the present study.

Worker race also was specified as a variable because racial tension and discrimination have been indicated as concerns in HHC focus groups and surveys (Fazzone et al., 2000; Fitzwater & Gates, 2000; Sherman et al., 2008). The omission of race as a variable in previous studies has been noted as a study limitation (George, 1996). Use of needles also was assessed because injections are aversive and may increase the risk of violence among patients with psychiatric conditions (Whittington & Wykes, 1996). Additional demographic and control variables included worker gender, job title, and hours of home care work.

Shortened Visits as a Measure of Reduced Care Quality

The data were examined to determine whether patient assaults and perceived threats of violence from others were associated with shorter home care visits. Kendra and colleagues (1996) found that surveyed workers tended to cut short home visits when feeling unsafe and suggested that a compromise in care quality is likely to result from shortened visits. Workers interviewed by Fazzone and colleagues (2000) also described shortening visits, changing visit times, and skipping visits due to concerns about violence, and they unanimously agreed that "shortening visits could have a negative impact on patient outcomes."

Method

Study Survey

Responses analyzed for the present report were selected from a larger survey featuring more than 100 items. The survey was piloted to maximize content validity and readability and was reviewed and approved by the NIOSH Human Subjects Review Board.

Survey Translations

The survey and consent form were translated into Chinese (simplified), Russian, and Spanish by certified translators using dialects or vernacular most commonly spoken in the regions in which the foreign-speaking study participants resided (primarily San Francisco and Chicago).

Survey Administration

Beginning in December 2002 and ending in July 2004, convenience sampling was used to administer the survey to workers from 11 HHC agencies serving patients in urban and suburban areas of Arkansas, California, Illinois, and Oregon. Group sessions were attended mainly by home care aides and nursing assistants during nonwork hours. Verbal and written instructions were provided and participants were able to ask for clarification regarding consent forms and survey items and use translators as needed. A small number of surveys were mailed to nurses who could not participate in person. Nurses had high education levels, and there were no concerns regarding their comprehension and response accuracy. Participants received $20 in compensation.

Survey Participants

The overall response rate across survey administrations and mailings was 64%, resulting in 743 surveys. The majority (705 or 95%) of workers in the total sample had home care aide or nursing-related job titles, including home care aide, certified nursing assistant, and nurse. Job titles of 3.7% respondents were recorded as social worker (0.9%), physical therapist (0.8%), occupational therapist (0.3%), speech therapist (0.1%), or other (1.6%), and 1.3% of the respondents left the job title item blank. Surveys from these respondents with miscellaneous or unspecified job titles were excluded from the analyses.

Final Sample

The survey items comprising the main dependent variable for this investigation pertained to assaults by patients. Of the 705 workers in the sample, 28 did not record responses to the assault-related items. The final sample comprised surveys from 677 workers, including 535 home care aides, 83 certified nursing assistants, and 59 nurses.

Among surveys, 538 (79%) were completed in English, 53 (8%) in Spanish, 46 (7%) in Chinese, and 40 (6%) in Russian. Most of the survey items required multiple choice, numeric, or check-mark responses. For the few open-ended items, responses written in foreign languages were translated to English by certified translators.

Survey Items

Assaults

Assault items included, "In the past 12 months, have you been hit, kicked, pinched, or shoved by a home care patient?" and "In the past 12 months, have you been bitten by a home care patient?" Participants responding "yes" were asked how many times such assaults had occurred during the past 12 months and to describe any resulting injuries. They also were instructed to indicate the number, if any, of missed or light-duty days that resulted.

Worker Demographics

Demographic items included age, gender, job title, and race.

Hours of Work

Work schedules varied widely and respondents included part-time employees who worked few hours and full-time employees who worked many overtime hours. Hours of work were specified in the analysis to control for this variability. Participants were asked, "On average, how many hours per week do you work your home care job?"

Patient Dementia

This item asked, "During the past 12 months, how many of your home care patients have had dementia?" Participants had the option to enter a number or indicate "don't know." Instructions described the term dementia as referring to patients who are "not in their right mind" or "out of their head."

Patient Handling

Participants who indicated they routinely performed one or more of the following tasks were categorized as patient handlers: transfer in and out of bed, transfer on and off of toilet, transfer in and out of tub, reposition in bed, change adult diapers, bathing, and dressing and undressing.

Perceived Threats of Violence from Others

This item asked, "How often do you feel threatened by violence from other people (not patients) in or around your home care patients' homes?" Response options included *never, rarely, sometimes, frequently,* or *always.* A yes/no dichotomized version of this variable was derived by categorizing *never* or *rarely* responses as "no" and responses of *sometimes, frequently,* or *always* as "yes."

Use of Needles

This item asked, "In your home care job, does your work involve the use of needles, such as drawing blood, inserting or removing IVs, giving injections, etc.?"

Shortened Visits

This item asked, "In the past 12 months, did you ever shorten a home care visit because you were concerned for your safety?" and "If yes, how many times during the past 12 months did you shorten a home care visit because you were concerned for your safety?"

Data Processing

Data from each paper survey were entered into Excel® spreadsheets twice by different people and then compared to detect and correct discrepancies in entered data. Data then were imported into a SAS data set for statistical analyses. A small number (<1%) of responses that were illegible or difficult to interpret were converted to missing values before analysis.

Results

Descriptive Statistics

Descriptive statistics for continuous and categorical variables described above are shown in **Tables 1** and **2.**

Assaults

As shown in Table 1, 31 (4.6%) of respondents had been assaulted by a patient one or more times during the previous 12 months; 29 workers had been hit, kicked, pinched, or shoved and 2 workers had been bitten.

Three workers reporting "nonbite" assaults did not enter a response to the assault frequency item, so the statistics for assaults in Table 2 are based on responses from 28 workers. The data in the table depict the distribution of nonbite assault frequencies because the two workers who had been bitten each were bitten one time. The majority of assaulted workers (20/28 = 71%) reported having been assaulted more than once.

Follow-up responses from one worker who had been bitten indicated that "skin was broken" and "shots were required," resulting in 14 missed work days. No other survey respondents indicated assault-related injuries, missed work days, or light-duty days.

Regression Analysis

Multivariate logistic regression analysis was conducted using assault category (assaulted or not assaulted) as the dependent variable. Continuous independent variables included age and average weekly work hours. Categorical independent variables included job title (with home care aide as referent), race (with Caucasian as referent), gender (male or female), needle use (yes or no), perceived threats from others (yes or no), patient handling

Table 1. Descriptive Statistics for Continuous and Categorical Variables

Continuous Variables	Mode	Median	Mean	*SD*	Min	Max
Age (n = 656)	51	49	48	12	20	80
Average work hours per week (n = 664)	40	28	28	14	1.5	88

Categorical Variables	*n*	Percent of Sample (%)
Gender		
Women	625	92
Men	52	8
Job title		
Home care aides	535	79
Certified nursing assistants	83	12
Nurses	59	9
Race		
Black/African American	385	57
White/Caucasian	118	17
Latino	57	8
Asian	83	12
Native American	4	0.6
Other	17	3
Patients with dementia		
One or more patients with dementia	117	17
No patients with dementia	260	38
Don't know how many patients with dementia	262	39
Patient handling		
One or more patient handling tasks	373	55
Use hoist(s) to lift patient(s)	31	8
No patient handling tasks	304	45
Perceived threats of violence		
Felt threatened by others	69	10
Did not feel threatened by others	597	88
Needle use		
Use needles	47	7
Don't use needles	620	92
Length of home care visit		
Shortened visits one or more times	43	6
No shortened visits	625	93
Number of Assaults		
Assaulted one or more times	31	4.6
Hit, etc., one or more times	29	
Bitten one or more times	2	
Both	0	
No assaults	646	95.4

Note. Some totals are less than 100% because of missing values or nonresponses.

Table 2. Descriptive Statistics for Workers Reporting Assaults, Workers Caring for Patients with Dementia, and Workers Who Shortened Visits

	n	Mode	Median	Mean	*SD*	Min	Max
Number of times assaulted	28	2	2	7	18	1	100[a]
Number of patients with dementia	117	1	1	3	5	1	30
Number of shortened visits	40	1	1	2	3	1	20

[a]100 assaults (of 1 worker with 2 patients with dementia) was atypical. The next highest number was 12 assaults.

(yes or no), and patient(s) with dementia (yes or no and don't know or know). Multivariate analysis permitted testing each independent variable while controlling for effects of the other independent variables.

Three of the independent variables were significantly associated with being assaulted one or more times in the past 12 months. They included having one or more patients with dementia (OR = 4.31, 95% CI 1.47–12.67), routine patient handling (OR = 8.48, 95% CI 1.89–37.94), and perceived threats of violence from others (OR = 4.45, 95% CI 1.75–11.32). Assault risk was not significantly associated with worker age, gender, race, job title, hours of work, or use of needles during patient care.

Patient Dementia

As shown in Table 1, 17% of survey respondents reported working with one or more patients with dementia during the past year. Although the number of patients with dementia reported by this group ranged from 1 to 30, most respondents reported having one patient with dementia, and the median number of patients with dementia was two.

Several (39%) of the participants chose "don't know" when asked how many of their patients had dementia during the past year. Colloquial descriptors of dementia ("not in their right mind" or "out of their head") were provided for participants and potential ambiguity regarding this item was not identified during survey development. Nevertheless, the number of "don't know" responses suggests that this survey item may have been inconsistently interpreted. Some participants may have been unable to recall if they had worked with patients with dementia in the past year. It also is possible that some participants were indicating they did not know the exact number of patients with dementia assigned to them. Regression analysis showed no significant difference in assault risk when comparing the "don't know" group to the group with members who said they had no patients with dementia. However, assault risk was significantly increased among workers with one or more patients with dementia (12% assaulted), compared to those with no patients with dementia (3% assaulted). These data are represented in the lefthand plot of **Figure 1**. Assaults were reported by 4% of workers who answered "don't know" to the dementia item (which is not shown in the figure).

Patient Handling

Figure 1 shows that assault risk was significantly increased for patient handlers (8% assaulted) as compared to those who did not handle patients (0.7% assaulted). Among the 31 workers who had been assaulted, 29 were patient handlers.

Use of Hoists to Lift Patients. Of the patient handlers who reported using a hoist for one or more of their routine patient handling tasks, 4 (13%) had been assaulted. Of the patient handlers who did not use hoists, 25 (7%) had been assaulted. A chi-square test indicates that this difference is not statistically significant (χ^2 (1) = 1.24, $p > .05$).

Patient Dementia and Patient Handling. The majority (79%) of those working with patients with dementia were patient handlers. All of the 14 assaulted workers caring for patients with dementia were patient handlers. In the group reporting no patients with dementia, 6 of the 7 workers who were assaulted were patient handlers. In the group responding "don't know" to the dementia item, 9 of the 10 who were assaulted were patient handlers.

Perceived Threats of Violence by Others

The risk of assault was significantly increased in the group that reported feeling threatened by violence from others in or around patient homes (14% assaulted) compared to those who did not perceive threats of violence by others (3% assaulted; Figure 1).

Shortened Visits

Figure 2 displays percentages of workers who shortened home visits, comparing workers who were or were not assaulted with workers who did or did not feel threatened by others.

Assaults and Shortened Visits

Of the 637 workers who reported no assaults by patients, 36 (6%) had shortened one or more home visits because of safety concerns. In contrast, of the 31 workers who had been assaulted, 7 (23%) had shortened one or more visits. The association between patient assaults and shortened visits is statistically significant (χ^2 (1) = 14.07, $p = .0002$).

Perceived Threats of Violence by Others and Shortened Visits

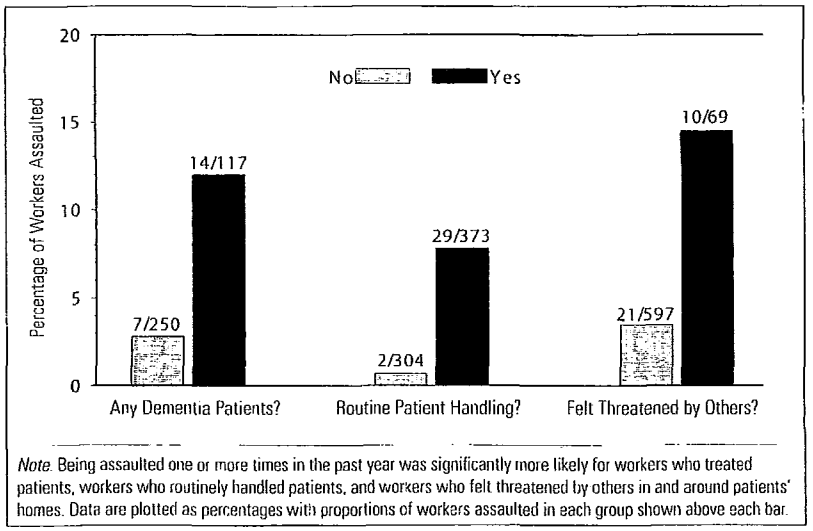
Of the 593 workers who did not report feeling threatened by violence from others in patients' neighborhoods and homes, 29 (5%) reported they had shortened one or more home visits because of concerns for their safety. Of the 68 workers who did report feeling threatened by others, 14 (21%) shortened one or more visits (Figure 2). The association between perceived threats from others and shortened visits is statistically significant (χ^2 (1) = 24.72, $p < .0001$).

Discussion

Assaults in the Present Study

In this study, 4.6% of surveyed HHC workers reported having been physically assaulted by their patients. This percentage is similar to rates of

Figure 1. Workers Assaulted According to Risk Factor



Note. Being assaulted one or more times in the past year was significantly more likely for workers who treated patients, workers who routinely handled patients, and workers who felt threatened by others in and around patients' homes. Data are plotted as percentages with proportions of workers assaulted in each group shown above each bar.

violent behavior (3.2%–3.5%) found in HHC studies by Barling and colleagues (2001), Canton and colleagues (2009), and Geiger-Brown and colleagues (2007). However, the latter three studies did not distinguish between assaults by patients and others in the home or between physical assaults and threats of assault. To our knowledge, the assault data collected in the present study represent the first research sample pertaining to HHC patient-on-worker physical assaults. From a physical and medical perspective, the majority of assaults appear to have been minor, which is consistent with other studies, indicating that assaults in healthcare settings typically are of low physical severity (Bussing & Hoge, 2004; Rippon, 2000).

Assault Rates in HHC Compared to Other Settings

When samples of hospital and nursing home workers have been surveyed about various time periods (e.g., the past five shifts, the past 2 weeks, the past year, "during your career"), relatively high percentages of workers have reported experiencing physical assaults: 30% (Arnetz, Arnetz, & Petterson, 1996); 68% (Gates et al., 2003); 80% (O'Connell, Young, Brooks, Hutchings, & Lofthouse, 2000); 17%, 21%, 82%, 22%, 73%, 58%, and 66% (McPhaul & Lipscomb, 2004). Although institutional healthcare workers typically interact with large numbers of patients each day and often see new patients, HHC workers rarely visit more than a few patients each day and typically make regular visits to those same patients over months or years. These differences could account for the lower assault rates in HHC versus institutional healthcare settings. It also is noteworthy that two of the factors predictive of assaults in the present study, dementia and patient handling, are more prevalent in institutional settings than in HHC.

Factors Predictive of Assaults

Patient Dementia

To our knowledge, this is the first study to provide data that quantitatively identify patient dementia as a significant risk factor for patient violence in HHC. In a previous focus group study of HHC workers, it was suggested that patients with dementia are less likely to be violent in their familiar home surroundings than in healthcare facilities (Fitzwater & Gates, 2000). This study was not able to address that possibility because it did not compare home and nonhome settings. Nevertheless, based on the current findings, HHC workers should not discount the likelihood that the risk of violence is increased when caring for patients with dementia. It also is worth noting that the one worker who reported 100 assaults also reported having two patients with dementia, and one of the bitten workers reported having one patient with dementia (the other worker who was bitten responded "don't know" to the dementia item).

Patient Handling

In earlier studies focusing primarily on psychiatric and dementia patients, assaults on workers occurred mainly during activities that required patient handling (Fitzwater & Gates, 2002; Gage & Kingdom, 1995; Gates et al., 2003; Hagen & Sayers, 1995; Miller, 1997; Whittington & Wykes, 1994, 1996). In the present study, all of the 14 workers with one or more patients with dementia who were assaulted also were patient handlers. Of the 7 assaulted workers with no patients with dementia, 6 were patient handlers, and of the 10 assaulted workers answering "don't know" to the patient dementia item, 9 were patient handlers. Although it is possible that in the larger population of HHC workers the magnitude of assault risk associated with patient handling may be greater when caring for patients with dementia, the current data set is too limited to test that possibility. The present results suggest that regardless of patient mental status, HHC workers should be aware that assault risk is increased during patient handling tasks. Although the survey did not specifically include "assistance with therapeutic exercises" among the listed patient handling tasks, such assistance should be considered along with other rehabilitation nursing services (e.g., transfer and ambulation assistance) as a type of patient handling that may increase assault risk.

Using Hoists to Lift Patients. Previously published data from our study survey showed that workers who routinely performed patient handling tasks were significantly more likely to report musculoskeletal symptoms (e.g., back pain) than those who did not handle patients (Waters, Collins, Galinsky, & Caruso, 2006). Only 8% of patient handlers said they used some type of mechanized hoist to lift patients. Hoist users were included among the patient handlers with an elevated risk for musculoskeletal symptoms, and the risk of assault was statistically equivalent for hoist users and nonusers. These results differ from those of Collins and colleagues (2004), who found that hoists reduced both overexertion and assault risk in nursing homes. It may be relevant to note the hoists used by the HHC workers in this study required more manual maneuvering than the more technologically advanced hoists used in the Collins study. In any case, the present study's relatively small sample of data pertaining to patient handling, hoists, and assaults does not permit a sufficient evaluation of the effects of hoists on assault risk. Further research using larger samples of HHC patient handlers and specific information regarding patient handling activities and equipment used at the time of assaults is needed to properly address the issue.

Perceived Threats of Violence by Others

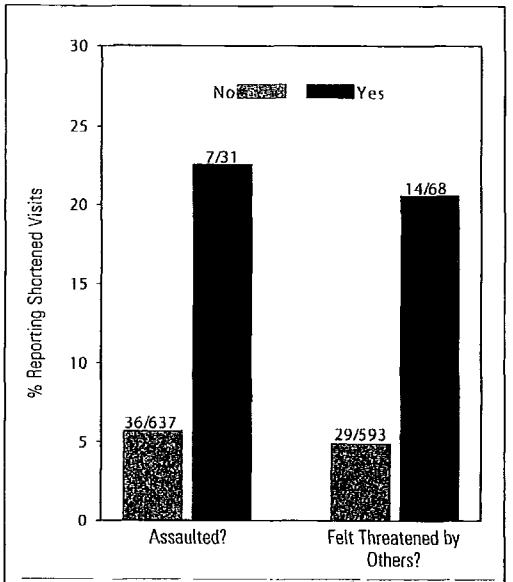
Although the survey used in the current study did not inquire about assaults from nonpatients, it did include an item to determine how often workers felt threatened by violence from others in or around patients' homes. The results indicated that respondents who sometimes, often, or always perceived such threats were at higher risk for assault by patients than those who rarely or never perceived such threats. It is feasible that patients living in dangerous neighborhoods may be more prone to violence, as influenced by fear or a general climate of violence. Research using objective measures of neighborhood crime rates and multi-item psychometric scales to measure violence-related constructs would be helpful to further explore the influence of these contextual factors on violence by HHC patients.

Serious Consequences of "Minor" Assaults

As noted by Gates and colleagues (1999), many healthcare workers, particularly those caring for patients with dementia, consider violence from patients to be a routine aspect of their jobs. Interviews of nursing home workers in the Gates study, however, showed that despite their understanding that assaults initiated by people with dementia are not intentional, they still are perceived as violence by the assaulted workers, who reported both short- and long-term emotional consequences as a result. Other studies have indicated that assaults and verbal abuse, even when not physically severe, lead to negative psychological reactions (Barling et al., 2001; Bussing & Hoge, 2004; Geiger-Brown et al., 2007; Sherman et al., 2008) including anger, which can lead to aggressive acts of retaliation by workers against patients (Gates et al., 2003).

Shortening visits in response to perceived danger is a necessary safety strategy that has been recommended in HHC worker safety training (Durkin & Wilson, 1998). In the present study, it was found that workers who had been assaulted by patients or who perceived threats of violence by others in patients' neighborhoods and homes were more likely to report shortening home care visits because of concerns for their safety. The unfortunate side effect of that strategy is reduced quality of care (Fazzone et al., 2000; Kendra et al., 1996).

Figure 2. Workers Who Shortened Home Visits According to Whether They Had Been Assaulted or Felt Threatened



Note. Shortening one or more home visits in the past year was significantly more likely for workers who had been assaulted and for workers who felt threatened by others in and around patients' homes. Data are plotted as percentages with proportions of workers who shortened visits in each group shown above each bar.

Strengths and Limitations of the Study

The exploratory survey used for the present study provided a rare opportunity to obtain information about occupational safety issues from a relatively large sample of HHC workers. As with all survey studies of this type, caution should be exercised when interpreting the results.

First, because convenience sampling was used, the results may not represent the HHC worker population as well as if random sampling had been used. However, workers were sampled from several geographically diverse HHC agencies, and efforts were made to provide opportunities to participate to all workers employed by the agencies, including non-English-speaking workers. The genders, ages, hours of work, and home care settings (primarily urban) were similar to those observed in another large convenience sample of HHC workers surveyed in New York City (Gershon, Canton, et al., 2008; Gershon, Pogorzelda, et al., 2008; Sherman et al., 2008).

Second, survey responses are subjective and most of the items required participants to recall from memory events that had taken place during the previous 12 months. Such responses are potentially subject to recall bias.

Third, because the data are cross sectional, cause cannot be ascertained. Statistically significant associations between variables represent associations between group memberships. For example, membership in the patient handling group was significantly associated with membership in the assaulted group, but the survey did not inquire about the circumstances under which assaults took place. Any likelihood that assaults in that group took place during patient handling may be assumed but cannot be confirmed. Similarly, although membership in the group of workers treating one or more patients with dementia was significantly associated with membership in the assaulted group, the dementia status of patients involved in the assaults cannot be confirmed.

Conclusions and Suggestions for Future Research

Assaults by patients generally are less commonplace in homes than in institutional healthcare settings. The results of this study indicate, however, that the risk of assault by patients is significantly higher for certain subgroups of HHC workers, including those who treat patients with dementia, perform patient handling tasks, and perceive threats of violence by others in patients' homes or neighborhoods. Moreover, workers who were assaulted or who perceived threats of violence were significantly more likely to shorten home care visits, which raises concerns about reduced quality of care in home settings.

Future studies could include assessments of the dementia status of assaultive patients and of the circumstances under which assaults take place (e.g., during manual patient handling, during hoist-assisted patient handling, during medical procedures). Also, including information on patient demographics such as patient age, gender, race, and ethnicity would provide an opportunity to examine the influence of interpersonal factors in patient assaults.

Studies evaluating methods to mitigate risk factors for assault would be especially useful. Violence prevention benefits should be explored when evaluating interventions such as mechanized hoists and other assistive devices to lift and move patients. Behavioral strategies that can minimize assault risk, particularly in patient handling situations involving patients with dementia, also should be explored. Such interventions could greatly benefit workers and their patients.

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