Staffing the Nation’s Nursing Homes

A dissertation presented

by

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ABSTRACT OF DISSERTATION

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Our country faces an urgent dilemma in strategizing policies to care for rising numbers of frail elders over the next few decades. The bulk of care in our nation’s nursing homes is provided by certified nursing assistants (CNAs) who as a workforce have very high annual job turnover rate. This dissertation explored the relationship between intent to leave the job, training, and workplace injury. The theory of monopsony and the concept of “dirty work” informed this study.

A secondary analysis was conducted of data from the 2004 National Nursing Assistant Survey (NNAS) a nationally representative sample of CNAs employed in U.S. nursing homes. Descriptive statistics and logistic regression models were conducted taking into account complex sample design weights. Respondents included 3,014 predominantly female CNAs. Fifty-eight percent of CNAs reported a workplace injury over the past year, the majority caused by patient aggression (59.4%).

CNA rating of their initial training in injury prevention and in caring for individuals with dementia was not predictive of injuries. In logistic regression models exploring intent to leave the job, injuries were not a significant predictor, however, other factors such as immigrant and marital status, job and pay satisfaction as well as age were significant predictors for intent to leave. In logistic regression exploring the relationship between work environment and frequency of patient assaults, supervisor respect was the only significant predictor in the model.

These findings have implications for policies, regulations and legislation to improve CNA training, staffing and pay as well as organizational changes to improve CNA overall job satisfaction.
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Introduction

Over the next few decades, our nation will be facing a demographic shift as baby boomers age and overall life expectancy increases, which will create a need for long-term care givers and dramatically increase long term care costs. There is a need to focus not only on policies related to the funding of future care, but also on developing policies to retain and recruit a direct care workforce. Certified nursing assistants (CNAs) provide the majority of care to the elderly in nursing homes, hospitals, day programs, and in homecare.

This dissertation research was focused on the certified nursing assistant (CNAs) workforce in nursing homes, investigating factors related to injury and job turnover. The researcher analyzed data provided in the National Nursing Assistant Survey (U.S. Dept of Health and Human Services, 2004) to study the problem of retention, with a focus on CNAs’ high injury rate and minimal training. There are approximately 700,000 certified nursing assistants (CNAs) employed in our nation’s nursing homes, providing care for 1.4 million individuals with significant cognitive, physical and/or emotional disabilities (CDC, 2010). The U.S. Department of Health and Human Services estimated that the cohort of individuals requiring help with basic activities of daily living will more than double from 13 million in 2000 to 27 million in 2050 (HHS, 2003). These care providers have a high turnover rate. Further, they have high rates of
work-related injury and assaults on the job. The work environment of CNAs has significant impact on the long-term care.

Hence, there is growing concern regarding the problem of caregiver retention and recruitment; estimates of nursing assistant annual job turnover in this setting are as high as 70 percent (Castle & Engberg, 2005; Decker et al., 2003). The low retention rate for these frontline workers, as well as concerns about the adequacy of their training, have resulted in Congressional requests for further research and legislative mandates for minimum training, demonstrating the importance of CNA training as a public policy issue.

This research examined a key factor possibly affecting retention—the high incidence of injury to this group of workers: the occupation of nursing assistant experiences the third highest rate of worker injuries nationally (BLS, 2006). The researcher also examined whether or not these high injury rates were related to CNA retention and training. The following sections provided the background for the questions to be addressed in this dissertation, including a description of today’s nursing home industry as well as a conceptual framework for viewing the research questions related to turnover, training and injuries.

**Background**

Strategizing how best to ensure a qualified and sufficient number of direct care workers to meet the long term care needs of our nation’s growing cohort of cognitively and physically impaired individuals drew Congressional attention over ten years ago. Congress in 2002, with a Republican President and a Democratic majority in the Senate, viewed this looming problem as compelling and requested that the Secretaries of Health and Human Services (HHS) and the Department of Labor (DOL) assess the shortage of care providers in assisted living, home care, and nursing home settings. Congress further requested recommendations for improving
recruitment and retention of qualified workers prepared to care for the growing aging and
disabled populations. The result was the Congressional Report entitled: *The Future Supply of
Long-Term Care Workers in Relation to the Aging Baby Boomer Generation* (U.S. Department
of Health and Human Services, 2003). The authors of this report documented the present and
projected supply and demand for caregivers in nursing homes and in the community and
estimated at least a 200 percent increase in the number of direct care workers would be needed to
provide long term care in 2050. An overarching concern was their high rate of turnover.

The authors discussed factors considered influential in CNA turnover, including wages,
staffing, significant physical demands and high injury rates, efficiency requirements, lack of
respect, limited job mobility, poor benefits and limited on-the-job training. An example cited by
the Commission for the role of limited training in possibly increasing turnover highlighted the
role of paraprofessional CNAs in caring for those with cognitive disabilities (HHS & DOL,
2003). This report was influential in the development of the National Nursing Assistant Survey
(NNAS) as a supplement to the National Nursing Home Survey (2004) which is discussed in
more detail in chapter 3.

**The Industry Today**

Today, the environment in which the majority of nursing assistants work is one driven by
profit. The majority of our nation’s nursing facilities are for-profit ventures hiring low paid, low
skilled workers. In 2004, 62% of facilities were for profit and 54% were operated by private
chains (NNHS, 2004). In 2009, a slight increase was noted in the for-profit venture, with 67
percent ownership (NNHS, 2009; CMS, 2010). Approximately 1900 nursing homes and/or their
real estate were acquired by private investment firms from 1998-2008, with ten firms accounting
for most of the sales (GAO, 2010). A recent example of a large nursing home acquisition
occurred in 2010 when HCP Inc. purchased 338 nursing facilities from HCR Manorcare for $3.1 billion. HCP Inc is the largest U.S. healthcare real estate trust with $18.1 billion in assets. (De Le Merced, 2010). The economic theory of monopsony has been applied to the hiring of CNAs in nursing homes, showing inflexible wages, paying the minimum to get just enough direct care staff (Bodah, Burkett and Lardaro (2003). In these corporations, the buyer of services (nursing homes) has market power over the seller (nursing assistants) of these services. They can hire workers at low wages and few benefits since this worker has few alternative options.

The concept of “dirty work” was also used to better understand why some workers stay in jobs stigmatized by society. Thus, for this study, the researcher used the economic theory of monopsony and the sociologic concept of “dirty work” to inform research questions related to turnover, injuries and training and to inform policy recommendations. These concepts are described later in the chapter.

**Statement of the Problem**

CNAs have the third highest rate of work-related injuries among occupations; assaults are higher than in any other work group (BLS, 2006). The question for this research was whether these injuries and assaults had a relationship to turnover and whether training had any impact on decreasing the injury rates. This study focused on these problems because there are policies that can be implemented to decrease injuries, improve the work environment and improve CNA training.

The impact of CNA work-related injury, type of injury, and etiology of the injury on turnover has not been well researched. One might expect a nursing assistant with a significant work injury to leave this field. However the question of what impact repetitive minor or moderate injuries and whether they were sustained in a “violent” manner has on turnover still
required examination. These repetitive and/or violent injuries could be a major contributor to CNA turnover. This research will further our understanding of the factors contributing to inadequate numbers of caregivers available over the next several decades to care for the growing elderly population that will require long-term care.

**Research Objectives**

The overall objective of this study was to explain the factors relating to high job turnover among certified nursing assistants (CNAs) through analysis of the results of the 2004 National Nursing Assistant Survey (NNAS). This study informed public policy related to the nursing home industry concerning this worker’s high injury rate, limited training and high turnover. These are problems that can be addressed with regulatory, economic, and legislative policy changes.

Specifically, the purpose of this analysis:

1. Identified the rate and nature of work-related injuries
2. Determined the relationships between the CNA’s work environment and frequency of patient assaults
3. Determined the relationships between work related injuries and intent to leave the job
4. Explored the effects of training on incidence of work related injuries
5. Identified the effects of training specific to the care of patients with dementia or aggressive behavior on incidence of injury related to assaults

The research questions for this study are outlined below.

**Research Questions:**
1. What is the rate and nature of work related injuries for nursing assistants working in nursing homes in the U.S.?

2. What is the relationship between the CNAs’ work environment and frequency of patient assaults?

3. What is the relationship between work-related injuries and intent to leave the job?

4. What is the relationship between CNA rating of initial injury prevention training on the incidence of work related injuries?

5. What is the relationship between CNA rating of training specific to the care of patients with dementia or aggressive behavior on the incidence of injury related to assaults?

**Conceptual Framework**

Two conceptual frameworks informed the research questions and the policy recommendations in this study; the labor market theory of monopsony and the concept of “dirty work.” Monopsony explains the overarching system in which paraprofessional healthcare workers are employed. The sociological concept of “dirty work” provides insight into the motivation of this care provider to continue to work in a highly stigmatized role.

**Monopsony**

Robinson (1969) defined monopsony as .. “a market similar to a monopoly except that a large buyer, not seller controls a large proportion of the market and drives the prices down.” To apply monopsony to the nursing home industry, the buyers are the large corporate nursing home chains that control the nursing assistant labor market in that they can drive down wages and benefits who are the sellers. They in fact, despite high turnover, have a monopoly or market power over
the workforce. Bodah et al., (2003) in an economic analysis of applying monopsony to the nursing home labor market force, confirmed the relevance of the model to the CNA workforce. The theory applied to this study was used to understand the work environment of the nursing assistant. In this environment, the monopsonic employer can continue to hire a relatively unskilled worker and keep wages and benefits low due to minimal competition.

“Dirty Work”

A second concept that helps in understanding the nature of CNAs’ work and the issue of retention is “dirty work,” developed by Hughes (1958) over a half century ago, referencing jobs others view as physically, socially or morally repulsive. Society does not view these distasteful jobs as unimportant or trivial, but as jobs people are grateful to have done by someone else. Nursing assistant work is ‘dirty work” yet these employees may stay in their occupation despite poor training and an injury, believing their work is vital to society. Ninety-seven percent indicated their role was very important (NNAS, 2004). The majority of CNAs stay in their occupation; 90 percent indicated they would definitely or probably become a CNA again. However, they do not stay in the same job for long.

The findings from this research will help inform public policies needed to decrease CNA turnover and work-related injury rates, as well as policies to increase the initial and ongoing training of this vital healthcare worker.
CHAPTER 2
OVERVIEW OF THE LITERATURE

Introduction

For this review, I synthesized literature from a number of disciplines including healthcare management and policy, sociology, workforce development, economics, gerontology, and history highlighting the multidisciplinary context necessary to examine the complex problem of nursing assistant staffing in nursing homes. A multidisciplinary lens was imperative in studying this group of workers since elder care is complicated, requiring policy recommendations that consider the multi-factorial nature of providing long term care.

The economic theory of monopsony frames the nursing home environment. The sociological concept of dirty work applies well to the work of the nursing assistant, although not applied in the literature to this work environment. Both of these concepts apply to this work environment and were used to inform this research in order to provide a better understanding of the problem of CNA retention.

The nursing home is a challenging work environment, and for many symbolizes a place where people go to die; a place where independence and privacy are stripped away. An understanding of the CNAs’ work environment as well as how our society views and financially supports our nation’s nursing homes is important in analyzing the problem of nursing home assistant turnover. Turnover for CNAs is higher than in most occupations, with estimates ranging from 40-100 percent annually (AHCA, 2003; Castle, 2006; Decker et al., 2003) as compared to an annual quit rate of 16.4 percent in 2010 for all non-farm occupations nationally (BLS, 2010). Given the complexity of the medical conditions, as well as the psycho-social needs of nursing home residents, high staff turnover interrupts continuity of care for the residents.
Furthermore, since many elders in nursing homes have no living relatives or none who visit, many resident’s support systems are the staff members and other residents (Gibson, 2004; Kriseman, 2005).

This literature review begins with a description of the history of nursing homes and the environment in which the CNA is employed. A description of the patients cared for in nursing homes and an overview of the nature of the work are presented. An in depth review of research conducted thus far in the area of CNA retention follows. A description of the theory of monopsony and the concept of “dirty work” are presented to give the reader context for the research questions and policy recommendations. Of particular interest are two work related concerns, CNAs’ high work injury rate, and the minimum training required for job entry. Literature related to these problems has been included, since the focus of this dissertation is to examine the relationships among the CNAs’ work environment, injury rates, job training and their intent to leave their jobs.

**The US Lens on Aging and Nursing Homes- How Did We Get Here?**

Our society’s view of growing old has changed dramatically throughout its history. In colonial America, the elderly were revered, enjoying a place of power and prestige. The young wore silver wigs and placed the elderly in seats of honor during church services. But no longer are these views current. David Hackett Fischer (1977) in *Growing Old in America* described the shift from a gerontocracy culture to one of the young republic; a shift from gerontophilia to gerontophobia. He suggested that the years between 1770-1820 witnessed a movement toward honoring the young, vibrant, and innovative. The citizens of the young republic viewed the elderly as having antiquated skills and old ideas that did not fit with the revolutionary mindset.
Fischer advocated for a new model of age relationships he termed “gerontophratia,” a form of fraternity of young and old where there is respect and a deep understanding of the differences between the ages, framed within a system of social equality. Many would argue that gerontophobia is quite pervasive in the 21st century, despite efforts from elder advocacy groups such as the American Association for Retired Persons, which has worked to combat negative attitudes toward and discrimination against the elderly. The recruitment and retention of our nation’s CNAs occurs within this societal frame. Aging is viewed today by many through a negative lens, a time of disintegration, dysfunction and mental demise. It is no wonder recruitment of these healthcare workers is a problem.

Nursing homes in the United States are a relatively new phenomenon. Prior to the nineteenth century, frail elders without resources or family were relegated to almshouses where the homeless, mentally ill, and alcoholics resided. These “asylums” became more populated with frail elderly throughout the nineteenth century and, although only about 2 percent of elderly were in institutions at that time, the percentage of institutionalized elderly increased from 33 percent in 1880 to 67 percent in 1923 (Haber & Gratton, 1994). Religious and women’s groups began to open special homes for the elderly, often for those of the same religious or ethnic background in an effort to save those in the working or middle classes and the native-born from the almshouses. Those who resided in these facilities typically had some resources to cover admission fees, as well as being able to prove they were of good character (Haber & Gratton, 1994). The legacy of the almshouse or poorhouse is still embedded in our society’s present perceptions of long-term care facilities. The almshouse represented a pauper’s existence at the end of life, a frail elder without family and ostracized from society. According to Haber and Gratton,
The shame of the poorhouse saturated the rhetoric of advocates for state welfare in the early twentieth century and dictated certain provisions of The Social Security Act of 1935. Nor is its legacy forgotten. Widespread aversion to contemporary nursing homes—clearly the descendants of the historic almshouse—continues both to influence congressional legislation and to trouble the national conscience in our time. (Haber & Gratton, 1994, p. 117).

In the early twentieth century, fear of being put in an asylum to live out one’s golden years helped move forward our present day welfare policy, since many people feared the possibility of living as a pauper in old age. In 1934, the Committee on Economic Security, under President Franklin Roosevelt, was charged with examining the state of elder care and making recommendations for improving elder services. The Committee drew its recommendations from data collected at almshouses to help move the concept of a social insurance program to the top of the policy agenda.

President Roosevelt signed the Social Security Act in 1935, thus providing Federal subsidy for elder care outside of public institutions (Haber & Gratton, 1994). Hence, those living in almshouses no longer received financial subsidies and subsequently almshouses began to close. Social Security was to be just that, to enable many elders to remain secure in U.S. society. The symbolism of the almshouse was a strong impetus to move legislation, shaking the national conscience and arousing fear of the same fate in the minds of many citizens. Yet, the birth of Medicare several decades later created strong funding for the nursing home industry. Although the almshouses no longer received government funding, the concept of private, for profit nursing homes was born, gaining steady ground financially with the enactment of Medicare in 1965. The industry flourished with revenues increasing by 2,000 percent from 1960 to 1976; the number of
nursing homes increased by 140 percent (Moss & Halamandaris, 1977). The industry has continued to grow, despite competition from assisted living options, and in 2011, there were 17,039 nursing facilities nationwide with estimated revenues of over $70 billion (Barnes, 2011).

The demand has been stable for facilities equipped to provide around the clock care for the most functionally and cognitively impaired within communities ill prepared to support these individuals in their homes. The incentives for institutionalization were growing as increasing numbers of women sought employment outside the home. Homecare for those with more intense needs would require one on one nursing assistant care; a nursing home could use the same assistant with much higher patient ratios. Labor costs for CNA care were kept low since no experience or training was needed. Training for entry into CNA practice was not required until the late 1980s. One only had to be able to perform heavy physical labor and work quickly.

Our society’s view of nursing homes, the vulnerable citizens who reside in them, and those who care for them, is largely negative. The Kaiser Foundation (2009) in a nationally representative survey of 1,032 individuals, queried participants about their perceptions of nursing homes. Only 8 percent of respondents noted that nursing homes would be a “decent place to stay” if necessary and 4 percent said they would choose a nursing home if they required help with activities of daily living. Sixty-three percent strongly or somewhat agreed that nursing home staff members are poorly trained.

Results of a recent Google search for “nursing home images” reinforced the negative view of the environment with pictures of residents sitting alone in front of windows or lined up facing long, stark corridors. Subject titles such as “Cuts in day care for adults are forcing more into nursing homes”, “Predicting time to nursing home care and death. . .”, “Nursing home abuse” and “Lawsuits aren’t improving nursing home care” appear early on in the search engine
pertaining to nursing homes. These visual images and stories conform to our negative societal image of nursing homes as places where people go to die, and where patients are segregated, totally dependent and forgotten without any ability to deinstitutionalize themselves. Dr. William Thomas, a proponent of the “Green House Project” which promotes a very positive homelike rather than institutional atmosphere in nursing homes stated: “I believe that in [nursing homes] in America, really every year, thousands and thousands of people die of a broken heart. They die not so much because their organs fail, but because their grip on life has failed.”¹

The negative perception has basis in reality. A recent investigation of the criminal records of nursing home employees conducted by the U.S. Inspector General’s office in 2011 at the request of a member of Congress found that 92 percent of nursing homes had hired at least one person with a criminal conviction and nearly half had five or more employees with at least one conviction (DHHS, 2011). Whether employers are not screening thoroughly or screening and still hiring despite this information was not established by the study.

Funding and the Operation of Nursing Homes

The funding and overall operation of nursing homes is important to consider in examining the CNA’s work environment, job responsibilities and compensation. Nursing home care is primarily paid for by Medicaid, with support from federal funds. Hence, the U.S. government is deeply entrenched in supporting and regulating nursing facilities and, therefore, is the primary economic supporter for the CNA workforce. Nursing homes are one of our nation’s most highly regulated industries with both state and federal government oversight and are among the most dependent industries for government funding. Medicare and Medicaid (CMS) have over 150 regulatory standards that include patient safety, physical and emotional abuse, quality of care and food safety (Medicare.gov, 2012). They are also among the most dependent on

government funding. In 2010, Medicare paid 63% of nursing facility costs, Medicare 14 percent and private/other paid 22 percent (Kaiser Foundation, 2013). In 2004, the U.S. spent $115.2 billion on nursing home care, 6.1 percent of healthcare expenditures (CMS, 2005) and in 2007 this figure had increased to $131 billion (Hartman, 2009). In 2011, we spent 149.3 billion on nursing home care, an increase of 4.4% from 2010 (CMS, 2013). Nearly all of U.S. nursing home beds are certified to accept Medicaid patients (National Center for Health Statistics, 2007).

The costs of long term care per patient continue to rise and the numbers needing this care are rising dramatically. A 2011 national survey of 15,500 nursing homes, estimated the median daily rate for a semi private room at $192 per day or $70,505 per year, a 5.7 percent increase from 2010 (Genworth, 2011). While not discussed in the literature, part of the rise in costs can be assumed to be related to increasing utility, food and labor costs. These costs have risen higher than overall healthcare expenditures; overall spending for healthcare rose 4.6 percent in 2011, an increase from 3.8 percent in 2010 (Healthcare Cost Institute, 2012).

Since taxpayers pay the vast majority of nursing home costs, the costs of poorly run institutions are passed to the U.S. citizenry indirectly in the form of Medicare and Medicaid subsidies. The present economic climate, a state deficit of 55 billion for fiscal year 2013, (CBPP, 2013) has caused states to cut back on services funded by Medicaid, making the hope of implementing initiatives to improve nursing home care that are not cost neutral or cost saving unlikely. Hence, any proposed policy initiatives focused on improving the recruitment and retention of qualified nursing assistants must keep the concern for funding these initiatives at the forefront, with consideration of the direct and indirect costs of turnover, litigation, and poor quality of care to taxpayers.
Proprietary nursing homes and turnover

Whether or not a nursing facility is run to earn a profit is a consideration in addressing nursing assistant turnover. Many nursing homes are “proprietary or “for-profit,” raising growing concerns about quality of care and a concern for CNA retention. Sixty two percent of nursing homes were proprietary in 2004 and 67 percent for-profit in 2009 with the remaining facilities nonprofit or government run (NNHS, 2004; CMS, 2010). What has changed are the percent owned by chains. In 2008, 54 percent of U.S. nursing homes were part of a chain as compared to 49 percent in 1993 (Stevenson, et al., 2006). The ten largest for profit chains now operate approximately 2,000 of our nation’s nursing facilities (Harrington et al., 2010).

Harrington et al. (2001) examined the impact of for-profit nursing home status on quality of care. These researchers studied 1998 state inspections of 13,693 nursing facilities nationwide and found lower quality and less nursing care in for profit nursing homes as compared to non-profit homes. Castle and Engberg (2005) found lower quality, lower staffing levels, for-profit ownership, and higher bed size to be associated with higher turnover for both nurses and nursing assistants employed in nursing facilities. Deficiencies in quality of care provided were 36 percent higher and serious deficiencies 41 percent higher within the ten top for profit chains as compared to those in government run nursing homes (Harrington et al., 2011).

Nursing assistants in for-profit settings have more patients under their care than those working in the non-profit home (Grabowski & Stevenson, 2008; Harrington et al., 2000). Although the investigators of preceding studies did not examine nursing assistant training in profit and non-profit facilities, we can speculate CNA training could be compromised in the for-profit facilities due to lower overall nursing staff and higher turnover. Lower nursing staff and higher turnover overall would compromise training since there would be fewer licensed staff to
help train and oversee the CNAs’ work. Higher turnover could impact training since colleagues would be less experienced.

**The Costs of Turnover**

There is a paucity of research on the costs of turnover of direct care providers within nursing homes. Turnover costs, as will be discussed a bit later, may not a concern for some nursing homes in that these costs can be incurred by others while they make a profit. In studies in the late 1990s, researchers estimated costs of turnover to be between $1242 and $2341 per direct care worker (Fullager et al., 1998; Johnston, 1998; Straker & Atchley, 1999). Straker and Tachley (1999) studied nursing home CNAs and home health care providers and found turnover costs for nursing home CNAs ranged from $1885-$2100 and home care assistants from $951-$1242. The higher costs for replacing nursing home CNAs may be due to potentially higher costs for recruitment and training of new staff at this level.

Later studies of turnover costs focused almost exclusively on assistants working with the mentally and developmentally disabled individuals in community settings (Larson, 2004; Seavey, 2004, Waldman et al., 2004). Perhaps the lens was focused on this group of patients and their providers due to continued political pressure for deinstitutionalization of those with mental and developmental disabilities and the subsequent passage of the Olmstead Act in 1999. The Supreme Court interpreted Title II of the Americans with Disabilities Act (ADA) to be discriminatory when states isolated those with mental disabilities in institutional settings. The Justices called for the least restrictive setting as possible for care of these individuals (Olmstead v. L.C., 527 U.S. 581, 119 S.Ct. 2176 1999). The costs of turnover were of significant interest to states specifically at this time as many individuals left state run institutions and moved to community group home settings, requiring specialized care from trained assistants.
Researchers who have studied turnover of trained assistants caring for those with disabilities, as well as other healthcare workers, have provided additional data on the turnover costs for CNAs. Vinfen Corporation, a Massachusetts non-profit agency caring for the disabled, estimated its turnover cost per direct care worker at $5,276 (Seavey, 2004). Larson (2004) estimated direct support worker turnover costs at $2,592 in Minnesota. Waldman et al. (2004) considered the costs of lost productivity related to turnover for a number of healthcare workers. They included nursing assistants under “allied health workers” and found hiring, training and lost productivity to cost at least $6,368 per worker. This study was in line with the formula used for many turnover cost analyses. The majority of investigators estimating the cost of turnover for all U.S. workers advise calculations using figures of 25% of yearly compensation (Seavey, 2004).

The high turnover within the facilities increases costs, yet these costs can be “downstream,” not incurred costs by the employer but rather by taxpayers, the patients and their families. Service delivery costs are not factored into traditional turnover costs calculations and include the costs to patients who receive lower quality care as well as nursing assistants who can incur stress and risk for injury due to high turnover. Third party payer costs are those incurred as a result of turnover to the government and other insurers (Seavey, 2004).

**Intent to leave: proxy for turnover**

Several researchers have used the National Nursing Assistant Survey (NNAS) to examine intention to leave the job as a measure of turnover; although intent is not necessarily followed through with actual leaving, it has been correlated with actual turnover in a number of studies and will be examined in this study as a proxy for turnover (Harris, James, and Boonthanom, 2005; Tett and Meyer, 1993).
CNA turnover and nursing home operations

CNA turnover negatively impacts nursing home operations. University of Kansas researchers (2004) examined nursing home characteristics and their relationship to state survey deficiencies, finding turnover rates to be the most important factor in predicting facility deficiency scores.

Nursing home state surveys, which are required for accreditation and for qualification to receive Medicare and Medicaid funding, are an attempt to ensure quality in this healthcare market. Failing a survey can have major financial implications for a facility. In an effort to improve nursing home quality, nursing home survey performance became available to the public on the CMS website in 2002. High performing nursing homes and those that had improved their performance had increased revenues and higher profit margins after the public reporting (Park, Konetzka & Werner, 2011). Deficiencies, as an indirect cost, can result in lost business and revenue, fines, litigation or facility closure. Lack of attention to staffing and its link to deficiencies could prove quite costly to a nursing facility.

Nursing home chains might not be as worried about marketing quality since they have the resources to market to consumers who may have little knowledge of quality deficiencies. Further, they have the legal resources to handle litigation (Harrington, 2011; Kitchener et al, 2008). They accept decreased quality, potential deficiencies and litigation as costs of doing business, while increasing profits with less staffing.

Mukamel et al. (2009) offered a different explanation in examining turnover within this labor-intensive industry, finding that turnover is associated with cost savings. These authors made a comparison between nursing homes and the fast food industry with the argument that there are cost savings when there is a sufficient supply of workers and wage, benefits, and
training costs are low. Turnover in this study was less costly than improved training and increased benefits to recruit more skilled staff. There is no incentive to put resources into training or efforts to retain staff, since the turnover is expected and part of doing business. Mukamel and colleagues demonstrated that if turnover was such a huge drain on nursing home revenues, rational administrators would have attempted to correct the problem a long time ago.

Eaton (2001) studied CNA turnover as part of a Congressionally mandated research project looking at whether there should be minimum nurse and CNA staffing in nursing homes. Eaton examined the reasons for varied staff turnover rates within facilities in close proximity. She discovered that some nursing facilities had consistent nursing assistant staffing and found that low turnover was associated with leadership offering staff recognition, meaning, and feedback. Staff in low-turnover facilities perceived their work as valued. They also had good wages and benefits, as well as flexible scheduling, realistic job expectations and adequate staffing. Additionally, Eaton found facilities with low turnover to have thoughtful and effective policies, i.e. consistent assignments, organizing work so as not to cause distress to the clients, and careful attention to culture. This study did not examine whether a facility was proprietary.

The finding that facilities with low turnover organized work in order to decrease client distress was important for this study. Those facilities that focused on the intricacies of the CNAs’ work and who arranged assignments in order to circumvent undue stress on patients may have experienced lower CNA injury rates from patients with cognitive disabilities. This dissertation utilized time to do the job, independence in providing care and caring for the same resident as some of the potential predictors in examining assault injuries. CNA satisfaction with pay and benefits were analyzed in this study as variables predicting intent to leave.
In a recent study utilizing the NNAS data that examined immigrant CNAs’ intent to leave their jobs, Sloan et al. (2010) found immigrants felt less respected by residents and families, but not by supervisors, and hypothesized that this may have contributed to their higher intention to leave. Noncitizen CNAs were more likely to express intent to leave the job in a year than those who were naturalized or U.S. born. Their length of time as CNAs, demographic factors and their noncitizen status were independently associated with intent to leave. Thus, this variable was used as a potential predictor in this dissertation, examining intent to leave and its’ relationship to work-related injury.

**Leaving the Job vs. Leaving the Profession**

Rosen, Stiehl, Mittal and Leana (2011) examined differences between what they termed the “stayers”, “leavers” and “switchers” in the Pennsylvania nursing home CNA workforce in a longitudinal study of 620 employed assistants. They found CNAs who switched to different nursing facilities were similar to those who stayed in both job satisfaction and level of emotional distress. Those who switched did so for health insurance, paid vacations and sick leave. They most often left to pursue other opportunities. After switching to another CNA position, they had greater emotional wellbeing and greater chance for promotion yet, interestingly, did not have improved wages. In fact, those who switched were paid nearly 10 percent less than those who stayed. Those who left the CNA workforce comprised 5.8 percent of those surveyed and those who switched 8.4 percent. Those who left this occupation felt greater job satisfaction and supervisor respect but had more physical problems as compared to those who stayed or switched jobs. It appears in this study that wages and benefits were not as important as a work environment providing respect, work satisfaction, and emotional support. Work injury and its relationship to retention were not examined in this study.
Studies of why CNAs stay in the same job address the turnover question in a different way. Several factors seem to explain longer tenure, including having an initial mentor, being over the age of 45, and having less than a high school diploma (Weiner, Squillace, Anderson & Khatutsky, 2009). Weiner and colleagues (2009) also found nursing assistants employed in facilities with specialized units, such as a designated Alzheimer’s unit, had longer tenure. CNAs working on these units could have higher satisfaction since there are more supports in place. These specialized units are often set up with environmental safeguards to protect wandering patients, with staff trained to care for those with cognitive impairments. This study was not able to examine specialized units as a variable predictive of turnover.

Nursing assistants stay in their jobs for more than monetary reasons. The option of working off hours, such as evenings and nights, alone may allow workers to meet family obligations. The variables impacting retention are multi-factorial and many are not quantifiable. For instance, in a study of low paid childcare workers, Murray (2000) discusses the concept of “emotional wages,” nonmonetary compensation which helps keep these workers on the job. The emotional rewards gained from working with children served to buffer the low pay and poor benefits. This buffering effect was only found true for female workers; males were not willing to forego monetary reimbursement for emotional satisfaction. Further, childcare workers tended to look at their work as fulfilling a higher purpose in benefiting society and so were able to rationalize an “ideologic wage” as well. The primarily female profession in this study thwarted unionization and higher pay, holding the belief that raising pay would cause some families hardship or even prevent them from using their services. These “ideologic and emotional wages” are much of the reason many workers, primarily female, stay doing jobs considered “dirty work”; those jobs stigmatized by society.
**Job satisfaction, empowerment and turnover**

Job satisfaction should be associated with low turnover. However, the CNA maybe satisfied with the work itself but not where they work. In a study using the NNAS, Squillace et al. (2008) measured CNA level of satisfaction with variables most compatible with self actualization or accomplishment (intrinsic satisfaction) such as ability to learn new skills and whether they felt trusted to make independent decisions. They also examined satisfaction with factors representing the extrinsic part of the CNA’s job including pay, benefits, time to do the job and supervisor respect. Intrinsic satisfaction was the best predictor of intent to leave. When nursing assistants did not feel a sense of self accomplishment, they were more likely to leave as compared to when they were dissatisfied with pay or benefits. These findings support the concept of “dirty work,” in that CNAs are apt to stay in a job which is difficult and stigmatized since they feel a sense of accomplishment and self worth from their role.

The important role of supervisors in promoting CNA satisfaction is evident from several studies (Bishop et al., 2009; Squillace, 2008; Decker et al, 2009; Milton et al., 2007). In an Ontario study of 222 CNAS, researchers found supervisory support to be highly correlated with job satisfaction (McGilton, Hall, Wodchis & Petroz, 2007). “Intent to leave” had a strong negative association with satisfaction in another study using NNAS data (Decker, Harris-Kojetin, and Bercovitz, 2009). Intrinsic satisfaction was most closely associated with supervisor behavior in this study, next was satisfaction with pay. More experienced CNAs indicated less intent to leave their jobs. Relationships with patients also had an influence on satisfaction, as did variety in work tasks and respect for CNA input in care.

Another area of research explored by investigators looking at CNA retention involves the empowerment of the CNAs in collaborating with the entire health care team to provide care. The
sense of how valued the CNAs felt by their supervisors and the organization and the ability to make independent decisions were very important and these variables were used in this study to examine intent to leave and injury rates. Yeatts and Cready (2007) observed 270 teams in the nursing home setting and found that teams did have a positive impact on empowerment and performance, a possible positive effect on turnover and absenteeism and a mixed effect on attitudes. The mixed effect on attitudes primarily related to frustration over time needed to attend the team meetings with time taken away from patient care. Other researchers have highlighted supervisor relationships and support as positively associated with CNA satisfaction, which in turn may influence retention.

CNAs working in community settings had higher job satisfaction than their colleagues employed in nursing facilities. Nursing assistants working in the PACE (Program of All Inclusive Care for the Elderly) model of community care for frail elders were compared with nursing assistants in nursing homes on job satisfaction and had higher job satisfaction (Friedman et al., 1999).

PACE nursing assistants working with community dwelling elders reported higher job satisfaction since they were able to form close relationships with patients. It is important to note that all PACE participants qualify for nursing home care. The majority of patients would have the same care needs as many in nursing home settings, although those with severe physical and cognitive impairments could not be served in the community model. The nursing assistants gained satisfaction from the variety in their role responsibilities and they were respected for suggestions they offered as care providers on the healthcare team. They felt empowered in their freedom to use their own judgment in providing care. The community CNAs felt valued for their input into care, had varied role responsibilities and had an opportunity to form close relationships.
with their patients. These non-monetary environmental factors, increased satisfaction and, although not reported by the investigators, could result in improved retention. The environmental factors which increased these assistants’ satisfaction in the community setting could be replicated in nursing homes, helping improve retention.

Review of the studies cited above revealed that the concepts of relationship building, empowerment, respect and autonomy need to be integrated into the day-to-day operations of the nursing home unit to increase this worker’s satisfaction and, hopefully, retention. The concept of a strong supervisory presence is seen throughout most of the studies. These supervisors are not defined in the studies, but are typically licensed nurses who could offer training, guidance and emotional support in caring for this vulnerable population. Compensation and benefits are not the only drivers for improving satisfaction of this workforce.

**Staffing, benefits and turnover**

In 2001, in an effort to improve the overall quality of care in nursing homes, Congress called for researchers to address whether or not to establish minimum nursing staff levels in nursing facilities. There were a number of studies done at this time that grew out of concern about turnover and staffing with recommendations to legislate minimum staffing levels to ensure quality care (CMS, 2001; Harrington et al., 2000; HCFA, 2000). The number of nursing staff and the mix of nurses and assistants providing care have been linked with quality of care and turnover of staff (Castle & Engberg, 2006; Donoghue, 2009). These findings also support the team concept of care, which has been important in CNA retention.

The impact of the overall work environment and the role staffing plays in CNA retention have been examined in a number of studies. Donoghue and Castle (2007) examined the voluntary and involuntary turnover for nursing home RNs, LPNs and CNAs in relation to
organizational and environmental conditions. These investigators studied the staffing mix of nursing homes in six states in an effort to understand the poor retention rates of CNAs, LPNs and RNs. Turnover was believed to be necessary at times to replace those staff members who were under-functioning and to bring in new ideas. They found adequate CNA staffing and higher quality of care to be strongly correlated in decreasing voluntary turnover for RNs, LPNs, and CNAs. Increased staffing would provide more time with patients and hence give CNAs more time to form relationships with those in their care. Adequate CNA staffing in this study also improved the retention of licensed nursing staff. The consistent presence of directors of nursing, who must be registered nurses, has been associated with improved quality of care in nursing homes (Tellis-Nayak, 2005). However, their turnover is high as well, with nearly half leaving their positions each year (Castle, 2001).

The Nursing Home Reform Act (NHRA) of 1987, a part of the Omnibus Reconciliation Act (OBRA), established a federal mandate for licensed nurse staffing requiring all facilities to have a registered nurse (RN) on site for eight hours and a licensed practical nurse (LPN) or RN for all shifts, but did not stipulate any requirement for staff to patient ratios (GAO 1998, 1999, 2000). The number of patients within the facility was not addressed and so a large facility would only be mandated to have the same professional nursing staffing as a smaller facility. Bed size has been a consideration in certain states and some moved for more rigorous standards. In 2001, there were 16 states requiring minimum staffing requirements within nursing facilities. Harrington (2005) compared actual nursing staffing levels with minimum standards recommended and found ninety seven percent of nursing homes had staffing profiles considered unsafe.
The impact of this legislation only improved staffing for those nursing facilities operating below or close to the new staffing standards. Of note, the overall use of patient restraints across all facilities dropped after these staffing requirements were implemented. There were indications that some facilities operating at above state staffing standards then lowered their staffing to meet the minimum requirements (Park & Stearns, 2009). The decrease in restraint utilization is not surprising. An increase in direct care staffing would decrease the need for chemical and/or physical restraints, since nursing assistants would then have more time to care for patients in a less rushed environment. Further, poor staffing has been correlated with increased assaults on staff. Mandatory overtime, a consequence of inadequate staffing, and not having sufficient time to care for patients, were associated with increased incidence of CNA injuries from aggressive patients (Tak, et al., 2010).

The OBRA 1987 legislation appears to have had a negative impact on licensed nurse staffing up until 2005, after which little new research appears. Harrington et al. (2006) found licensed nursing hours per resident day dropped from 1.5 hrs from 1999-2000 to 1.4 hours during 2001-2005, as states moved forward with instituting changes to meet the federal standards and nursing homes followed with staffing to avoid regulatory sanctions. RN hours per resident day declined by 25% from 1999 to 2005, while CNA hours per resident day increased. This finding indicates more utilization of unlicensed nursing assistants after OBRA ’87.

Kash, Castle, and Phillips (2007) examined the impact of wages on staffing levels and turnover. The two most significant predictors of CNA turnover in this study were RN turnover and low wages, suggesting a need for strong supervisory support from registered nurses and, of course, adequate CNA pay for doing the job. These findings again highlight the importance of a strong and supportive supervisory presence. Kash and colleagues noted that monies allocated to
residents activities and staff development were significantly higher in non-profits. Those facilities making higher profits did not experience higher turnover in this study, but they did have lower staffing. However, Castle and Engberg (2006) found higher turnover among all nursing staff in facilities that were for-profit, lower in quality, ran with lower staff to patient ratios, and had more beds.

There are inconsistent findings on the effect of higher wages on turnover. Higher wages, paid time off, and access to a pension, but not health insurance, were found to have a positive effect on job tenure in a study using the NNAS (Weiner et al., 2009). In contrast, Rosen and colleagues (2010) studied the turnover of CNAs in a longitudinal study of 620 Pennsylvanian CNAs and found pay was not a predictor of turnover or intent to leave, although the absence of health insurance was. The different findings may relate to one study using a national sample compared to a state sample. CNA salaries do vary by state with the highest 2011 average salary in Alaska ($34,700) and the lowest in the southern states ranging from $19,890 to $21,570 (http://cnasalary.biz/).

Injuries and turnover

CNAs’ high rate of work-related injury and its relationship to high turnover has not been studied, a gap that this study sought to rectify. Historically, CNA turnover and injuries have not drawn much attention. Hospital nurses are more likely to leave their positions if injured secondary to musculoskeletal injuries (Brewer, et al, 2012), but their work is very different from the work done by the CNA in the nursing home setting. This researcher hypothesized that those injured would have higher intention to leave their jobs.
The Work Environment: Care Recipients

An understanding of the needs of those requiring long-term care is paramount since those needs drive the work of the CNA. The nursing home workplace has evolved into an environment caring for persons with more intense medical, behavioral, and psychiatric needs than those cared for in the past. The National Hospital Discharge Survey indicated that hospital lengths of stay decreased by over 20 percent from 1990-2007 (CDC, 2007) and many patients with complex medical and nursing needs are being discharged post hospitalization to nursing facilities. The nursing home workforce is not adequately prepared to care of these patients.

Further, rising numbers of elders now live into their eighth and ninth decades with physical, psychiatric and cognitive disabilities requiring more care than families or staff members in assisted living facilities can provide. Those individuals admitted to nursing facilities are often more physically and cognitively disabled than persons their age living in the community and CNAs in these settings provide an estimated 80-90 percent of their care (Beck, Ortigara, Mercer & Shue, 1999). This care is not just services delivered such as assistance with bathing, dressing and undressing, eating, and other activities of daily living, but also care that includes an ability to communicate effectively with individuals experiencing mental health problems and confusion related to dementia and delirium.

According to 2009 Online Survey, Certification and Reporting (OSCAR) data from the Centers for Medicare and Medicaid Services (CMS), over fifty percent of nursing home residents have a diagnosis of depression, 47 percent have dementia and 27 percent have behavioral problems. The data further document residents’ functional impairments and offer a glimpse of the scope of nursing assistants’ work responsibilities. Fifty-three percent of nursing home residents need assistance with eating; 85 percent with toileting; 81 percent with transfers; and 96
percent need some type of help to bathe. Fifty-nine percent of the nursing home population is unable to walk. Those who are incontinent of urine comprise 56 percent of the nursing home population and 46 percent have bowel incontinence.

Hence, nursing home CNAs must be adept at lifting and moving patients, bathing and assessing for abnormalities, communicating effectively with patients, families and others on the healthcare team, as well as managing aggressive and abusive patients living with dementia and/or mental illness. They must also be able to pick up subtle cues indicating changes in a patient’s health status, since they are the providers interacting with and assessing residents throughout the day. Their job is one that is not glamorous, and is physically and emotionally demanding.

The deinstitutionalization of those with chronic mental illnesses, as well as rising numbers of elderly with dementia has increased the number of nursing home patients with psychiatric and behavioral issues. Nursing home residents with dementia increased by 10 percent and those with psychiatric diagnoses by 43 percent from 1999-2005. (Harrington, Carillo & LaCava, 2006). The actual number of nursing home patients with aggressive behaviors is difficult to determine since studies define “aggression” differently. The Canadian Institute for Health Information (2008) collected data from 699 Canadian nursing facilities and found 10 percent of residents were physically abusive to staff and another 30 percent were aggressive when care was delivered or were “resistant to care.” Isaksson et al. (2008) found 15.1 percent of nursing home residents to have violent behaviors in a study done of Swedish facilities.

There is also a trend to admit increasing numbers of working age adults with chronic medical and psychiatric illness to nursing homes due to lack of adequate community care for handling those with physical and/or emotional disabilities. In a study of nursing home
admissions nationally, Miller (2011) found 12.9 percent of admissions were working age adults in 2007 as compared to 10 percent in 2000. This researcher found younger admissions were more often Black and had chronic diseases such as diabetes and psychiatric illnesses.

The increased number of individuals with psychiatric and cognitive impairments adds another dimension to the workload responsibilities of the CNA and could contribute to increasing injury related to combative behavior. Geriatric psychiatrists Madhusoodanan and Brenner (2007) described the troubling situation confronting nursing homes due to lack of adequate placements for the seriously mentally ill in the Annals of Long-Term Care. They discussed inappropriate nursing home admissions based on their experiences and call for psychiatrists to become involved in nursing home reform.

Eighty-nine percent of institutionalized elders with serious mental illnesses are nursing home residents (Kanapaux, 2004). It is increasingly common to treat these patients with antipsychotic medications. Twenty nine percent of nursing home residents in Massachusetts in 2009 were prescribed antipsychotics (Lazar, 2010). Feng, et al. (2009) reported similar findings from a national cross study of chemical and physical restraint use, with between 26-27 percent of U.S. nursing home residents on prescribed antipsychotics. An examination of the 2004 National Nursing Home Survey data found over a quarter of nursing home patients were on antipsychotics and 40 percent of those patients had no diagnosis identified for their use (Stevenson et.al., 2010). Thirteen percent were prescribed benzodiazepines which are most often ordered for anxiety or insomnia, with no indications for their use in 42 percent of this group. The use of antipsychotics overall has dramatically increased in nursing homes for treatment of agitation in dementia as well as treatment for psychosis and mood disorders. It certainly is necessary in some situations but the inappropriate use has increased. These medications can sedate patients and make care
easier for the CNA but this comes at the cost of impacting a patient’s quality of life when perhaps other interventions such as organizing work so as not to agitate the patient (Eaton, 2001) would be better for the patient and improve the work environment for the CNA.

**Risks for CNA Injury**

As described earlier, the nursing home environment can predispose to injuries related to direct patient contact, including lifting and moving. Injuries are also often related to patient aggression. The NNAS defined a work-place injury as any bite, sprain/strain, contusion, scratch or open wound sustained while working. They then queried how the injury occurred. An injury was considered an assault if the CNA stated the injury was caused by patient aggression, violence or abuse.

Workload, inadequate training, lack of flexibility, and not enough time to do the job have been found to increase risk of physical aggression. Rushing through patient care and rigid facility policies often increased patients’ agitation. Further, the number of patient assaults against nursing assistants was correlated with organizational factors such as CNA fear of reporting, lack of action when an incident was reported, and being excluded and not respected on the team (Morgan, 2008). Lack of CNA input into care minimizes the potential to gain knowledge about what works to de-escalate agitation and prevent assaults.

Researchers have estimated that 60-80 percent of CNA assaults by patients in nursing homes are not reported (Gates & Succop, 2002), indicating the actual injury rates are even higher than once thought. Azaroff et al. (2002) suggested that low paid workers may underreport injuries due to lack of knowledge about worker’s compensation or lack of ability to afford to take time out of work. Further he speculated that immigrants or part-time workers may not have benefits and think they are not eligible for worker’s compensation coverage. There is little
research on under-reporting, but possible explanations for under-reporting include: the injury may not require a health provider visit or lost days from work; the workers may be reticent to report for fear of losing his/her job; the subsequent physician visit may not be covered by insurance; the worker may fear being blamed for the injury or the injury maybe an assault which is not defined as an “injury” by the CNA. The CNAs may fear retaliation from an employer for increasing worker’s compensation claims and from their colleagues if they are placed on leave or on restricted duty since the unit may run short staffed. CNAs may also believe an injury inflicted by a confused patient is not something that should be reported. For example, a nursing assistant in Sweden noted, “Even though I get a punch, perhaps it is me who is standing in the wrong place . . . they don’t mean it, they do it because I have been stupid” (Isaksson, Astrom & Graneheim, 2008, p. 1663). Further research is needed to understand why nursing assistants do not report these incidents.

Overall injury rates were decreased in settings where supervisors used a transformational leadership style including emphasis on innovation, communication, career development and helping CNAs do their job (Lee, 2011). These motivational managers encouraged give and take between administration and staff, again highlighting the importance of strong supervisory support. These findings are important in developing policies to address nursing assistant injuries in nursing homes, highlighting the necessity to focus on the pivotal role of supervisors in retention efforts. An important consideration in examining CNA injury rates is that injuries reported to the Bureau of Labor Statistics (BLS) are those that necessitate a healthcare provider visit or result in lost work days. Hence, a lot of injuries that do not require a provider visit or lost work days go undocumented. The Occupational Health and Safety Act of 1970 require employers to record injuries if they involve the following:
. . . death, days away from work, restricted work or transfer to another job, medical treatment beyond first aid, or loss of consciousness. You must also consider a case to meet the general recording criteria if it involves a significant injury or illness diagnosed by a physician or other licensed health care professional, even if it does not result in death, days away from work, restricted work or job transfer, medical treatment beyond first aid, or loss of consciousness. (OSHA, 2005).

The only directly reportable injuries are fatal injuries or injuries involving three or more employees requiring hospitalization. These incidents must be reported to the Occupational Health and Safety Administration (OSHA), a division of the U.S. Department of Labor, within eight hours of the incident. All other injuries are required to be documented in a log and kept within the workplace for 5 years. Injury data are collected annually by OSHA from a sample of industries via survey (OSHA, 2011).

The regulations for reporting are surprisingly lax and, despite the movement to create workplaces that are free of violence, there is no requirement for reporting injuries related to patient abuse unless there is lost time from work or the CNA seeks medical attention. The OSHA 300 log, which stays in the worksite for 5 years, only asks the employer to “Describe injury or illness, parts of body affected, and object/substance that directly injured or made person ill ” (OSHA, 2011, n.p.).

Research on violent behaviors in cognitively-impaired individuals not residing in nursing homes offers insight into factors contributing to increasing agitation in these patients. Love and Hunter (1996) found assault rates from 11.1 to 16.9 assault injuries per 100 employees in six psychiatric facilities. Those with the highest likelihood of violence were individuals with serious psychiatric disabilities and substance abuse; older men with schizophrenia, neurologic disease,
history of violence or substance abuse. Another group at risk for agitated behavior included younger men or women with personality disorders, substance abuse, personal victimization or past history of violence (APA, 1992; Flannery, 2001; Nestor, 2002).

The external factors precipitating aggressive behaviors in psychiatric settings included sensory overload, staff restrictions, provocation from staff and others and staff denial of privileges such as cigarettes (Flannery, 2005). Characteristics of victims of assault were examined using fifteen years of data from the Assaulted Staff Action Program (ASAP), a peer crisis intervention program for assault victims. Younger and less experienced, less formally trained staff were more susceptible to injury as were nurses providing restraint interventions. Male and female inpatient staffs were equally at risk for assaults, whereas women were at higher risk within the community psychiatric setting (Flannery, Farley, Rego & Walker, 2006). The assault injuries incurred in these settings help us to understand the risk factors for CNAs assault injuries in nursing homes.

Historically, aggressive behavior toward nursing home staff has not been viewed as workplace violence, but rather as an expected part of the job (Isaksson, Astrom & Graneheim, p. 1663, 2008). This environment is one that can be incredibly stressful coping with persistent verbal and physical assaults. It is not surprising Rosen et al. (2011) found CNAs leaving the profession experienced high emotional distress.

Staffing, not surprisingly, has been found to play a pivotal role in preventing injuries. With each additional hour of nursing care per day, the nursing staff injury rate decreased by 16 percent Trinkoff, Johantgen, Muntaner, and Le, 2005; Cohen, Village, Ostry and Rainer, 2004. The number of residents assigned to each CNA is also related to assaults (Gates, Fitzwater and Succor, 2005).
Lack of control was a central theme in preventing injuries. CNAs expressed a sense of lack of control and insecurity in handling potentially violent patients (Isaksoon, 2009; Zeller, Dassen, Gerjo, Needham & Halfens, 2009). One of the study participants described her reaction,

I was afraid of him. I entered into the room feeling insecure and I think that he also sensed that as he threatened me and struck out. I was very afraid of him. I hardly said a word to him and constantly watched out that he didn’t hit me when I was washing him and I constantly watched his arm and he sensed that (Zeller, Dassen, Gerjo, Needham & Halfens, 2009, p. 2473).

This dissertation will examine the incidence of work-related injuries experienced by participants in the NNAS and whether work related injuries incurred by nursing increase the odds of turnover. The risk of repetitive injuries within nursing home setting is a factor which has been present for many years and is now heightened with increasing numbers of individuals with cognitive impairments admitted to long-term care settings. The stress alone of always needing to be on guard to circumvent injuries could contribute to their high turnover. There are major gaps in the literature on this topic and this dissertation will examine whether these injuries increase the likelihood of leaving the job.

**CNA Training**

Certified nursing assistants in nursing homes are required to have 75 hours of training in order to practice per the Centers for Medicare and Medicaid (CMS) regulations. The Office of the Inspector General began to research the issue of CNA training in 2002 in response to many stakeholders questioning the adequacy of the CMS requirement of 75 hours total training to qualify for nursing assistant certification. This survey of nursing home administrators, nursing supervisors, trainers, ombudsmen, academics, and experts found that all supported more
preparation for CNAs to keep pace with the changing demographics of the patients admitted to nursing homes. Areas where the need for more education was cited were care of individuals with cognitive and behavioral disorders, lifting, catheter and colostomy care, infusion therapies, feeding and hydration, communication and interpersonal skills, teamwork, coping with death and dying, time management and technology (DHHS, 2002). Experts in the field, convened by the Hartford Foundation, recommended that CMS double its CNA training requirements to 150 hours (Harrington, 2000).

CNAs agreed that OBRA’s mandate for basic minimum training, a decade after the Act’s initiation, had made a difference. Kramer (1997) studied 365 CNAs and found that their perceptions of the quality of care provided in their facilities improved after implementation of the Omnibus Budget Reconciliation Act of 1987 and its mandate of minimum training requirement for this workforce. These nursing assistants indicated a need for more education in lifting techniques, stress management, and most interestingly, dealing with combative and confused patients. It is hard to consider what the care was like prior to minimum standards.

The Institute of Medicine voiced its concerns about CNA training in a 2008 report examining preparation for the care of the aging population, despite the 75 hour OBRA mandate. The authors of the report highlighted the fact that federal law has not changed the minimum requirement of 75 hours training in over twenty years and that CNAs have less training than dog groomers, cosmetologists, and crossing guards (IOM, 2008).

The Paraprofessional Healthcare Institute (PHI) has been a leading advocate of increased training and wages for CNAs. Peggy Powell, the department director, described PHI’s position as follows:

As demand increases for the care of elders and individuals with chronic
illness and other disabling conditions in long-term care settings, having a more highly skilled direct-care workforce — with increased competence in clinical, core communication and problem-solving skills — is essential to provide high-quality service (Powell, 2009).

One CNA, a participant in Eaton’s (2001) Congressionally mandated research project examining nursing home staffing, raised the issue of training especially in dealing with patients who could be violent:

When you are in class, they prepare you for a certain kind of resident, and as soon as you get into a facility, it’s so overwhelming. Two or three people expect something different than they actually get. Then they just quit. They should be honest up front. In the classes and the books, there are no bedsores and no malnutrition. There’s been a big change in the last five years. Now Vietnam Vets start to show up in their 50s, their minds are not in the best shape. We are not prepared for these kinds of things (Eaton, 2001, p. S-43).

Eaton (2006) examined CNA length of training, clinical preparation and screening prior to training and also looked at English as a second language and remediation. She concluded that there was a need for increasing training and clinical preparation. She noted oversight of CNA programs was often nonexistent; officials cited lack of resources to review curricula and programs overall as a reason for lack of change.

Several of the state officials queried in Eaton’s study had never conducted onsite evaluations or had discontinued them. Federal law does not stipulate that CNAs must be able to read and write in English and Eaton found employers struggling with basic literacy among their staff. Another area of concern was appropriate screening for basic writing and language
competencies prior to training, since lack of screening could also be a factor in turnover (AARP, 2006).

In a British pilot study of a CNA competency tool, Whittingham (2009) found the roles of CNAs could be enhanced with a very structured educational program with well-defined boundaries for accountability. The competencies included communication, health and safety, service improvement and quality, personal and people development and equality and diversity. Training related to the care of those with dementia is crucial since workplace injuries could be reduced in staff prepared to deal with agitated behavior due to cognitive impairment. A web-based training program providing information in handling aggressive behaviors is a promising intervention for CNA continuing education. Irvine (2012) found decreased assault injuries and increased nursing assistant knowledge in handling aggressive behaviors with an internet training program provided as ongoing training after employment.

Furaker and Nilsson (2009) studied Swedish CNAs’ knowledge and experience caring for patients with dementia and found lack of knowledge about the disease. They also found that knowledge was based on personal experience and the care Swedish CNAs gave was predicated on how they themselves would want to be treated. Greater diversity in training methods used to prepare a CNA for practice was associated with lower rates of turnover in a study whose investigators looked at staff training and turnover in specialized Alzheimer care units (Grant, Kane, Potthoff & Ryden, 1996). They found these specialized care units used various teaching methodologies to train CNAs to care for patients with dementia and had lower turnover rates than non-specialized units.

The following concepts were briefly described in the introduction and mentioned throughout the literature review and are now more fully presented since they were used, along
with the extensive literature review, to inform the research questions as well as the policy recommendations.

**Monopsony**

The theory of monopsony was first presented by Joan Robinson (1969) to explain how one buyer operates within a market with a number of sellers. In a labor market, the buyer or employer is able to set wages, hiring less labor (the seller) and offering lower pay and benefits (the price) than an employer hiring in a purely competitive market (Ashenfelter, et al., 2010, Boal & Ransom, 2010). The economic concept of monopsony in labor market theory, describes an employer with market power functioning within a non-competitive labor market. There are few employers and the employee has few options. Monopsony, or market power, can be strengthened when the business is in a convenient geographic proximity for workers unwilling or unable to commute or from “offering” uncompensated benefits (Matsudaira, 2010). These uncompensated “benefits” are those discussed by Murray(2000) such as emotional or ideologic wages.

This researcher considers many nursing homes to be functioning with some amount of monopsonic power. Only one study, that this author is aware, found monopsony to be applicable to the nursing home industry (Bodah et al., 2003). Nursing home market power in “purchasing” CNA services is strengthened since CNAs are low skilled, prefer not to travel more than a half hour to work (NNAS, 2004) and are willing to do a very difficult job for low pay. The willingness to perform “dirty work,” and accept “emotional wages” and intrinsic satisfaction rather than higher monetary compensation strengthens their market power.

Despite the competition for CNAs in some regions, and the likelihood they will not stay long in the job, the wages are kept low. In 2008, nursing home CNAs averaged $11.13 per hour.
or $23,150 annual wage (BLS, 2010). Medicaid and Medicare are the primary payer for services, reimbursing at low rates which, in fact, creates this low paid position.

The majority of the facilities are now operated for profit, at the expense of this worker and taxpayer monies. Dawson (2001), a founder of the Paraprofessional Healthcare Institute, describes the work situation of the nursing assistant working in a nursing home;

The single largest funder of healthcare, the federal government, has in essence created an entire labor market of paraprofessional health care workers—a labor market that would not exist without its funding, a labor market that keeps low-income women in the ranks of the working poor. And yet, our government has yet to accept responsibility for creating and maintaining literally thousands of poverty-level jobs. (n.p.)

Examples of work settings considered monopsonistic are hospitals through recruitment of medical residents (Staiger, et al., 2010 ;) and nurses (Burkett, 2005; Staiger et al., 2010), teachers (Ransom & Sims, 2010), colleges recruiting professors (Perloff, 2008), and college athletes (Brown, 1993). These occupations have been considered by some economists as monopsonic since the employer has some form of market power over the employee. There is little negotiation for higher wages or benefits and many of these workers are not willing or able to relocate for a better position. Wal-Mart has been described as a labor market monopsony, especially in rural areas, where the employer can hire low-skilled workers with few other job options, offering low wages and poor benefits (Bonnano & Lopez, 2012).

The true monopsonic employer has few competitors. However, the dynamic or “new” monopsony (Manning, 2003) describes labor markets where competing nursing homes could still have persistent wage setting and industry control over employees despite the issues of high
turnover and “competing” nursing home ventures. Wages are still kept low, driven by low Medicaid and Medicare reimbursement rates and little wage competition. However, the majority of facilities still make a profit, hiring fewer staff. The move to a new job outside of a region is costly for a low wage earner and so the market holds power over the worker who has few options. They change jobs often and often make less money after the move (Rosen, et al., 2011).

There are also frictions in this labor market that further hinder market competition for nursing assistant services despite high turnover in the industry. These frictions increase the market power of the employer and can include CNA ignorance, heterogeneous preferences and inability to afford transportation or relocation costs (Manning, 2005). For example, CNAs who cannot afford a long work commute, lack relocation expenses and/or who have family obligations will not be in a position to do a job search outside of a small geographic area. Further, the CNAs may have imperfect information and be unaware of other job opportunities. They can change jobs, but within a small radius of employers. Language barriers or cultural barriers may contribute to lack of full knowledge about the labor market (Hirsch, 2010).

Factors such as supervision/scheduling, training/safety, benefits, race and salary (Stearns & D’Arcy, 2008) as well as strong leadership, adequate staffing and realistic job expectations (Eaton, 2001) were all related to nursing assistant retention. Nursing assistants may see other benefits to them, which are no cost to the firm, such as a short commute or shifts that accommodate childcare. The turnover of this workforce is problematic for quality of care (University of Kansas, 2004) but might be an accepted way of doing business for many employers.

Manning (2003) argued that there is an incentive for under training in a monopsonic environment, since benefits of the training will often be reaped by future employers. There are
still nursing homes that provide onsite training to meet the Centers for Medicare and Medicaid’s (CMS) mandate for a minimum of 75 hours training as well as state specific regulations that may require a bit more (Office of the Inspector General, 2002). A quarter of nursing facilities offered this training in 2007, a decrease from 38% in 1997 (Tyler, et al., 2010). These facilities could still be providing onsite training in an effort to address the high turnover rates and to diminish or delete barriers to entry. The decrease in the number of facilities providing this training could be due to shifting the cost of training off site to increase overall revenues.

Whether injury rates are more prevalent in firms with monopsonic power is a question of interest for future research. Employees working for a monopsony may stay in potentially unsafe work environments due to lack of knowledge about other work options or fear there are no other options. The injury rate for nursing assistants is one of the highest of all workers nationally and despite the fact turnover is high, this worker may move to another facility with a similar work environment and culture. Chances are that the new workplace is a facility owned by the same chain. Waterman (1996) describes increased monopsony in chain ownership. Kahn (1991) found that geographic areas with more employer choices in the mining industry experienced lower injury rates. He found reducing monopsony power by providing many alternative work choices positively impacted wages and overall worker welfare.

Certified nursing assistants are workers who are employed in an environment best described as one that is not sought after for employment, yet its employers continue to hire at low wages for care providers who enter with little or no training to provide comprehensive emotional and physical care to frail elders. The concept of monopsony provides a context for this dissertation since it helps frame the work environment.
Dirty Work

The concept of “dirty work,” initially described by Ashforth and Kreimer (1999), deepened the understanding of how those in stigmatized jobs maintain their dignity, identity and pride. They described a refocusing, reframing and recalibrating of their work in order to carry on and look to their work cohort for social acceptance when all others in society would look at their work as abhorrent.

These “dirty work” jobs require handling waste or dangerous materials or doing tasks others would deem distasteful. Sanders (2010) examined the work of veterinary technicians in the context of “dirty work” and found their relationship and love for animals to be pivotal in giving meaning to their work. They took pride in their skills, specifically their adeptness in performing activities most of society would see as repulsive. They found their work fulfilling in that it involves the interaction and care of animals which gave them positive self definition and a different perspective on their work as compared to how others in society would view their jobs.

Byrd (2010) wrote about the exploitation of immigrant domestic workers into “dirty work” and describes them eloquently as workers “...seen as an economic commodity and unseen as a person and an individual” (p. 19). The CNA within the nursing home industry is an economic commodity, a worker who does very important work at low cost, offering the employer the possibility of significant profits. The concept of dirty work” helps one to understand why a nursing assistant may stay in the occupation yet not in the same job. They may love caring for patients but be dissatisfied with the work environment.

The nursing assistant working within the nursing home setting is in a job fitting the “dirty work” definition. It is work stigmatized by society. They are workers seen as an economic commodity, providing the majority of services sold by the nursing home industry; yet they are
relatively “unseen” and definitely underpaid for the profits they make for many nursing home corporations. “Dirty work” is used in this study to help frame the motivation of this worker to carry on this work, despite the stigma and lack of societal recognition.

There have been a number of studies presented earlier which support the concept of “dirty work” and its use in better understanding the motivation of this worker and why they may stay in the occupation and endure injuries and poor working conditions. Eaton (2001) found that CNAs perceived their work as highly valued in low turnover nursing facilities and so CNAs stayed in the facility since they perceived their work as highly valued. The concept of “emotional wages” describes workers who stay in their jobs due to the “emotional and ideologic” wages they acquire from their work (Murray, 2000). Despite low pay and difficult work, these “emotional wages” keep the worker in the occupation but not always in the same job. CNA intrinsic satisfaction gained from a sense of accomplishment and self fulfillment has also been found to decrease this workers’ turnover (Squillace et al., 2008). Studies have also found relationships with patients to be highly correlated with job satisfaction (Friedmam, 1999; Decker, Harris-Kojetin & Bercovitz, 2009). These studies highlight that CNAs have higher turnover when their work is not highly valued by the organization and when they are not in a culture supporting intrinsic satisfaction or a sense of accomplishment in their work.

Conclusion

The nursing home industry holds market power over CNAs, within an environment offering few opportunities for advancement and training, placing this worker at high risk for work-related injury. CNAs may lack knowledge of worker’s compensation, other employment options or benefits. As mentioned previously, ongoing training may be minimal since the nursing home industry has few incentives to increase training. Due to the high turnover of
CNAs, the training benefit would be reaped by another employer (Manning, 2008). The fact that most CNAs are female, increases the power of this employer (Hirsch, 2010) in that wages can be kept low, in exchange for “benefits” such as flexible hours and location. Further, Kahn (1991) has found where there are more employer choices, there are fewer injuries. CNA work is viewed as “dirty work” by our society, services provided by an almost invisible care giver within a stigmatized role and within a predominantly for-profit environment. The worker may stay in the job due to their love of the work itself.

There are key areas to consider when examining CNA turnover. These include pay and benefits, supervisory/management practices, scheduling, training, safety, workload/staffing, recognition for their input in care and overall working conditions and will be used as potential predictors for examining intent to leave and injuries.

The issue of retention of this worker is a serious concern. Questions arise about the contribution of their high injury rate contributes to intent to leave the job, how their training affects their injury rate, and/or whether the training they receive directly influences retention. Few researchers have studied CNA injury rates, training, and job retention and the relationships among these variables and this is the goal of my research.

There is a need for further data on nursing assistant injuries within the nursing home setting and specifically those related to patient aggression. There is also a gap in our knowledge about the relationship between the work environment and these assaults and whether work injuries increase the likelihood of CNAs leaving their jobs. This study will examine all of these questions as well as the effect of training on work injuries overall, and those incurred by patient aggression. There is a paucity, if any research, examining these questions.
CNAs high injury rate, third among all workers, is of particular interest. The researcher will examine whether injury rate and type of injury are related to a nursing assistant’s intent to leave the job. Hospital nurses are more likely to leave their positions if injured secondary to musculoskeletal injuries (Brewer, et al, 2012). This was the only study which supported increased turnover related to work injury and, unfortunately, was of nurses not nursing assistants. This researcher hypothesizes CNAs will have greater odds of intention to leave their jobs if they have sustained work injuries.

Quality training specific to injury prevention (D’Arcy, Sasai & Stearns, 2012) has been shown to decrease CNA injury rates. There is not enough time to cover adequate injury prevention as well as all that is needed to care for patients within 75 hours of initial training. Twenty states still only require 75 hours of training since the OBRA 1987 mandate. Only five states have increased training to 150-180 hours (PHI, 2009).

The National Nursing Assistant Survey offers an opportunity to examine a national sample of nursing assistants and their intention to leave their positions within the year. It includes data related to workplace injuries and their etiologies, and provides a clearer picture of the training CNAs have received.

The present economic environment will challenge policy makers involved in transforming long-term care. The majority of nursing facilities today are proprietary, operating frequently in chains with set wages and meager benefits, hiring these direct service providers below poverty income, at an average $23,150 per year (BLS, 2010). It is not surprising to see this high turnover within this monopsonic environment and in a job viewed as “dirty work” and stigmatized by society. Ignoring indirect costs and the overall impact of high turnover can no longer be tolerated and all should be concerned. U.S. citizens are footing the tab. Further, nearly
half of us living into the seventh decade will be patients in these settings (Walker, 2002), cared
for by those not acknowledged by society. The following chapter will present the research
design and methods. The variables were selected based on this literature review.
CHAPTER 3
RESEARCH DESIGN AND METHODS

Introduction

The questions for this study examining the turnover, injuries and training of certified nursing assistants employed in U.S. nursing homes are:

1. What is the rate and nature of work-related injuries for nursing assistants working in nursing homes in the U.S.?
2. What is the relationship between the CNA’s work environment and incidence of patient assaults?
3. What is the relationship between work-related injuries and intent to leave the job?
4. What is the relationship between CNA rating of initial training to prevent work injuries on the incidence of work related injuries?
5. What is the relationship between CNA rating of initial training specific to the care of patients with aggressive behavior on the incidence of injury related to assaults?

This research project is based on a secondary analysis of publicly available data collected as part of the 2004 National Nursing Assistant Survey (NNAS), a nationally representative sample of certified nursing assistants (CNAs) employed in U.S. nursing homes. This sample offers a robust data set, sampling 3,014 CNAs across the country, to study the problem of CNA retention, their work related injuries, and training. For the analysis, the relationships between training and injuries and injuries and intent to leave the job were explored. Question 1 was a descriptive analysis of the dataset and questions 2 through five required analytical analyses.
The 2004 National Nursing Home Survey was the seventh since 1973 of national nursing homes certified by Medicare and/or Medicaid or licensed by the state as a nursing facility with the inauguration of the NNAS as a supplement. The NNAS is the first national survey of certified nursing assistants employed in nursing facilities and its data have been used by a number of researchers and policy makers studying certified nursing assistants and their work environments (Adams, 2010; Bishop, Squillace, Meagher, Anderson, & Weiner, 2009; Sloane, Williams & Zimmerman, 2010; Temple, Dobbs & Ross, 2011). The impetus for the survey came from growing concern about the high turnover of nursing assistants employed in our nation’s nursing facilities and was sponsored by the Assistant Secretary for Planning and Evaluation in the Office of Disability, Aging, and Long-Term Care Policy (Squillace, 2007). In this survey, investigators contacted a national sample of 3,017 nursing assistants by telephone. The primary goal for the NNAS was to understand the issues impacting recruitment and retention of this key healthcare provider to help inform evidenced-based policy decisions. Survey questions were developed to provide data regarding demographics, family life, education/training, as well as work life for researchers interested in studying this workforce from a holistic perspective. For this research, data were extracted from the NNAS related to CNAs’ demographics, intent to leave their jobs, reasons for consideration of leaving, incidence/etiology of work injury, and CNA training.

**Sample design**

For the NNAS, the researchers used a stratified, multi-stage sampling design. They sampled nursing homes and then sampled certified nursing assistants within the facilities. Study participants selected for the survey were required to be nursing assistants who were paid nursing home employees and responsible for direct patient care. The CNAs had to be certified prior to
1987, when mandatory certification was initiated. They were also required to speak English or Spanish and work at least 16 hours/week within the sampled facility.

Investigators for the NNHS used a sampling frame of U.S. nursing homes provided by the Centers for Medicare and Medicaid (CMS) and state nursing home licensing records. The final sampling frame included a total of 16,628 facilities. Homes were stratified based on bed size category and whether they were metropolitan, a small city, or neither. They were then further stratified by certification status, ownership, whether hospital or non-hospital based, as well as by geographic region, state, county, and ZIP code. Investigators then chose facilities to include by systematic random sampling with probability of selection proportional to bed size. Once the investigators had chosen 1500 homes, they selected a random sub-sample of 790 homes for the NNAS supplement.

During the interview for the NNHS, each facility provided a list of eight nursing assistants meeting the criteria mentioned earlier and this information was collected during the NNHS onsite interview. The list of CNAs was then split into those employed for less than a year and all nursing assistants employed for one year or more as of midnight the day before. Out of the 790 facilities, 21 were not eligible, 164 did not participate in the NNHS, and 23 decided not to participate in the NNAS. From the remaining 582 homes, interviewers contacted a sample of 4,542 nursing assistants. Among the 4,274 assistants selected to participate in the study, a national sample of 3,017 completed a phone interview, yielding a final response rate of seventy percent.
Instrumentation

The survey instrument was developed under the auspices of the Assistant Secretary for Planning and Evaluation with the expertise of an advisory panel of stakeholders as well as representatives from the Occupational Health and Safety Administration, the National Institute for Occupational Safety and Health, and the Centers for Medicare and Medicaid. The survey consisted of eleven domains that included: education/training/licensure (19 items); job history (17 items); family life (17 items); management/supervision (10 items); client relations (8 items); organizational commitment/job satisfaction (14 items); workplace environment (8 items); work related injuries (14 items); and demographics (10 items). (see Table 3.1) An eleventh section was designed by the study team to query CNAs who had left their facilities when contacted to participate (U.S. Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation, NNAS, 2004).
Table 3.1: Key Subject Area Covered by the NNAS Questionnaire

<table>
<thead>
<tr>
<th>Subject Area</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Screening</td>
<td>CNA screening for inclusion in study</td>
</tr>
<tr>
<td>B. Recruitment</td>
<td>How CNA found out about the job</td>
</tr>
<tr>
<td></td>
<td>Reasons for working in field, source of job</td>
</tr>
<tr>
<td>C. Education, Training, Licensure</td>
<td>Circumstances of training, nature of initial training, continuing ed, on the job training</td>
</tr>
<tr>
<td>D. Job History</td>
<td>Current and previous jobs, current job benefits</td>
</tr>
<tr>
<td>E. Family Life</td>
<td>Transportation, family size and make-up</td>
</tr>
<tr>
<td></td>
<td>Family care needs, public assistance</td>
</tr>
<tr>
<td>F. Management/Supervision</td>
<td>Job title of supervisor, quality of supervision</td>
</tr>
<tr>
<td>G. Client relations</td>
<td>Distribution of work time, acknowledgement of work</td>
</tr>
<tr>
<td>H. Organizational Commitment, Job Satisfaction</td>
<td>Reasons for continuing job, opportunity to perform different types of work, satisfaction, problems on the job, future prospects in the field</td>
</tr>
<tr>
<td>I. Workplace Environment</td>
<td>Attitude toward management/supervision, cooperation among workers, job related problems</td>
</tr>
<tr>
<td>J. Work Related Injuries</td>
<td>Nature of injuries, needle sticks, facility prevention</td>
</tr>
<tr>
<td>K. Demographics</td>
<td>Age, race, marital status, income, education, citizenship status, language, gender</td>
</tr>
<tr>
<td>L. Facility Leavers</td>
<td>Why separated, current work arrangements, likelihood of working again, likelihood of recommending facility to family/friend</td>
</tr>
</tbody>
</table>

The eight CNAs selected from each nursing home received packets distributed by the facility. These packets included details about the study and a $5.00 initial incentive with instructions that each participant would receive a $30.00 check after participating in the phone interview. The informational packet emphasized that the survey was confidential and voluntary. CNAs were instructed to either call a toll free number or to return a prepaid postcard if they wished to participate. Anonymity and confidentiality were assured and consent to participate was read as part of the introduction for the phone interview. The survey was approved by the National Center for Health Statistics’ institutional review board.

The investigators’ intent was to provide national estimates of the certified nursing assistant population employed in nursing homes using a nationally representative probability sample. The standard errors are typically increased in a multistage design, since the participants
are not drawn from a simple random sample. A sampling error computation model is needed including stratum and cluster variables, as well as a weight variable in order that variances are calculated correctly. Weights are computed for the sample in order to reach unbiased population estimates (West, 2008).  

**Variables Utilized**

The demographic data were initially examined to give an overview of this worker’s backgrounds and for use later in the analysis. Weighted frequencies, means, and standard deviations for the following variables were calculated: age, education and household income. Categorical demographic data included in the demographic description were gender, race, marital status, and immigrant status.

A descriptive analysis of rate of injury and injury etiology was performed for the first research question: What are the rates and nature of work related injuries for nursing assistants working in nursing homes in the U.S.?

The variables displayed in Table 3.2 below were examined using descriptive statistics to analyze work injuries sustained by nursing assistants, including the type of injury, frequency, etiology and severity. The severity of the injury was indicated by calculating the number of days out of work, as well as whether the CNAs were placed on restricted duty.

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2 All of the demographic data were analyzed using the applicable survey weight calculated using the following components; inverse of the probability of selecting a nursing assistant; adjustment for non response; and ratio adjustment and smoothing (DHHS, 2006).
Table 3.2: CNA Work-Related Injuries

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>Level of measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injury types</td>
<td>“Since you started your job at have you had any of the following?” Options: “back injuries, other strains, human bites, scratches/open wounds/cuts, black eyes or other bruising, other injuries” Y/N</td>
<td>Categorical</td>
</tr>
<tr>
<td>Rate of injury</td>
<td>“Since you started your job, how many different times were you hurt or injured while working at this facility?”</td>
<td>Interval</td>
</tr>
<tr>
<td>Incidence of injury</td>
<td>Ever injured Y/N</td>
<td>Categorical</td>
</tr>
<tr>
<td>Etiology of injury</td>
<td>How did this injury happen?” 1. lifting, repositioning, bathing or handling patients; 2. slips, trips, falls; 3. aggression, violence, abuse by resident(s) Y/N</td>
<td>Categorical</td>
</tr>
<tr>
<td>Presumed severity-days out of work</td>
<td>“In total, how many days were you unable to work because of the injuries?”</td>
<td>Interval</td>
</tr>
<tr>
<td>Presumed severity-restricted duty or other job?</td>
<td>“Because of the injuries, were you given restricted duties or a different job?” Y/N</td>
<td>Categorical</td>
</tr>
<tr>
<td>Presumed Severity-days given restricted duty or different job</td>
<td>“In total, how many days were you given restricted duties or a different job?”</td>
<td>Interval</td>
</tr>
</tbody>
</table>

Research question two, “What is the relationship between the CNA’s work environment and incidence of patient assaults?” required analysis of the dichotomous dependent variable, “injury by aggression, violence or abuse by a resident,” and work environment variables shown to have an influence on worker injuries. An environment which is supportive of the work of the nursing assistant was hypothesized to be related to decreased incidence of assault injuries.

The work environment predictor variables are described in Table 3.3 and included those in the literature found to be related to nursing assistant work-related injury from patient aggression and
support of the CNA in the work environment (Gates, Fitzwater & Meyer, 2009; Lee et al., 2011; Morgan, 2008; Trinkoff et al., 2005). The predictor model was the following:

\[
\text{Log odds assault injury} = e^{Bo + B1 \text{suplistens} + B2 \text{suprespect} + B3 \text{independence} + B4 \text{new skills} + B5 \text{ask CNAs} + B6 \text{ask staff} + B7 \text{enough time} + B8 \text{supervisor respect} + B9 \text{caring for same residents}}
\]

Table 3.3: CNA Work Environment Independent Variables

<table>
<thead>
<tr>
<th>Question</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>“My supervisor listens to me when I am concerned about a resident’s care”</td>
<td>4 point Likert Ordinal</td>
</tr>
<tr>
<td>“I am appropriately respected or rewarded by the facility for my work.”</td>
<td>4 point Likert Ordinal</td>
</tr>
<tr>
<td>“I can decide on my own how to go about doing my work.”</td>
<td>4 point Likert Ordinal</td>
</tr>
<tr>
<td>“I have a chance to gain new skills and knowledge on the job.”</td>
<td>4 point Likert Ordinal</td>
</tr>
<tr>
<td>“How often do you ask other CNAs for help with problems that relate to your job?”</td>
<td>4 point Likert Ordinal</td>
</tr>
<tr>
<td>“How often do you ask other employees, besides CNAs, for help with problems that relate to your job?”</td>
<td>4 point Likert Ordinal</td>
</tr>
<tr>
<td>“Time to do the job”</td>
<td>3 point Likert Ordinal</td>
</tr>
<tr>
<td>“To what degree do you feel your supervisor respects you as part of the health care team?”</td>
<td>3 point Likert Ordinal</td>
</tr>
<tr>
<td>“Caring for the same residents”</td>
<td>3 point Likert Ordinal</td>
</tr>
</tbody>
</table>

Research question three, “What is the relationship between work-related injuries and intent to leave the job?” is comprised of the dependent variable “intent to leave the job” which was collapsed to construct a dichotomous variable, “very/somewhat likely” versus “not likely at
The variable was collapsed to examine whether the CNAs had any intent to leave versus no intention to leave related to specific work-related injuries.

The literature gave insight into the variables to consider in looking at CNA injuries and the possible relationship to turnover. Gates et al. (2002), using a smaller and less nationally representative sample, found older CNAs less likely to be injured at work. Squillace et al. (2008) used the NNAS to examine certified nursing assistant demographic data and their intent to leave their jobs and found those more likely to leave to be younger, were single and were non citizens. In a study linking the National Nursing Home Survey and NNAS, Tak et al. (2010) found non-Hispanic whites to report higher injury rates and older CNAs to report fewer injuries. Whether those with higher injury rates were more likely to leave was a key research question for this study.

The NNAS survey does not solicit immigrant status and is important to include in the demographic analysis for my study. Therefore, citizenship status was extracted by combined responses from the following questions to create an “immigrant” variable: “Are you a citizen of the U.S.?” Those answering “yes” were then asked, ”Were you born a citizen of the U.S.? or “Did you become a citizen by naturalization?” The groups created included U.S. born citizens, naturalized citizens, and non-citizens. The naturalized citizens and the non-citizens were combined to configure the new “immigrant” variable. This is consistent with Sloane’s (2010) use of the NNAS data to study CNA turnover in the immigrant population. Immigrant status will also be examined in the analysis of CNA retention and injury rates. The independent variables in Table 3.4 were considered important to consider in analyzing this question based on a thorough review of the literature. Race and immigrant status were included as variables in the regressions based on the literature findings.
Table 3.4: CNA Independent Variables for Injuries and Intent to Leave the Job

<table>
<thead>
<tr>
<th>Question</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>During the past 12 months how many times injured?</td>
<td>Interval Collapsed to ordinal</td>
</tr>
<tr>
<td>Age M=38.5 (SD 12.6)</td>
<td>Continuous-interval Collapsed to ordinal</td>
</tr>
<tr>
<td>Immigrant status (20.2% immigrant status)</td>
<td>Categorical (Y/N)</td>
</tr>
<tr>
<td>Race (53.4% White, 38.7% Black, 3.8 Asian, 4.1% Other)</td>
<td>4 categorical choices White/Black/Asian/Other</td>
</tr>
<tr>
<td>Marital status (51% married or living with partner)</td>
<td>Categorical Collapsed new variable</td>
</tr>
<tr>
<td>Are you satisfied with the salary/wages?</td>
<td>Likert - 4 levels Ordinal</td>
</tr>
<tr>
<td>Are you satisfied with the benefits?</td>
<td>Likert - 4 levels Ordinal</td>
</tr>
<tr>
<td>Respected by supervisor as part of team</td>
<td>3 levels Ordinal Collapsed to 2</td>
</tr>
<tr>
<td>How satisfied is CNA with job?</td>
<td>Likert - 4 levels Ordinal</td>
</tr>
</tbody>
</table>

Research question four, “What are the effects of training on the incidence of work injuries was examined by collapsing the number of injuries into whether the CNA had ever been injured at work, a dichotomous “Yes/No” response. For this study, this researcher was interested in the effect of training on the incidence of injury and so the independent variables included the CNAs’ perceptions of how good their initial training covered injury prevention. Other independent variables included in the analysis were those found to be linked to work-related injuries from the literature findings including age, race, mandatory overtime, length of time as a CNA, caring for the same patients, immigrant status, time to provide care, working on a team and asking other CNAs and staff for help and use of lifting devices (see Table 3.5). The model for predicting work injuries was the following:

$$\text{Log odds work injury} = e^{b_0 + b_1 \text{training} + b_2 \text{age} + b_3 \text{immigrant} + b_4 \text{time as CNA} + b_5 \text{race} + b_6 \text{OT} + b_7 \text{same pts} + b_8 \text{teams} + b_9 \text{ask CNAs} + b_{10} \text{ask staff} + b_{11} \text{lift use} + b_{12} \text{time for care}}$$
Table 3.5: CNA Independent Variables for Training on Incidence of Work-Related Injuries

<table>
<thead>
<tr>
<th>Question</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>How well did initial training prepare CNA to prevent work injuries</td>
<td>4 point Likert Ordinal</td>
</tr>
<tr>
<td>Age</td>
<td>Interval Collapsed to Ordinal</td>
</tr>
<tr>
<td>Immigrant status</td>
<td>Categorical (Y/N)</td>
</tr>
<tr>
<td>Time worked as a CNA</td>
<td>7 scales Ordinal</td>
</tr>
<tr>
<td>Race</td>
<td>4 categorical choices</td>
</tr>
<tr>
<td># of times in past month required to work mandatory overtime</td>
<td>4 point Likert Ordinal</td>
</tr>
<tr>
<td>Time to provide care</td>
<td>3 point Likert Ordinal</td>
</tr>
<tr>
<td>Are you assigned to care for the same patients?</td>
<td>3 point categorical</td>
</tr>
<tr>
<td>Opportunity to work in teams</td>
<td>4 point Likert Ordinal</td>
</tr>
<tr>
<td>How often asks other CNAs for help</td>
<td>4 point Likert Ordinal</td>
</tr>
<tr>
<td>How often asks other employees (besides CNAs) for help</td>
<td>4 point Likert Ordinal</td>
</tr>
<tr>
<td>How often does CNA use lifting devices?</td>
<td>3 point Likert Ordinal</td>
</tr>
</tbody>
</table>

The fifth research question, “What are the effects of training specific to the care of patients with aggressive behavior on the incidence of injury related to patient assaults?” includes a dichotomous independent variable, which is the response to whether the injury occurred due to “aggression/violence/abuse by resident(s).” All of the independent variables included in question four will be used except the CNAs’ perception of how good their initial training covered injury prevention. This will be replaced with their perception of how good their initial
training prepared them to work with residents who act out or are abusive. The variables used in the regression were obtained from the literature review.

All of the dependent variables were dichotomous in research questions two through five. Logistic regression was selected to model the relationship between these dependent variables and the set of covariates described for each of the last four research questions. The dichotomous variable is not fitted to a linear regression model since it not a normal distribution. In linear regression, the least squares method is used for estimating unknown parameters. In logistic regression, the likelihood equations are not linear and so it is an iterative process to fit the model with ongoing evaluations of the variables (Hosmer & Lemeshow, 1989).

Logistic regression is used to model the odds of injury and to estimate the impact of each independent variable on these odds (O’Connell, 2002, Menard, 2010). Variables were added one at a time and assessed for statistical significance and confounding. Variables were kept in the regression model if they were independent predictors of the outcome (p < 0.05) or if there was evidence of confounding by that variable (changing the beta coefficient > 10 percent) but were excluded if there was evidence of multicollinearity. Multicollinearity exists when two or more predictors are highly correlated. The variance inflation factor (VIF) helps to determine the amount by which the standard error and variance are inflated when assessing variables suspected of collinearity. (online.stats.psu.edu/online/development). There were no variables excluded due to high (> 10) variance inflation factors.

The model specification for predicting intent to leave was the following:

\[
\text{Log odds “intent to leave”} = \frac{e^{b0 + b1 \text{everinjured} + b2 \text{age} + b3 \text{immigrant} + b4 \text{race} + b5 \text{marital status} + b6 \text{pay satisfaction} + b7 \text{job satisfaction} + b8 \text{benefit satisfaction} + b9 \text{supervisor respect}}{1}
\]
The goal of this study was to examine nursing assistants’ intent to leave their jobs as well as their injury rates and training. A descriptive analysis of key variables of interest used as predictors in the logistic regression analyses will be presented initially. A descriptive analysis of demographic and socioeconomic variables from the NNAS survey data is presented next, not to answer research questions, but to better understand who is employed as a CNA in our nation’s nursing homes. A descriptive analysis of variables specific to the rate and nature of nursing assistant injuries is provided in answering research question one. Logistic regression results follow in examining research questions two through five.

Demographic factors of interest in the regressions included age, race, marital and immigrant status and whether they would be associated with intent to leave as well as with workplace injury. The researcher was also interested in the relationship between age, race and immigrant status on overall injury rates and injuries related to patient aggression. The descriptive analyses of the demographic variables utilized are described here.

The NNAS sample is representative of the population of CNAs employed in our nation’s nursing homes. These workers are female, poor, educated at the high school level or below and managing family caregiver responsibilities along with work responsibilities. Nationally, certified nursing assistants employed in nursing homes had an average age of 38.5 (Table 1). However, there were (19 %) age fifty or older. Forty percent of these workers were married and eleven percent lived with a partner. Almost fifty percent were single; either separated, divorced, widowed or never married. Racial composition included 53.4 percent White, 38.7 percent Black,
3.8 percent Asian and the remaining “other.” Nine percent of CNAs queried identified themselves as Hispanic.

The following variables were not utilized in the analyses but are presented to offer a better understanding of this worker to inform future policy recommendations. Eighty-seven percent of CNAs indicated they had total yearly household incomes less than $40,000. Thirteen percent of CNAs did not have a high school education. Sixty-eight percent of CNAs earned a formal high school degree while another 18 percent earned a GED. Four percent had a college degree (Table 4.1). Fifty-nine percent of CNAs had children living in their household; fifty percent of these children required childcare while the CNA worked. Fifteen percent of CNAs were also caring for a friend or family member with a disability or health problem.
Table 4.1: Nursing Home Certified Nursing Assistant Demographics

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Percent</th>
<th>Education*</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-19</td>
<td>105</td>
<td>3.5</td>
<td>Ninth grade or less</td>
<td>239</td>
<td>4.5</td>
</tr>
<tr>
<td>20-24</td>
<td>412</td>
<td>13.6</td>
<td>H.S. diploma</td>
<td>2058</td>
<td>68.7</td>
</tr>
<tr>
<td>25-34</td>
<td>726</td>
<td>24.1</td>
<td>GED</td>
<td>549</td>
<td>18.3</td>
</tr>
<tr>
<td>35-44</td>
<td>738</td>
<td>24.5</td>
<td>Neither</td>
<td>390</td>
<td>13.0</td>
</tr>
<tr>
<td>45-54</td>
<td>664</td>
<td>22.0</td>
<td>College graduate</td>
<td>128</td>
<td>4.2</td>
</tr>
<tr>
<td>55-59</td>
<td>194</td>
<td>6.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60-64</td>
<td>101</td>
<td>3.4</td>
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<tr>
<td>65+</td>
<td>75</td>
<td>2.5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender*</th>
<th>Marital Status</th>
<th>Frequency</th>
<th>Percent</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>Married</td>
<td>2775</td>
<td>92.0</td>
<td>1205</td>
<td>40.2</td>
</tr>
<tr>
<td>Male</td>
<td>Living with partner</td>
<td>242</td>
<td>8.0</td>
<td>325</td>
<td>10.8</td>
</tr>
<tr>
<td></td>
<td>Separated</td>
<td>167</td>
<td>5.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Widowed</td>
<td>128</td>
<td>4.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Never married</td>
<td>797</td>
<td>26.6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ethnicity*</th>
<th>Total CNA Household Income*</th>
<th>Frequency</th>
<th>Percent</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hispanic</td>
<td>Less than $10,000</td>
<td>280</td>
<td>9.4</td>
<td>300</td>
<td>10.4</td>
</tr>
<tr>
<td>Non-Hispanic</td>
<td>$10,000 &lt; $20,000</td>
<td>2711</td>
<td>90.6</td>
<td>$10,000 &lt; $20,000</td>
<td>805</td>
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<tr>
<td></td>
<td>$20,000 &lt; $30,000</td>
<td></td>
<td></td>
<td>$20,000 &lt; $30,000</td>
<td>808</td>
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<tr>
<td></td>
<td>$30,000 &lt; $40,000</td>
<td></td>
<td></td>
<td>$30,000 &lt; $40,000</td>
<td>411</td>
</tr>
<tr>
<td></td>
<td>$40,000 &lt; $50,000</td>
<td></td>
<td></td>
<td>$40,000 &lt; $50,000</td>
<td>282</td>
</tr>
<tr>
<td></td>
<td>$50,000 &lt; $60,000</td>
<td></td>
<td></td>
<td>$50,000 &lt; $60,000</td>
<td>137</td>
</tr>
<tr>
<td></td>
<td>$60,000 &lt; $70,000</td>
<td></td>
<td></td>
<td>$60,000 &lt; $70,000</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>$70,000 &lt; $80,000</td>
<td></td>
<td></td>
<td>$70,000 &lt; $80,000</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>$80,000 or more</td>
<td></td>
<td></td>
<td>$80,000 or more</td>
<td>55</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Race</th>
<th>Citizen Status</th>
<th>Frequency</th>
<th>Percent</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>US Citizen</td>
<td>1612</td>
<td>53.4</td>
<td>2640</td>
<td>90.9</td>
</tr>
<tr>
<td>Black</td>
<td>Non US citizen</td>
<td>1166</td>
<td>38.7</td>
<td>265</td>
<td>9.1</td>
</tr>
<tr>
<td>Asian</td>
<td></td>
<td>114</td>
<td>3.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>125</td>
<td>4.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* These variables were not used in the regression analyses but are presented here for an overview of this worker.

The researcher hypothesized that age, immigrant status and race would increase likelihood of injury and intent to leave based on prior study findings. Older CNAs in prior studies stayed longer in the job and immigrants were more likely to leave. Those in a relationship (marital status) were hypothesized to have increased likelihood of staying in their positions since they might be less likely to change positions due to family obligations. CNAs that
changed jobs made 10 percent less (Rosen, Stiehl, Mittal and Leana (2011) after leaving their position which would be a consideration for anyone, but perhaps more of a consideration for those with a family. Marital status is an important variable in examining intent to leave since prior research has found those married have less job turnover (Ahituv & Lerman, 2011).

**Immigration status**

Data from the 2004 NNAS revealed that immigrants comprised twenty percent of the certified nursing assistant workforce, with a larger percent of male CNAs (14%) as compared to the U.S. born CNA cohort (8%). Thus, the CNA workforce is disproportionately comprised of immigrants, since they were 14.5 percent of the entire U.S. labor force in 2004 (Congessional Budget Office, 2010).

There is little research examining immigrant nursing assistants. Prior studies, using the NNAS, found they were more likely to leave the job as compared to non-immigrants (Sloane, 2010). Those who immigrated tended to have slightly higher household incomes than US born CNAs; 23 percent and 20 percent respectively had yearly household incomes over $40,000. (p = 0.011) The immigrant group was older than those born in the U.S. Twenty-nine percent of immigrant CNAs were in their thirties as compared to 22 percent of the U.S. born, thirty-one percent in their forties as compared to twenty-four percent of the U.S. born and seventeen percent in the fifties as compared to fifteen percent U.S. born (p=0.000).

**Workplace environment and race**

Minorities comprise 47 percent of the CNA workforce. Of note, in 2005, nearly 85 percent of nursing home residents were Caucasian (CMS, 2010). Whether there were racial differences in turnover rates was important to this study and for future research since several studies describe minority CNA experiences of racial discrimination from elderly patients,
especially from those with dementia (Berdes & Eckhart, 2001; Jonson, 2007; Ryosho, 2011). CNAs could be more likely to leave their jobs due to racial discrimination and possible be more at risk for injuries from cognitively impaired patients. Further, there were racial differences in how respected CNAs felt by their supervisors, patients and their families. Seventy-seven percent of white CNAs reported they were highly respected by their patients as compared to 65 percent of Black and 64 percent of Asian CNAs. White CNAs perceived more respect by families (66%) than Asian CNAs (63%). Black CNAs felt least respected with 55 percent stating they felt highly respected by families. The majority of Asian CNAs felt highly respected by their supervisors (71%) as compared to Black and White CNAs (58%). Surprisingly, only 7 percent of CNAs reported having experienced discrimination over the past year. Thirty-six percent of minorities report workplace racial discrimination (Reitz & Banerjee, 2007).

This researcher also hypothesized that minorities could be injured more often due to the potential for increased patient aggression due to prejudice from confused patients and thus have more likelihood of intent to leave the job, so race was included as a potential predictor in the analyses. Furthermore, nursing homes serving primarily minority patients receive more serious deficiencies, have poorer staffing and are more at risk for termination from Medicare and Medicaid funding than those caring for non-minorities (Smith, et al., 2007), potentially increasing CNA risk for injury due to decreased staffing.

**Motivation to be a CNA**

CNAs overwhelming stated that they went into the profession to help others (95%). They wanted to work close to home (52%) and have flexible hours (60%). Nearly 58 percent indicated that they had gone into the profession since the position was easy to enter. There was no further clarification of this response, but it would seem that entry into the job wasn’t difficult. Of note,
ninety-eight percent of CNAs believed their role was very important; yet only forty-two percent perceived the public as rating their work as highly valued.

**Research questions**

Five research questions were examined using these data (as listed in Chapter 3). The results of the data analyses are presented under each research question.

Question 1: What is the rate and nature of work-related injuries for CNAs working in U.S. nursing homes?

Descriptive analysis reveals that 58 percent of CNAs reported a work-related injury over the past year; despite the fact that ninety-two percent of CNAs indicated they had been provided with worksite training to prevent injuries (Table 4.2). Nearly six percent reported ten or more injuries over the past year. The majority of these injuries were scratches and open wounds (45%). The high incidence of musculoskeletal trauma was consistent with the literature. Nearly eighteen percent of those injured reported back injuries and another 15 percent, strains and other muscular injuries. Injury related to human bites constituted nearly twelve percent of work-related injuries. Bruises and “black eyes” were responsible for 16 percent of the injuries and “other causes” responsible for five percent. The majority of injuries were caused by patient aggression (59.4%). The second cause of work related injury was anticipated, the lifting and handling of patients (51.4%).
Table 4.2: CNA Work-Related Injuries

<table>
<thead>
<tr>
<th>Injury Type</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Back</td>
<td>507</td>
<td>17.5</td>
</tr>
<tr>
<td>Strains/pulled muscles</td>
<td>457</td>
<td>15.2</td>
</tr>
<tr>
<td>Scratches, open wounds, cuts</td>
<td>334</td>
<td>11.5</td>
</tr>
<tr>
<td>Human bites</td>
<td>346</td>
<td>12.0</td>
</tr>
<tr>
<td>Black eyes, other bruising</td>
<td>470</td>
<td>16.2</td>
</tr>
<tr>
<td>“Other” injuries</td>
<td>209</td>
<td>7.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of Injuries</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1195</td>
<td>42.1</td>
</tr>
<tr>
<td>1</td>
<td>584</td>
<td>20.6</td>
</tr>
<tr>
<td>2</td>
<td>374</td>
<td>13.2</td>
</tr>
<tr>
<td>3</td>
<td>202</td>
<td>7.1</td>
</tr>
<tr>
<td>4</td>
<td>133</td>
<td>4.7</td>
</tr>
<tr>
<td>5</td>
<td>107</td>
<td>3.8</td>
</tr>
<tr>
<td>6</td>
<td>44</td>
<td>1.5</td>
</tr>
<tr>
<td>7</td>
<td>19</td>
<td>0.7</td>
</tr>
<tr>
<td>8</td>
<td>17</td>
<td>0.6</td>
</tr>
<tr>
<td>9</td>
<td>3</td>
<td>0.1</td>
</tr>
<tr>
<td>10 or more</td>
<td>39</td>
<td>5.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Injury Etiologies</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Lifting, bathing</td>
<td>874</td>
<td>51.4</td>
</tr>
<tr>
<td>Slips, trips, falls</td>
<td>82</td>
<td>4.8</td>
</tr>
<tr>
<td>Resident aggression</td>
<td>1010</td>
<td>59.4</td>
</tr>
<tr>
<td>Black eyes, other bruising</td>
<td>186</td>
<td>11.0</td>
</tr>
<tr>
<td>“Other” injuries</td>
<td>88</td>
<td>5.2</td>
</tr>
</tbody>
</table>

Nearly seventy-six percent were out of work less than one day due to their injuries; nine percent were out seven days or more (Table 4.3). Nearly sixteen percent of injured nursing assistants were given other jobs after sustaining a work-related injury while recovering.

At first glance, it would seem as though the majority of injuries were minor. However, of those CNAs given lighter duty, 9 percent were on lighter duty for ten days, 18 percent were given fourteen days, 10 percent were given thirty days and 6 percent ninety days. Thirty-four percent of those given lighter duty were injured enough to need two or more weeks of a change in their job responsibilities. These statistics highlight the severity of the injuries. The high
number of CNAs out of work could, in fact, put the remaining CNAs left on the units at risk for injury secondary to increased workloads. Nine percent of CNAs with apparently more severe injury are out of work six days or more.

The data confirm that CNAs have the third highest injury rate of any worker nationally (BLS, 2010). As anticipated, injuries related to musculoskeletal injury and patient aggression were also higher than other injuries.

Table 4.3: Total Days Out of Work

<table>
<thead>
<tr>
<th>Days Out of Work</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1 day</td>
<td>1290</td>
<td>75.8</td>
</tr>
<tr>
<td>1</td>
<td>79</td>
<td>4.6</td>
</tr>
<tr>
<td>2</td>
<td>67</td>
<td>3.9</td>
</tr>
<tr>
<td>3</td>
<td>59</td>
<td>3.5</td>
</tr>
<tr>
<td>4</td>
<td>21</td>
<td>1.2</td>
</tr>
<tr>
<td>5</td>
<td>29</td>
<td>1.7</td>
</tr>
<tr>
<td>6 or more</td>
<td>156</td>
<td>9.2</td>
</tr>
</tbody>
</table>

Based on the literature review, immigrant status as well as race was important to consider in analyzing CNA work injury data. Immigrants were less likely to be injured than U.S. born nursing assistants. Nearly 51 percent of immigrants indicated they had been free of work-related injury over the past year as compared to forty percent of non-immigrants. Sixty-percent of White nursing assistants indicated they had been injured at work as compared to 47 percent of Black and 48 percent of Asian CNAs. These findings were significant (p=.000). It is unclear why white nursing assistants reported more injuries. These findings indicate that minority CNAs did not report more injuries than White nursing assistants.

In examining injury rates, eighty-seven percent of CNAs responded that lifting devices were always available when needed and nearly 99 percent of CNAs stated they had received training on their use. However, only 60 percent indicated that they always used this equipment.
Factors involved could be that it takes more time to use the equipment and the equipment may not be easily accessible to the CNA. The CNA in the short training period may not take in injury prevention education, concentrating only on skills to perform the job efficiently.

Question 2: What is the relationship between the CNA’s work environment and frequency of patient assaults?

Nine survey variables were identified as the “work environment” and represented concepts such as supervisor and organizational commitment to respect, autonomy, growth, teamwork, communication and time to do the job. These variables were utilized in the regression to predict patient assaults. These variables were selected since they were hypothesized to be related to CNA injuries from patient aggression. An environment which is supportive of the work of the nursing assistant was hypothesized to be related to decreased incidence of assault injuries.

Descriptive analysis of the variables of interest revealed that only 21 percent of CNAs reported that they frequently asked other CNAs for help, and only 10 percent asked other employees for help. CNA perception of respect from their supervisors and the organization was also examined. The majority answered that they felt respected by their supervisors as a member of the healthcare team (58%) but fewer felt respected by the organization (37%). Only a little over a third of nursing assistants responded that their institution respected them as member of the team. This study did not ask why they perceived this lack of respect, which would be best researched in a qualitative study.

A multivariate analysis using logistic regression was conducted to select those variables predictive of patient assaults, taking into account a number of potential variables hypothesized to be related to the incidence of CNA injuries due to patient aggression. Supervisor respect for the
important role nursing assistants play on the team was the only variable significant in the model (p=.023).

Supervisor willingness to listen to the CNA’s concerns, organizational respect for the work of the CNA, as well as an ability to learn new skills, make their own decisions about care, time to do the work, continuity of patient assignments and asking others for help were not significant in a model predicting frequency of patient assaults against CNAs.

Table 4.5: Relationship Between CNA Work Environment and Patient Assaults

<table>
<thead>
<tr>
<th>Work Environment</th>
<th>Model A</th>
<th>Model B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Exp(b)</td>
</tr>
<tr>
<td>Supervisor respect</td>
<td>-0.272</td>
<td>0.762</td>
</tr>
<tr>
<td>Facility respect</td>
<td>0.032</td>
<td>1.032</td>
</tr>
<tr>
<td>Supervisor listens</td>
<td>-0.060</td>
<td>0.942</td>
</tr>
<tr>
<td>Asks other staff for help</td>
<td>0.061</td>
<td>1.063</td>
</tr>
<tr>
<td>Asks other CNAs for help</td>
<td>-0.016</td>
<td>0.984</td>
</tr>
<tr>
<td>Independence</td>
<td>-0.012</td>
<td>0.988</td>
</tr>
<tr>
<td>New skills</td>
<td>-0.062</td>
<td>0.940</td>
</tr>
<tr>
<td>Same assigned patients</td>
<td>0.064</td>
<td>1.066</td>
</tr>
</tbody>
</table>

CNAs who felt very respected by their supervisors had 21 percent less odds of injury from patient assaults than those who felt little or no respect. Other “work environment” variables hypothesized to be predictors of injury from patient assaults did not influence the incidence of these injuries (Table 4.5). The variables selected (those supporting teamwork, autonomy,
innovation in care delivery and respect for the CNA role) were used by Lee (2010) in a study using the NNAS to examine supervisor and environmental factors and their relationship with all injuries. Lee found supervisor leadership style to be significant in predicting CNA work-related injuries. However, the study did not examine assault injuries specifically.

The researcher chose the same variables used to predict overall work injury to examine whether they would also predict assault injuries. Inadequate time to do the job, poor training and an inflexible facility environment have been shown to increase the risk of patient aggression (Morgan, 2008) and so the same variables were examined for use in a model predicting assault injuries. However, the variable of interest was initial training in dementia care for question five, rather than overall initial injury prevention training used in question four.

There are certainly many other variables outside of “work environment” with relationships to patient assault injuries that deserve future research which will be discussed in the final chapter.

Question 3: What is the relationship between work-related injuries and intent to leave the job?

The initial descriptive analysis of key variables examining CNA injuries found those with back (28%), musculoskeletal (29%), and scratches/open wound (51%) injuries had a higher likelihood of leaving the job as compared to those sustaining human bite injuries (16%). All were significant at the 0.05 level. CNAs who sustained musculoskeletal injuries may have had greater intent to leave due to the severity of their functional impairment as compared to CNAs who incurred bite injuries.

The logistic regression results on incidence of work related injury and other variables considered potentially predictive of CNA’s intent to leave their job revealed that work injuries were not predictive of intent to leave the job. Immigrant and marital status, job and pay
satisfaction and age were all found significant in predicting intent to leave the job (Table 4.6). Older nursing assistants were hypothesized to have less likelihood of leaving since they are more than likely comfortable in their role and have seniority, less likely to want to change jobs or fear they might not find another job. Married CNAs or those living with a partner were anticipated to have less likelihood of leaving due to family obligations.

Workplace injury was not predictive of intent to quit, when controlling for other potential predictors. These predictors included age, race, immigrant and marital status, job, pay and benefit satisfaction and were all potential predictors of intent to leave. The finding that injuries were not predictive of intent to leave, controlling for other variables, was unexpected (p = 0.345). A possible explanation is that the majority of injuries were not serious enough to motivate a CNA to leave when controlling for other variables such as pay, benefit and job satisfaction.

Immigrants were more likely to state an intention to stay in their jobs as compared to non-immigrants. Immigrants had thirty-eight times the odds of staying in their job as compared to those from other countries after controlling for other factors (p=0.010). Immigrants may have had less intent to leave, perhaps fearing they might have difficulty finding another position, especially if they were not English speaking or had little experience.

Whether a nursing assistant was married or living with a significant partner was related to intent to quit. Those who were married or living with a partner had nearly 31 times the odds of intending to stay in their position as compared to single nursing assistants (p=0.009). Those who were living with a significant other might be less likely to change jobs as they may have had family obligations preventing them from relocating. They may also not want to risk making less money after a job change. Rosen (2011) found CNAs made 10 percent less after moving to a new
job. Consistent with prior research, for every year of age there was a three times lower odds of intending to leave the job. This finding was anticipated because older nursing assistants would be expected to be more comfortable in their role and position and also have more obligations, making them less likely to change jobs.

Lack of satisfaction with pay and the job were strong predictors of intention to leave. A Pearson’s correlation coefficient indicated that job satisfaction and pay satisfaction were not highly correlated ($r= 0.416$, $p=0.000$) and so were both included in the regression. For every unit increase in satisfaction with pay, there was an 18 percent decrease in odds of leaving. Satisfaction with benefits was, however, not a significant predictor. This was not an unanticipated finding since many nursing assistants cannot afford the out of pocket expense of employee supported health insurance. As expected, for each category increase in job satisfaction, (very dissatisfied to very satisfied) there was a 60 percent decrease in the odds of quitting (Table 4.6).

Injuries were not predictive of intention to leave the job as hypothesized, when controlling for other predictors. Immigrant and marital status, age, and overall job and pay satisfaction were all predictive in the model examining intention to leave the job. Injuries were anticipated to be predictive of intent to quit; however the injuries may not have been severe enough to motivate CNAs’ consideration of leaving.
Table 4.6: Relationship between work-related injuries and intention to leave the job

<table>
<thead>
<tr>
<th></th>
<th>Model A</th>
<th></th>
<th>Model B</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>e^b</td>
<td>p-value</td>
<td>B</td>
</tr>
<tr>
<td>Ever Injured</td>
<td>0.111</td>
<td>1.117</td>
<td>0.345</td>
<td></td>
</tr>
<tr>
<td>Benefit</td>
<td>0.125</td>
<td>1.113</td>
<td>0.032</td>
<td></td>
</tr>
<tr>
<td>Satisfaction Immigrant</td>
<td>-0.410</td>
<td>0.664</td>
<td>0.005</td>
<td>-0.476</td>
</tr>
<tr>
<td>Pay Satisfaction</td>
<td>-0.155</td>
<td>0.856</td>
<td>0.012</td>
<td>-0.202</td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>-0.844</td>
<td>0.430</td>
<td>0.000</td>
<td>-0.909</td>
</tr>
<tr>
<td>Age</td>
<td>-0.030</td>
<td>0.980</td>
<td>0.000</td>
<td>-0.016</td>
</tr>
<tr>
<td>Supervisor respect</td>
<td>0.040</td>
<td>1.041</td>
<td>0.721</td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>-0.346</td>
<td>0.172</td>
<td>0.707</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>0.396</td>
<td>0.673</td>
<td>0.125</td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>0.206</td>
<td>1.279</td>
<td>0.576</td>
<td></td>
</tr>
</tbody>
</table>

Question 4: What are the effects of training on the incidence of work-related injuries?

A descriptive analysis of CNAs’ rating of their training found that the majority of CNAs indicated that they had excellent or good training in providing general patient care (94%).

However, they believe they are less capable of caring for those with dementia; 81 percent indicated their training was good or excellent in this area. Training in problem solving was ranked one of the lowest, as good or excellent by 75 percent as compared to other categories (Table 4.4). This is important since these providers need excellent problem solving skills to work with patients who can be unpredictable. The need to work as part of a team and the ability to seek help from peers and supervisors when needed is important to quality care.

CNAs responded that they were, overall, well prepared, yet key stakeholders believe they need more training. It would be important for future research to query the confidence in these areas after their initial training since the training might have been ranked high but not adequately prepared them in certain areas.
Table 4.4: Nursing Assistant Rating of Initial Training Quality

<table>
<thead>
<tr>
<th>Skill</th>
<th>Excellent N(%)</th>
<th>Good N(%)</th>
<th>Fair N(%)</th>
<th>Poor N(%)</th>
<th>Not Offered N(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident care skills</td>
<td>1,949 (66.6)</td>
<td>812 (27.8)</td>
<td>148 (5.1)</td>
<td>15 (0.5)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>Talk with patients</td>
<td>1,690 (57.8)</td>
<td>963 (32.9)</td>
<td>220 (7.5)</td>
<td>41 (1.4)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>Work with co-workers</td>
<td>1,090 (37.3)</td>
<td>1,226 (41.9)</td>
<td>446 (15.9)</td>
<td>101 (3.4)</td>
<td>40 (1.3)</td>
</tr>
<tr>
<td>Discuss care with families</td>
<td>1,231 (42.1)</td>
<td>973 (33.3)</td>
<td>296 (10.1)</td>
<td>158 (5.4)</td>
<td>257 (8.8)</td>
</tr>
<tr>
<td>Work with supervisors</td>
<td>1,163 (39.8)</td>
<td>1,215 (41.6)</td>
<td>361 (12.3)</td>
<td>113 (3.9)</td>
<td>66 (2.3)</td>
</tr>
<tr>
<td>Deal with work problems</td>
<td>938 (32.1)</td>
<td>1,243 (42.5)</td>
<td>534 (18.3)</td>
<td>132 (4.5)</td>
<td>68 (2.3)</td>
</tr>
<tr>
<td>Dementia care</td>
<td>1,301 (44.6)</td>
<td>1,056 (36.2)</td>
<td>371 (12.7)</td>
<td>118 (4.1)</td>
<td>69 (2.4)</td>
</tr>
</tbody>
</table>

Nursing assistants were asked which topics were not covered which should have been addressed in initial training. CNAs ranked care of patients with dementia (19%) and prevention of injuries related to patient aggression (20%) as the two priority areas that should have had more attention when they were trained, despite the high rankings of their initial training. Fifty-four percent of CNAs responded that their training was divided between working with patients and classes. Nineteen percent were trained predominantly in the classroom. Although there is no research offering answers to the ideal training time spent with patients, predominant classroom preparation offers little direct patient contact, essential for anyone learning to provide patient care.

It was hypothesized that there would be fewer injuries, controlling for other predictor variables, when nursing assistants rated their training as high quality. The variables that were hypothesized to predict work-related injuries included age, race, time as a CNA, amount of overtime, time to provide care, same patient assignment, opportunity to work in teams, asking
other CNAs for help, asking other employees for help and use of lifting devices as all variables from the literature with relationships to work-related injury. Logistic regression was then utilized to examine the relationship between CNA rating of their initial training specific to injury prevention and injury incidence.

There was an unanticipated relationship between training and the likelihood of injury: a 21 percent increase in incidence of work-related injury for each unit increase in ranking of the quality of initial training (p = 0.007). CNAs were asked about how well they were prepared during their initial training. As ranking of the quality of initial training became higher, there were higher odds of injury. Initial training then does not correlate with decreasing injuries. Perhaps CNAs who indicated they were well trained were more careless and injured more often. Another possibility for this finding is that the ranking of training does not predict whether they are injured later on. Another unanticipated finding was that for each unit increase in time to care for patients (CNA rating of more, enough or not enough time), there was a 59 percent increase in the odds of a work related injury (p = 0.000). Time to care for patients may not be as important in preventing many injuries, specifically those related to patient aggression. Nursing assistant years of experience was also a significant independent predictor in the model but, again, not as anticipated, in that for every category decrease in years of experience, there was a 2 percent decrease in odds of work related injury (p = 0.000). (Table 4.7). This finding could have been related to older nursing assistants incurring more physical injuries due to years of strenuous physical labor.

Race was examined as a predictor of injury since it was hypothesized there could be higher injury rates for minority CNAs. Research indicates poorer quality, lower staffing and
more deficiencies in minority nursing homes. It is likely that more minority CNAs work in these homes since over 90 percent of CNAs live close, within an hour radius, to where they work.

There were racial differences in the level of respect CNAs experienced from patients; 77 percent of whites reported that patients respected them, compared to 65 percent of black and 64 percent of Asian CNAs. The model considered race as a predictor and found that in terms of work-related injury, Black and Asian CNAs were the races significant in the model. Black CNAs had 54 percent decreased odds of work injury; Asians 46 percent decreased odds.

Table 4.7: Relationship between CNA rating of injury prevention training and incidence of work-related injuries

<table>
<thead>
<tr>
<th></th>
<th>Model A</th>
<th>Model B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>e^B</td>
</tr>
<tr>
<td>Rate of Training</td>
<td>0.183</td>
<td>1.201</td>
</tr>
<tr>
<td>Time to do the job</td>
<td>0.466</td>
<td>1.594</td>
</tr>
<tr>
<td>Ask NAs for Help</td>
<td>-0.067</td>
<td>0.935</td>
</tr>
<tr>
<td>Time as CNA</td>
<td>-0.023</td>
<td>0.977</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>-0.112</td>
<td>0.898</td>
</tr>
<tr>
<td>Black</td>
<td>-0.781</td>
<td>0.000</td>
</tr>
<tr>
<td>Asian</td>
<td>-0.618</td>
<td>0.540</td>
</tr>
</tbody>
</table>

Question 5: What is the effect of training specific to the care of patients with aggressive behavior on the incidence of injury related to assaults?

Logistic regression was used to analyze this question. Nursing assistant rating of their training in prevention of aggression injuries did not prove to be significantly related to the incidence of patient assaults, controlling for other variables that were hypothesized to be predictive of assault injury occurrence (Table 4.8). Immigrant status, use of lifts, teamwork, frequency of overtime and time as a CNA were not significant in the model.
Age was the only variable that was predictive. For every increase in year of age, there was a 3 percent decrease in the odds of an assault by a patient. Older CNAs may incur fewer assault injuries due to their experience and maturity. Life experience often helps care providers adapt to changes in behavior calmly and cautiously. There could be fewer injuries categorized as related to aggression by older CNAs who may see the behavior as confusion related to disease and not as an “aggressive” act. Younger CNAs may not be adequately prepared to handle patients who are combative and confused.

Table 4.8: CNA rating of their training to prevent injury from patient aggression and incidence of injury related to assaults

<table>
<thead>
<tr>
<th></th>
<th>Model A B</th>
<th>Model A e^b</th>
<th>p-value</th>
<th>Model B B</th>
<th>Model B e^b</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-0.020</td>
<td>1.021</td>
<td>0.037</td>
<td>-0.028</td>
<td>0.973</td>
<td>0.000</td>
</tr>
<tr>
<td>Rate training</td>
<td>0.002</td>
<td>1.002</td>
<td>0.987</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immigrant Status</td>
<td>0.448</td>
<td>0.260</td>
<td>1.566</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teamwork</td>
<td>0.171</td>
<td>0.842</td>
<td>0.098</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time as CNA</td>
<td>0.009</td>
<td>0.517</td>
<td>1.009</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overtime frequency</td>
<td>0.009</td>
<td>0.991</td>
<td>0.766</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lift use</td>
<td>-0.072</td>
<td>0.685</td>
<td>0.931</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>0.087</td>
<td>1.091</td>
<td>0.876</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>0.650</td>
<td>1.915</td>
<td>0.274</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>1.103</td>
<td>3.014</td>
<td>0.344</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Conclusion

The hypothesis that rating of initial training would inversely be predictive of work related injuries in question four was not supported. In fact, higher ranking of initial training was predictive of injury. The descriptive injury data were as anticipated, although the percent of those injured by patient aggression was higher than expected. The majority of injuries were caused by patient aggression (59.4%), with lifting and handling of patients following second (51.4%). For
every increase in CNA rating of initial training quality, there was a 21 percent increase in the odds of injury. CNAs may rate their initial training as good or excellent but this ranking does not correlate with decreased work-related injuries.

Research question two found supervisor respect to be predictive of assault injuries. However, other variables representing “work environment” in this study (innovation and ability to listen to concerns, assignment of same patients, organizational respect, and teamwork) were not predictive of assault injuries. The finding that supervisors were important in decreasing CNA assault injuries is consistent with prior studies looking at prevention of work injuries and a very important finding. Lee (2011) found supervisor leadership style to be significantly related to decreasing overall injuries. There might be other environmental factors contributing to assaults not examined in this research, as well as factors unrelated to the environment. Variables to consider in future research would include study of CNA’s interactions which decrease agitation. Medications and infections can also increase agitation. Future research should examine the effectiveness of specialized dementia units and other alternative therapies in decreasing CNA assault injuries. These variables were not queried in the NNAS.

The third research question examining the relationship between work-related injuries and intent to leave the job, did not find work injuries predictive of turnover as hypothesized. Nursing assistants may have perceived these injuries as an anticipated part of the role and something they would incur no matter where they worked as a CNA. Sixteen percent of CNAs were given lighter duty after sustaining injuries, decreasing the likelihood of long-term disability and perhaps strengthening loyalty to the employer.

Question five found CNA rating of their training in caring for patients with dementia not predictive of assault injuries. Age was the only predictor and, as mentioned above, younger
CNAs could have been assaulted more often due to lack of experience in handling aggressive behaviors. The findings from questions two and five indicate that there are other factors related to prevention of assault injuries which necessitate future research since they account for the majority of work-related nursing assistant injuries.

Specialized care units as mentioned previously should be further researched as well as the relationship between ongoing training at the worksite and assault injuries. This study examined rating of initial training only which was found not predictive of either overall work injuries or assault injuries. Further discussion and policy recommendations will be presented in the next chapter.
CHAPTER 5

DISCUSSION OF FINDINGS

This chapter discusses the implications of this study’s findings and the opportunities for legislative and policy initiatives to help improve the retention of this workforce, their training and decrease the incidence of work-related injury. An overview of key findings is presented with specific legislative and policy recommendations.

Main hypotheses and overview of key findings

The first research question examined CNA injury rates and found 58 percent of CNAs reporting a work injury over the past year, with 59 percent caused by patient aggression. The hypothesis that injured nursing assistants would have greater odds of intent to leave their jobs was not supported. Age, marital and immigrant status as well as satisfaction with pay and the job itself were all predictive of intent to leave as predicted from prior study findings.

Only one of the hypothesized variables relating to the CNAs’ work environment and patient assaults was supported. CNA’s perception of supervisor respect was predictive of assault injuries. Those who believed they were highly respected had lower odds of assault injuries as compared to CNAs who responded they had little or no respect. The remaining “work environment variables; supervisor ability to listen to patient concerns, organizational and supervisor respect, ability to decide on own how to do work, opportunities to learn new skills, frequency of asking other CNAs for help, frequency of asking others besides CNAs for help, consistency of patient assignments and adequate time to do care for patients, were not predictive in the model.

Lastly, the hypotheses that training would decrease the odds of overall work-related injuries as well as assault injuries were not supported. Initial training to prevent work injuries
was not predictive of decreased odds of work-related injuries. Further, training specific to the care of those with dementia did not decrease the odds of these injuries. There are other variables involved in efforts to prevent work-related injuries and these will be discussed in the last chapter.

The following discussion gives insight into the findings and present policy recommendations informed by the concepts of monopsony and “dirty work.” The discussion begins with a discussion of what motivates this worker.

**The CNA as a committed direct care provider**

Understanding of factors that might decrease turnover, improve training and decrease injuries is needed. CNA turnover can have huge implications for patients and the quality of care they receive (University of Kansas, 2004). Similar to other stigmatized jobs such as veterinary technicians, morticians, sewer workers and domestic help, the nursing assistant’s work can be categorized as “dirty work.” At least some of these workers take pride in their societal contribution and find their work important, despite the “dirty” tasks and risk of injury inherent in performing the role. This does not mean they are always happy in their role since this is extremely difficult work, but most CNAs believe their work is important to society. The majority (62%) indicated in the NNAS (2004) that they would become nursing assistants again if offered another career option, despite the emotional and physical hardships of the job.

Despite low pay, few affordable benefits and little societal recognition, CNAs view their role as one requiring expertise to fulfill a needed role in society. Ninety-eight percent of CNAs believe that their role is very important; yet only forty-two percent perceive the public as rating their work as highly valued. Perhaps contributing to CNA lack of organizational commitment and subsequent high turnover was the fact that only a little over half of nursing assistants (57%) believe their supervisor highly respects them as a valuable member of the healthcare team and
only 34 percent feel strongly that they are respected by their employer. These findings are important, since prior research found low turnover institutions valued the work of the CNA (Eaton, 2001). These caretakers are very satisfied with the work they do; the majority of CNAs believe they are very respected by those entrusted in their care.

The concept of “dirty work” helps in understanding the reasons a CNA might stay in a profession highly stigmatized by society, yet frequently change jobs within various nursing homes. The nursing assistant may endure injuries as well as poor pay and benefits, accepting the injuries and the satisfaction of being a care-provider as “emotional” wages (Murray, 2000) instead of fair compensation. As mentioned previously, a job change for a nursing assistant typically did not benefit them financially but did improve their emotional wellbeing (Rosen, et al., 2011), reinforcing the idea of emotional wages which was not able to be queried from this dataset. A worker who is willing to work for other “benefits” besides those given by the employer such as flexible hours and close proximity to home can increase the market power of the employer and perpetuate a poorly compensated occupation.

**Overview of key findings**

The researcher initially hypothesized in research question two that work environment variables would predict assault injuries and in research question three, that work related injuries would predict intention to leave. However, the only variable found significantly related to predicting assault injuries was supervisor respect; work injuries were not predictive of intent to leave. The hypothesis in question 4, that CNA high rating of initial training quality would predict decreased work injuries was not supported. Nor was CNA rating of initial training in dementia care predictive of assault injuries. These findings are discussed more fully later in this chapter. Future qualitative research might be able to explore these relationships more fully.
Injuries rate and nature and impact of training

Although research question one did not find injuries predictive of intent to leave the job, policies should address this worker’s high injury rate and, specifically, their high rate of aggression injuries. Even though workers may be willing to put up with injury, preventing it should still be a policy goal. The emotional and economic toll of these injuries is not elicited in this study and should be further researched. This worker does have a high rate of “lighter duty” due to injury and the direct and indirect costs of these injuries to nursing assistants, patients, nursing homes and society deserve further attention.

The majority of injuries are related to patient aggression (59.4%); not surprising, considering the nursing home population, yet this issue is not addressed by the Occupational Health and Safety Administration (OSHA) and certainly not communicated to the public in the Bureau of Labor Statistics’ (BLS) job descriptions. Even the word “visiting” in this recruitment description portrays an image of a robotic type worker who drops by every so often to visit patients without any other responsibilities; rather than a key healthcare professional caring for very frail, often disabled patients. There is no mention in any recruitment or job description online materials of the need to communicate in a therapeutic manner to the confused patient, calm the agitated patient with dementia and associated mental illness or feed the patient with risk of choking.

That 12 percent of CNAs reported receiving human bites suggests workers could be at risk for acquiring infectious disease. Further, there is a rising numbers of patients with HIV/AIDS as well as Hepatitis B and C, which could be transmitted via a human bite. Between 10-15 percent of human bite wounds become infected and although the risk of transmission of HIV is unlikely, it does occur with more frequent transmission of Hepatitis B (Barrett, 2012).
Individuals with HIV as well as Hepatitis B and C are living longer and many will be admitted to nursing homes. This injury has the potential to be life threatening. Unfortunately, we do not have information regarding how these injuries occurred. Some of these bite injuries could have been related to feeding patients or due to patients who were angry, agitated or confused. Further qualitative research could identify how these injuries occur, which would inform prevention strategies.

Lifting and moving patients accounted for a little over half (51.4%) of the injuries, despite the fact that the majority of facilities (87%) had accessible lift equipment. Further, almost all (99%) CNAs stated they had training in their use, yet only 60 percent indicated they consistently used the equipment. This disconnect is likely due to the additional time it takes to operate a hoyer lift, a piece of equipment used to move disabled individuals. It is faster to do the transfer or reposition a patient without using equipment, placing the nursing assistant and patient at risk for injury. They may have also feared reprisal if it appeared they could not do their job.

Research question four examined the relationship between initial training and work-related injuries and found a 21 percent increase in incidence of work-related injury for each unit increase in ranking of initial training quality. This was an unexpected finding because it was anticipated that CNAs who rated their initial training as excellent would have less injuries. However, this survey queried their perception of their initial training. It is clear from this finding that an excellent or good training rating does not predict decreased work related injuries.

Adequate time to care for patients was expected to be predictive of decreasing work injuries. However this was not the case. In fact, for each unit increase in time to care for patients, there was a 59 percent increase in the odds of incurring a work injury. This researcher thought having more time to access lifting equipment and to care for patients would decrease
injuries. It may be that time is not as critical in decreasing injuries. The injuries may have been from aggression or other injuries which would still have occurred even with more than enough time to care for the patient.

**Work environment and patient assaults**

Assault injuries were of interest in research question two, as we see more patients with dementia admitted to the long-term care setting with confusion and agitated behavior. Whether there were work environment factors that were predictive of these assault injuries was of particular interest. However, the only “work environment” variable which was significant in the model was supervisor respect toward the CNA in decreasing the odds of patient assaults. The multivariate analysis did not find that supervisory ability to listen, autonomy, organizational respect, the opportunity to learn new things and work on a team, nor having time to do the job were significantly related to the incidence of patient aggression injuries.

More detailed analysis of the role of the supervisor should be examined in future studies. The survey only included questions on supervisor respect and ability to listen to CNA concerns. There are other variables not directly identified as “work environment” involved in increasing the incidence of injuries related to assaults that should be examined in future research. The variables missing from this model which should be considered for future research include specialized units for dementia care, programs providing ongoing training in handling aggression and nontraditional treatment modalities for decreasing agitation such a pet or music therapy.

Future research should examine the communication skills and emotional state of the CNA as well in decreasing patient aggression. Nursing assistants’ “anger state,” a measurement of anger developed by Spielberger (1999) and not a variable in this survey, was found to strongly correlate with CNA patient related injuries (Gates, Fitzwater and Succop, 2005). These
researchers considered the emotional state of the CNA while at work and how these emotions could influence their encounter with the patient, escalating aggressive behavior. The descriptive analyses revealed that only 21 percent of nursing assistants frequently asked their CNA colleagues for help; only 10 percent frequently asked other employees. The NNAS used these variables to evaluate teamwork and did not ask why CNAs do not ask for help, which is an important question. This perceived lack of teamwork would seem to be important in predicting patient assault injuries, yet it did not prove significant in this study. The variable representing “teamwork” in the regression analyses asked CNAs whether they had opportunities to work in teams. They may have interpreted this as asking whether they worked as a formal team rather than viewing teamwork as a broader concept of helping each other throughout the day.

Decreasing CNA assault injuries is multi-factorial as are many of the issues affecting this worker. This study found CNAs who perceived a high degree of respect from their supervisors had fewer patient assault injuries. Efforts to decrease CNA patient aggression injuries should consider what the CNA brings to the encounter, how the patient’s aggression is being managed medically and other environmental considerations not queried by this survey. Policies implemented to prevent assault injuries will require examining many factors such as medical/pharmacologic management, the overall environment in which the care is given and perhaps ongoing training of CNAs with mentoring from supervisors. CNAs may also benefit from ways to decrease frustration with patients and decrease their “anger” state as described in prior studies.

**Work related injuries and intent to leave the job**

Whether a worker’s high injury rate predicted turnover was examined in research question three. The hypothesis that injuries would predict intent to leave when controlling for
other potential predictors was not supported. Investigators have found CNAs perceive and define violence differently and may see assault injury as just part of doing the job (Isaksson, Astrom & Granaheim, 2008). The concept of “dirty work” helps in understanding why injuries were not predictive of CNA intent to leave. CNAs may stay in the profession, despite experiencing injury and aggression, with the belief they are providing an invaluable service. Some may stay believing that no other CNA position would be any better. Their paradigm is different than most in that they may not view injury as such or aggression as others would define it since they believe it is “part of the job.”

As mentioned in the preceding chapter, the severity of the injuries may not have been serious enough to motivate intention to leave. Nursing assistants had a very low number of sick days. Seventy-six percent responded that they took less than a day out of work as a result of injury, so it is assumed many of these injuries were not serious. Yet 16 percent continued to work in a lighter duty job while they recuperated, suggesting some degree of serious injury. It is assumed these injuries were serious enough to require lighter duty and were probably musculoskeletal in nature, with restrictions placed on lifting and repositioning patients. The high rate of lighter duty may have lessened the chance of leaving the job when injured. These nursing assistants would have still been paid and perhaps felt “cared for” by the employer, strengthening their loyalty.

Age, immigrant and marital status, satisfaction with the job, pay and benefits were all found to be predictive of intent to leave the job. Consistent with prior research, older nursing assistants were more likely to report intending to stay in their jobs. For every year increase in age, there was a three times lower odds of leaving the job. This finding was anticipated because older nursing assistants would be expected to be more comfortable in their role and position and
also have more obligations, making them less likely to change jobs. They also may believe they have fewer other options in the labor market.

Immigrants may have been less likely to leave due to language barriers or fear they might have difficulty finding another position. They may have been fearful to say they were intending to leave in response to the survey question. Those married or with a partner, as mentioned earlier, may have been less likely to leave due to family obligations or inability to relocate. Those who were satisfied with the job and satisfied with pay were less likely to leave which was an anticipated finding.

Training

Nursing assistants ranked their training in working effectively with co-workers and supervisors as well as in problem solving the lowest out of all categories in the descriptive analyses. These highlighted training needs are important, yet initial rating of training quality was not predictive in the model examining work-related and, specifically, patient aggression injuries. An interesting finding was that nursing assistants who perceived they were highly respected by their supervisors had lower odds of assault injuries as compared to those who felt little or no respect. Since most supervisors are nurses, their presence and ability to convey respect is very important. There are other factors at work which need to be examined in future studies. Perhaps mandated nurse to CNA staffing ratios, specialized dementia units, greenhouse environments or use of relaxation and other alternative therapies might help decrease assault injuries.

Training and incidence of work injuries

The CNA’s rating of their initial training was not significantly related to the incidence of workplace injury. Since this was a rating of their initial training it does not address ongoing training which is crucial. Further, the initial training is short, ranging from 75-150 hours for
certification. A perplexing finding was that when this initial training was rated as high quality, the odds of injury were higher. The NNAS queried the CNA’s perception of quality and this study’s finding supports the fact their perceptions of training quality do not correlate inversely with injury incidence. Nursing assistants who believed their initial training was “good” or “excellent” may have taken more risks due to increased confidence, incurring high injury rates. As mentioned earlier, the rating is arbitrary and it is the CNA’s perception of the quality. There is no rubric for understanding why the CNA selected each ranking. Nearly a fifth of new CNAs were primarily trained in the classroom; another consideration for policy development which will be discussed later in this chapter.

CNAs who reported that they had adequate time to care for patients were, in fact, injured more often. For each unit increase in time to care for patients, there is a 59 percent increase in odds of sustaining a work injury. This could be solely due to increased exposure to potential injury risk, specifically patients who are aggressive. Those who stated they had enough time may also work slower and respond that they have enough time due to a work injury. This finding was surprising since adequate staffing which would give CNAs more time with patients, has been shown to decrease injury rates.

Race was a predictor in the model examining work-related injury and training. This demographic variable was of interest since nearly half of nursing assistants nationally identify as a minority and the literature describes CNA race discrimination in the worksite (Berdes & Eckhart, 2001; Jonson, 2007; Ryosho, 2011). Nursing homes serving minority patients have been shown to be understaffed and inadequately funded (Smith, 2007), placing CNAs working at these sites at higher risk for injury and higher turnover. Although not documented in the literature, this researcher expected higher percentages of minority nursing assistants to be
employed in facilities caring for minorities since the majority of nursing assistants travel within a half hour radius for work. This researcher hypothesized that they might have been injured more often perhaps due to patient discrimination and lack of respect or working perhaps in a facility with less staffing, but this was not the case. In fact, this study found Black and Asian CNA reported injuries less often than White CNAs. The difference in injury rates related to race is a bit perplexing but perhaps they reported fewer injuries for fear of reprisal or they defined “injury” differently. They might also have feared losing their job after reporting an injury.

Immigrant status was not predictive in the model, but fifty-one percent of immigrants reported no injuries as compared to forty percent of non-immigrants. Immigrants may also report fewer injuries, even in the survey, due to fear of reprisal or define injury differently. They may also have had prior experience caring for frail elderly family members, giving them added skill in dealing with aggressive behaviors.

The survey did not ask why a nursing assistant might be wavering about whether they should answer in the affirmative about injuries this past year. Nursing assistants surely have different definitions of aggression (Isaksson, Astrom & Granaheim, 2008) and could also be viewing “injury” differently as well. A more expansive survey of nursing assistants could give more information about possible hesitancy to report and data on how best to provide adequate time to care for patients, other than increasing staffing.

Training and assault injuries

Care of patients with dementia and prevention of injury related to aggressive behavior are two priority areas cited by CNAs as needing more attention during initial training. Only 42 percent rank their training as “excellent” in working with abusive patients, consistent with
Furaker and Nilsson’s (2009) study that found CNA lack of knowledge and experience in caring for patients with dementia.

CNA rating of their initial training in preventing assault injuries is not predictive of these injury occurrences. The age of the CNA was predictive in the model. For every year decrease in age, there was a 3 percent increase in the odds of patient assaults. Younger CNAs, as mentioned earlier, may incur more assaults due to lack of experience, which is consistent with the literature Flannery, Farley, Rego & Walker, 2006). Older and more experienced CNAs should be utilized as mentors in role modeling ways of caring for patients that help decrease agitation.

Although not a specific research question, a closer look at the nursing home environment is provided first since it is pivotal in implementing policies for decreasing CNA injuries and turnover, as well as improving CNA training.

**The Employer: The majority of nursing homes with commitment to profit**

The majority (67%) of nursing facilities are run for profit, owned by investors not in the healthcare industry (CMS, 2010). Quality is compromised and there is little competition within the market (Harrington, 2001, Castle & Engberg, 2005). A recent study of post acute hospital stay patients sent to non-profit nursing homes for rehabilitation had fewer readmissions to the hospital 30 days after discharge, as well as decreased pain and increased functional capacity as compared to those admitted to for profit nursing homes for rehabilitation (Grabowski, et al., 2013).

These employers are hiring a relatively unskilled, predominantly female workforce, often unable to relocate for better pay and benefits. This study found the vast majority of CNAs (90%) live within a half hour of their job. They want to live close to home, need flexible hours and value job security as a CNA. Additionally, 59 percent of nursing assistants have children living
at home and 15 percent are caring for a friend or family member with a disability or health problem.

It could be that employers view this flexibility and accessibility as important benefits that they can calculate into the compensation package. The nursing home with strong market power over the CNA can easily replace the assistant with an individual who is poorly trained and willing to work for low wages. High turnover may not be a concern for those facilities where high quality is not a priority and where beds are filled despite deficiency ratings related to high demand or lack of consumer knowledge. As discussed earlier, some facilities may operate with novice staff and accept turnover and high injury rates each year as a cost of doing business, not investing in long-term employees and accepting the risk of liability and regulatory discipline for economic gain.

The Patient Protection and Affordable Care Act (PPACA) of 2010 (Pub. L. No. 111-148 §2702) called for improvements in transparency of nursing home ownership, staffing and expenditures. A number of bills to improve the quality of nursing home care, including the Elder Justice Act and the Nursing Home Transparency Act were introduced over a number of Congressional sessions, but did not advance due to lack of support and strong nursing home industry opposition. However, the intent of these bills was finally realized in the PPACA of 2012 (Miller, 2012).

The Patient Protection and Affordable Care Act seeks to increase consumer knowledge regarding nursing home operations since it requires staffing data, hours of patient care given per day and staffing turnover to be reported on a government website, “Nursing Home Compare” (Pub. L. No. 111-148 §6103) in a manner to allow comparison of facilities’ data. Further, facilities are mandated to disclose their ownership and organizational structure, expenditure data,
as well as wages and benefits given to direct care staff (Pub. L. No. 111-148 §6101). This federal law is a milestone since it will provide more knowledge to the public; however, enforceability and reliability of data will be concerns. It will help motivated consumers to research ownership and spending for any given facility.

Although well intended, it is doubtful the Act will do much to promote more non-profit interests in nursing home ownership. Despite the fact that the Patient Protection and Affordable Care Act needs more stringent requirements for training and disincentives for profit ventures, it is a window of opportunity for transforming long-term care and the CNAs’ work environment. There is much discussion regarding the overall healthcare reform aspects of the law but, as expected, little attention to the long-term care ramifications. The Act highlights major concerns surrounding this industry which until recently, was one most Americans knew little about. The government pays approximately 63 percent of nursing home costs (CMS, 2008). It is in our nation’s best interests to make long-term care and its workforce one of our top priorities.

For-profit nursing homes have the lowest staffing levels, the highest number of deficiencies identified by regulatory agencies and the highest number of deficiencies causing patient harm (Harrington, et al., 2011). Nursing assistants in these settings are even more challenged as are our dwindling resources. Continuing government support of a for-profit nursing home industry does not make fiscal sense within a model guaranteeing care for all. The “for-profits” are providing lower quality care, which will certainly increase health care costs over the long-term, further increasing our costs to the Medicare and Medicaid system.

This research examines our nation’s nursing assistants’ retention, training and injuries and highlights the need for system change. Future research should examine the relationship
between intent to leave, injuries and training, specifically examining for-profit chains in concentrated regions with little competition regionally.

Policy Implications

The Industry

This study confirmed high injury rates, specifically those related to assaults, as well as pay and job satisfaction as predictive of intention to leave the job. Therefore, policy is needed to decrease injuries and turnover. The majority of nursing home costs are reimbursed by government funds and, as long as we are willing to pay for-profit companies to provide long-term care at taxpayer expense, there will continue to be incentives to cut staffing, wages and benefits and other costs of providing care in order to increase profits. An amendment to the PPACA must consider the work of Harrington (2012) and others who have exposed the consequences of shareholder interests in what should be a small profit margin industry. Disincentives for making profits within the industry could be implemented in efforts to improve quality and decrease turnover, since decreased turnover of all nursing staff was found in nursing homes providing higher quality care.

Stricter penalties for quality infringements as well as smaller nurse to assistant ratios could be added to the Affordable Care Act to de-incentivize profits and incentivize non-profits solely interested in providing quality care. This would require garnering public support through increased media attention to the discrepancies in staffing and quality in for-profit homes. There are many groups working to reform nursing home care and increasing the visibility of the problems on websites such as CMS’ “Nursing Home Compare” is a positive step. Legislative support would also be necessary to make changes to the PPACA.
This study looked at injuries and whether they were predictive of intent to leave and as described earlier, injuries were not predictive. Satisfaction with pay and benefits decreased the chances of a nursing assistant intending to leave their job. This is yet another reason to create disincentives for profit making ventures within the nursing home industry. These profits could be used internally to compensate nursing assistants for their work with increased pay and affordable benefits. The dataset revealed that nearly 25 percent of nursing assistants received government aid for their health insurance, yet another indirect long-term care expense to taxpayers. Further, non-profits could reinvest money to increase nurse to nursing assistant ratios, which have been linked with improved quality of care and decreased turnover of staff (Castle & Engberg, 2006; Donoghue, 2009).

Nursing homes profits could also be used to improve training initiatives. Training mentors as well as nursing supervisors in team building and empowerment would be helpful in supporting nursing assistants and decreasing turnover. The administrators of nursing homes have a lot of work to do in transforming a culture wherein the majority of nursing assistants do not feel respected or valued by their employer.

**Patient screening for admission**

Fifty-nine percent of nursing assistant injuries were related to aggression. Hence, policies considering the appropriateness of a patient’s admission to a nursing home as well as whether the facility is equipped to care for the patient are needed to decrease these injuries. There is a shift in the numbers needing staff well versed in the care of those with cognitive and emotional illnesses. The Patient Admission Screening and Resident Review (PASRR) tool is a federal mandate required for all nursing home admissions, which is part of the Omnibus Reconciliation Act of 1987, meant to protect individuals with either mental illness or
developmental delays from inappropriate institutionalization. The law requires that each individual be screened for mental illness or developmental disability and then if they have either diagnosis, that the individual be assessed for requiring the needs of a skilled nursing facility and that their need for services is assessed. These services are those above and beyond the services covered by the nursing facility and are reimbursed separately. This “specialty” care does not include nursing assistants trained specifically in the care of individuals with mental illness or developmental disabilities. There are also exemptions to the screening including admissions for less than 30 days post hospital admissions or those patients admitted in a delirious state or for respite care (http://pasrrassist.org/resources/passr-plain-english). This lack of attention to whether those at the facility are trained to handle patients with more complex behavioral needs is not addressed.

The situation could be remedied with an amendment to the OBRA Act of 1987. Turnover could also be decreased by increasing the number of specialty care units designed to care for those with cognitive impairments.

**Training and work related injuries**

This study found rating of initial training in dementia care did not decrease the odds of assault injury, nor did initial training in injury prevention decrease the odds of overall injury. As mentioned above, this was the CNA’s perception of the quality of their initial training, not their ongoing training. There were also no guidelines to ranking the training quality in the survey, so we are left without an understanding of what the CNA was considering in the training that was excellent or poor.

Although the training variables were not significant in this study, most other studies indicate that more training, and more hands-on training is needed. The minimum federal 75-hour
mandate has not changed since the Nursing Home Reform Act of 1987. However, twelve states as well as the District of Columbia have recognized the need for longer CNA preparation and now require 120-175 hours of training (Sengupta, Harris-Kojetin & Ejaz, 2010). Unfortunately, the federally mandated 75 hours does not specify where the learning should take place.

Recommendations for amendments to the PPACA include a change in the federally mandated 75 hour minimum to a 160 minimum with at least half of this time on the units with patients. There would need to be documentation of competencies in caring for those with cognitive impairments; the competencies would be assessed by the program offering the CNA training. Although there is no data supporting this more than doubling of time, the National Citizens’ Coalition for Nursing Home Reform (NCCNHR, 1998) has for sometime advocated for 160 hours or 4 weeks of training.

Further, this study highlights CNAs request for more preparation in managing patients with cognitive or emotional problems. The Centers for Medicare and Medicaid (CMS) must mandate training specific to the care of individuals with dementia and other cognitive impairments as part of the mandated 150-160 hours. Nau et al. (2010) found significantly improved handling and de-escalation of aggressive situations in a group of student nurses studied in simulated patient scenarios after there was training provided on managing patient aggression. CNAs must have this training since they are the direct care providers in these settings; nurses are not providing this care.

Increasing the training hours will be more costly. The Omnibus Reconciliation Act of 1987 mandates repayment of the cost of training to the CNA from the State if it is within 12 months of the course and the nursing assistant is employed during that year. Further, if CNAs are offered a position as a nursing assistant at the beginning of their program, they are to be
reimbursed for the cost of the program (OBRA, 1987). There are also a number of grants available for training but specific data on the amount of funding was unavailable. Only 25 percent of nursing homes provided onsite training in 2007, a decrease from 38 percent in 1997 (Tyler et al., 2010). Further, decreasing the ability to make a profit from this care would allow more monies to be used for ongoing training after hire.

Although the additions to the Patient Protection and Affordable Care Act of 2010 are a step in the right direction, they are miniscule in the face of what is needed. They will do little to improve the training of nursing assistants caring for those with dementia and psychiatric illnesses. The Act’s mandate is not specific and is not enforceable unless a state decides to move forward with more stringent requirements. This is possible, but we have already seen that it has taken nearly twenty-five years for twelve states and the District of Columbia to increase their mandated training hours. Leaving this to the states is not the way to expediently change the skill set of this worker. A CNA program could simply hand out a pamphlet if they so desired on dementia care and fulfill the requirement as the law stands today.

Additional research needs to be done examining whether states requiring more training time have a more knowledgeable and competent workforce. This research should also compare the outcomes of nursing assistants who are trained predominantly in the classroom, in the nursing home or even online.

**Incidence and nature of work related injuries**

Fifty-eight percent of CNAs reported a work-related injury over the year. The majority of CNAs did not use lift equipment and, although adequate time to care for patients did not predict injuries, it might be the equipment is not readily accessible. The reporting of nursing home injuries to the regulatory agency, which could have influence in decreasing their incidence, is of
utmost importance. The Occupational Health and Safety Administration (OSHA) mandate reporting of a work related incident directly to them only if there is a fatality or if three or more employees are hospitalized. The log reportable injuries, which are kept at the nursing facility unless OSHA requests a report, include the following: fatalities, loss of consciousness, injuries necessitating days out of work or restricted work or job transfer or injuries requiring more than basic first aid. Needle-stick injuries or other injuries with sharp objects potentially exposing the worker to blood or infectious material are also mandated to be included on the log. This is where the data often ends and is useful only to the motivated nursing facility who wants to improve. It is important to recognize that these logs are, for the most part, kept at the nursing home and are not monitored regularly by OSHA. The logs document the cause of the injury, yet are not routinely collected to inform policies to protect workers, despite the fact injury etiology is also collected (http://osha.gov/recordkeeping/RKform300pkg-illable-enabled.pdf). These data would be extremely helpful in examining the ongoing etiologies of this worker’s injuries and implementing change accordingly. OHSA regulations mandate the log be kept for 5 years at the worksite.

Due to this worker’s extremely high injury rate, policy recommendations would include a five-year analysis of nursing home logs by OSHA in concert with CMS. The collection of this data would be within the already established rules and regulations of this regulatory agency since they can, at anytime, request that these logs be sent to them. Unfortunately, some nursing assistants may not report or report inaccurately for fear of loss of job or other retaliation. However, it would still be an incredibly valuable dataset to analyze, considering this worker’s vulnerability to workplace injury.
Peer mentoring programs are recommended to help decrease injuries, since this study found older CNAs had less odds of injury due to patient aggression. Eighty-one percent of CNAs had a mentor assigned during their transition as a new CNA and 96 percent said this was helpful. A mentoring program could help with role modeling for less experienced nursing assistants and, hopefully, be a successful initiative not only in decreasing injuries but improving retention as well. A “career ladder” of mentor status for senior CNAs with increased compensation would also be a recommendation.

The importance of the supervisor in decreasing assault injuries was a finding in this study and speaks to the importance of the supervisor’s role in this setting, consistent with the literature. Improving the worksite training of nurses, the majority of CNA supervisors, in respectful communication, mentoring and support of CNAs would be a recommendation. Nursing curricula could also be strengthened in managing unlicensed personnel. This would entail working with individual state boards of nursing to include training specific to working with unlicensed personnel within all nursing programs.

Limitations of the Study

The NNAS used a stratified, multistage probability design within a total of 582 nursing homes nationwide. It was not possible to randomly sample the population of nearly 700,000 CNAs and this allowed a nationally representative sample. However, it is not as accurate as random sampling and increases the possibility of under or oversampling of nursing assistants with various characteristics. Further, nursing homes selected the eight CNAs themselves for the study and this could have introduced bias. The survey queried only employed nursing assistants and did not capture data from those who had already left possibly due to injury or dissatisfaction with the role or their employer. Intent to leave was used as a proxy for turnover in this study.
Research has shown that intent to leave is highly correlated with actual leaving (Harris, James, and Boonthanom, 2005; Tett and Meyer, 1993). However intent to leave the job does not guarantee that they will definitely leave within the year.

The NNAS had insufficient sample sizes for some items which had low prevalence in the population, such as male CNAs, making it difficult to obtain accurate estimates of the responses. Lastly, the study is quantitative and did not allow elaboration or clarification of the responses. For example, rating of initial training to prevent injuries was rated on a four point scale, but we are not clear about what aspects of the training or the experience they were rating.

Conclusion

This study highlights the important role of the supervisor in decreasing assault injuries. The literature has also highlighted their role in helping to decrease turnover and improve CNA satisfaction. Emphasis should be given to the vital role they play in the nursing home setting. Nursing assistants’ high injury and turnover rate as well as inadequate training can no longer be tolerated as we face a burgeoning number of individuals needing long-term care. The nursing home industry has for a longtime operated in a vacuum with little interest from the rest of society. Government is deeply involved as a payer and as a regulator but profits, mismanagement and poor quality were allowed to occur quietly as the vast majority of Americans lacked the knowledge and perhaps interest to see just how far out of control the industry had grown. The nursing assistant, doing the “dirty work” deserves our support, acknowledgment and guarantee that we will do all we can to insure they work in as safe an environment as we can offer and that we are willing to pay for them to have the skills they need to take care of our society’s most vulnerable.
# Appendix A

## Variable Codebook

<table>
<thead>
<tr>
<th>Question</th>
<th>Scale</th>
<th>Codebook</th>
</tr>
</thead>
</table>
| “How often asks other CNAs for help”                                    | Ordinal   | 1 = Frequently  
2 = Sometimes  
3 = Once in awhile  
4 = Never* |
| “Opportunity to learn new skills”                                       | Ordinal   | 1 = Strongly agree  
2 = Somewhat agree  
3 = Somewhat/strongly disagree* |
| “Opportunity to work independently"                                     | Ordinal   | 1 = Strongly agree  
2 = Somewhat agree  
3 = Somewhat/strongly disagree* |
| “Supervisor listens when I have concerns”                               | Ordinal   | 1 = Strongly agree  
2 = Somewhat agree  
3 = Somewhat/strongly disagree* |
| “Are you assigned to care for the same residents most days”             | Ordinal   | 1 = Same  
2 = Residents change  
3 = Combination* |
| “Respected by the nursing facility”                                     | Ordinal   | 1 = Strongly agree  
2 = Somewhat agree  
3 = Somewhat  
4 = Strongly disagree* |
| “How often asks other employees (other than CNAs) for help”             | Ordinal   | 1 = Frequently  
2 = Sometimes  
3 = Once in awhile  
4 = Never* |
| Intent to quit within the year                                          | Categorical | 0 = No*  
1 = Yes |
| Respect from supervisor                                                 | Categorical | 0 = Somewhat/not at all*  
1. A great deal |

* Reference category
<table>
<thead>
<tr>
<th>Variable</th>
<th>Type</th>
<th>Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have you been injured this year</td>
<td>Categorical</td>
<td>0 = No* 1 = Yes</td>
</tr>
<tr>
<td>Immigrant</td>
<td>Categorical</td>
<td>0 = No* 1 = Yes</td>
</tr>
<tr>
<td>Race</td>
<td>Categorical</td>
<td>1 = White 2 = Black 3 = Asian 4 = “Other”*</td>
</tr>
<tr>
<td>Marital status</td>
<td>Categorical</td>
<td>1 = Married/live with partner 2 = Live alone*</td>
</tr>
<tr>
<td>Satisfaction with pay</td>
<td>Ordinal</td>
<td>1 = “Extremely dissatisfied” 2 = “Somewhat dissatisfied” 3 = “Somewhat satisfied” 4 = “Extremely satisfied”*</td>
</tr>
<tr>
<td>Satisfaction with benefits</td>
<td>Ordinal</td>
<td>1 = “Extremely dissatisfied” 2 = “Somewhat dissatisfied” 3 = “Somewhat satisfied” 4 = “Extremely satisfied”*</td>
</tr>
<tr>
<td>Age</td>
<td>Interval</td>
<td>16 – 75* years</td>
</tr>
<tr>
<td>Respect from supervisors</td>
<td>Ordinal</td>
<td>1 = “A great deal” 2 = “Somewhat” 3 = “Not at all”*</td>
</tr>
<tr>
<td>Work-related injury this year</td>
<td>Categorical</td>
<td>0 = No* 1 = Yes</td>
</tr>
<tr>
<td>Initial training rating: work injury prevention</td>
<td>Ordinal</td>
<td>1 = excellent 2 = good 3 = fair 4 = poor*</td>
</tr>
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*Reference category
<table>
<thead>
<tr>
<th>Variable</th>
<th>Type</th>
<th>Values</th>
</tr>
</thead>
</table>
| Time as a CNA                                | Ordinal    | 1 = 6 months or less  
2 = > 6 months < 1 yr.  
3 = 1 yr < 2 yrs.  
4 = 2-5 yrs  
5 = 6-10 yrs  
6 = 11-20 yrs  
7 = > 20 yrs* |
| Race                                         | Categorical| 1 = White  
2 = Black  
3 = Asian  
4 = Other* |
| Number of times in past week required to work overtime | Ordinal    | 0 = none  
1 = 1-2 times  
2 = 3-5 times  
3 = over 5 times* |
| Time to provide care                         | Ordinal    | 1 = not enough time  
2 = enough time  
3 = more than enough time* |
| Caring for the same patients                 | Categorical| 1 = Same patients  
2 = Residents change  
3 = Combination* |
| Teamwork                                     | Ordinal    | 1 = Strongly agree  
2 = Somewhat agree  
3 = Somewhat disagree  
4 = Strongly disagree* |
| Lift use frequency                           | Ordinal    | 1 = Always  
2 = Sometimes  
3 = Never* |
| Injury from aggression                       | Categorical| 0 = No*  
1 = Yes |

*Reference category
Rating of initial training to care for aggressive patients

<table>
<thead>
<tr>
<th>Ordinal</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Excellent</td>
</tr>
<tr>
<td>2</td>
<td>Good</td>
</tr>
<tr>
<td>3</td>
<td>Fair</td>
</tr>
<tr>
<td>4</td>
<td>Poor*</td>
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</tbody>
</table>

*Reference category
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