

To the Graduate Council:

I am submitting a dissertation written by David Joseph Weitz entitled “A Comparative Analysis between Skilled Nursing Facilities Experiencing High Versus Low Resident Transfer Injury Rates.” I have examined the final electronic copy of this dissertation and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Education, with a major in Learning and Leadership.

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We have read this dissertation  
And recommend its acceptance

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Accepted for the Graduate Council:

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A COMPARATIVE ANALYSIS BETWEEN SKILLED NURSING  
FACILITIES EXPERIENCING HIGH VERSUS LOW RESIDENT TRANSFER  
INJURY RATES.

A Dissertation  
Presented for the  
Doctor of Education Degree  
The University of Tennessee at Chattanooga

David Joseph Weitz

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## DEDICATION

This dissertation is dedicated to my family, friends, and loved ones, for always encouraging me to go in pursuit of my fullest potential by engaging in the rigorous endeavor of lifelong learning: wife, Renee; parents, John and Loretta Weitz; son, Matthew; daughters, Rebekah, Hannah, and Kelli; son-in-law, Brandon; and granddaughter, Vivienne.

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## **Abstract**

The health care industry is under siege with muscular skeletal disorders (MSD), the vast majority of which are directly related to the manual repetitive transfer or repositioning of residents/patients from one position to another.

Two purposive sample groups were selected from over 200 nursing home facilities and identified as the “high” injury rate sample group and the “low” injury rate sample group. The research study used a mixed method analysis with a causal-comparative methodology for examining the differences between the sample groups.

The first research question explored: Did skilled nursing facilities with a high injury rate compare to low injury rate facilities on the number of mechanical transfer devices? The data analysis indicated that contrary to accepted theory, there was a demonstrated inverse relationship between injury rate and number of lifts available for use by caregivers.

The second question explored: Did the low injury rate sample group differ significantly from the high injury rate sample group when comparing them on the following variables: transfer training, morale, age, turnover, TIPS safety score, and individual efficacy? The data analysis of the six variables indicated that four of the six variables revealed a significant difference between the two sample groups.

The third question analyzed: Did caregivers (LPN, RN, and nurses’ aides) compare proportionally between subgroup resident injury rates? The data analysis indicated a confounding of the job subgroup variables due to company

staffing policies and the lack of definitive tracking requirements between licensed caregivers (LPN and RN) job exposures.

The final research question examined: Did nursing facilities with a high transfer injury rate compare with nursing facilities with a low transfer injury rate on caregiver dignity concerns for utilizing mechanical transfer equipment? The qualitative analysis using comparative cataloging techniques indicated the high injury rate sample group expressed proportionally more caregiver dignity concerns about mechanically transferring residents.

The research highlighted the complexity of issues that need to be addressed for solving the resident transfer injuries experienced by nursing facility caregivers. Therefore, the key to reducing these caregiver injuries is far more complex than just simply having additional mechanical transfer devices available for use.

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## CHAPTER ONE

### OVERVIEW OF THE STUDY

#### **Background of the Problem**

The health care industry (HCI) is besieged with muscular skeletal disorders (MSD) that are commonly referred to as resident transfer injuries experienced by resident caregivers (nurses and nurses' aides). Resident transfer injuries are directly related to the repetitive manual transfer, or repositioning of residents from one position to another. The resident transfer injury's contributing factors are possibly a result of years of emphasis on behavioral based safety training programs as well as numerous other potentially unexplored cultural variables. The dissertation study attempted to advance the research efforts needed to analyze the relationships of numerous variables such as training, leadership, employee morale, patient dignity issues, and other cultural variables which might be associated with resident transfer injuries.

The goal of examining these variables was to inform the health care industry and potentially suggest changes to what is currently presupposed as acceptable resident transfer injury exposures within the industry. The research study explored the influence of cultural values, dignity rights, training, turnover, caregiver mix, and leadership as change agents, and their relationship with influencing resident transfer injuries experienced by resident caregivers who are becoming an endangered worker in the health care industry (NNHS, 2004).

If you were to ask almost any one of the managers in the approximately 18,000 skilled nursing homes in the United States (Castle, 2009) what their most

significant challenge is, they would probably answer: “availability of quality staffing.” Staffing impacts all levels of resident care and it also has an enormous effect on the industries’ financial viability. According to the Bureau of Labor and Statistics, the associates caring for residents in the skilled nursing facilities accumulate 211,000 serious injuries each year (BLS, 2003), and these injuries total over 1 billion dollars in costs. Furthermore, the National Nursing Home Survey (NNHS, 2004) concluded that nurses’ aides are among one of the most at risk occupations for injury job categories in the US labor market with 18.8% of nurses aides experiencing back pain incidents. The overall number of injuries which involve lost work days, or medical treatment is on average 13.5 individuals per 100 full time equivalent (FTE) workers. When this number is compared to the national average for all job categories which is 4 individuals per 100 FTE workers, the significance of their injury exposure was extremely glaring (Castle, 2009).

The two most significant variables impacting the availability of quality staffing are an overall shortage of direct caregivers and the tremendously large job injury rate. Additionally, more than half the caregivers complained of chronic back pain and approximately 38 percent of caregivers required leave of absences, or even to eventually find a less hazardous workplace (Franken, 2009; Menzel, 2004; Bos, 2006; & Smith 2006). Labor represented approximately 70% of a facility’s total expense (LCCA, 2004). It can easily be seen that attracting the best and brightest to a facility and keeping them free from injury is a key component to any skilled nursing facility’s success. The primary job tasks

resulting in associates' injuries are the manual lifting, transferring, and repositioning of residents who are referred to in this document as resident lifting or resident transfers. According to Castle (2009) there were very few studies which have examined the injuries experienced in the nursing homes which have provided any concrete evidence of how to accurately prevent resident transfer injuries.

Until recently, many companies treated associates' back injuries as risk management exposures, and simply as a cost of doing business. Workers' compensation insurance against resident transfer injuries is purchased in the same way it would be to protect businesses against losses from fire, flood or other risk exposures. Beyond operating a safety program in accordance with insurer or government requirements, resident transfer injuries were left to the insurance carrier to reactively manage. The rapid rise in workers' compensation costs began in the 1980's when costs rose from 22.8 billion in 1982 to over 63 billion in 2001 (Liberty Mutual, 2009) (BLS, 2006). The rapid rise in premiums has forced the insured companies to become more knowledgeable and more involved in proactive cost controls in this important area. Workplace accidents can be costly in terms of lost wages, medical expenses and lost productivity. Preventing resident transfer injuries is the best way for skilled nursing facilities to significantly control workers' compensation costs while maintaining a healthy and happy workforce. In a health care industry that is already short of staff it makes providing skilled nursing care even more challenging when associates are frequently exposed to injuries which ultimately leave the uninjured workers

clamoring to find someone else uninjured to help them perform resident transfers. Unfortunately, due to the workforce scarcity experienced in skilled nursing care, recruiting replacements for injured workers in the future will only be more difficult. The nursing home workforce was projected to increase by approximately 3 million new jobs between 2006 and 2016 (Gill, 2008).

### **Statement of the Problem**

The United States is indeed in a nursing caregiver crisis, and every single caregiver has to be protected from injury because there is likely no one available for replacement. If health care safety professionals can make the health care environment safer and prevent future injury to our caregivers, in return these caregivers will be able to provide care longer and be happier.

One research article pointed out the facts that hospitals had extremely high injury rates as compared to the national injury rate average of other industries in general, but nursing homes were almost three times higher than hospitals (Gill, 2008) (Carlson, 2009) (Liberty Mutual, 2009). The study indicated the injury rate was approximately 52 injuries per 1,000 workers per year in hospitals as compared to 132 injuries per 1,000 workers per year in the nursing home industry.

According to the Bureau of Labor Statistics, the United States health care labor force grew by only 1% each year between 1995 and 2005 (BLS, 2006). The average age of today's caregiver is 47 (Carlson, 2009). By 2017, 50% of all working registered nurses will reach retirement age. This mass retirement will happen as 78 million baby boomers celebrate their 65<sup>th</sup> birthday. The ratio of potential caregivers to the rising elderly population will decrease by 40% between

2010 and 2030 and may limit access to health care. The United States will need 1,754,000 registered nurses by 2020 due to growth in the health care industry. Based on current trends, we will only have 635,000 registered nurses (BLS, 2006). In light of the fact there is already a significant shortage of caregivers, keeping the caregivers we have healthy and productive will be a critical part of providing the needed health care for all elderly baby boomers coming of age in the near future. More recent studies indicated as of 2004 there are more than 2.4 million caregivers working in the health care industry (GAO, 2007). Even with 2.4 million caregivers working in health care it is estimated by the Department of Health and Human Services that the supply of caregivers fell approximately 111,000 short of the demand with the project shortage widening in years to come.

Recently there have been articles written which provide a counter argument to the position we are having a nursing shortage. One article entitled; *The Return of the RNs* (Thrall, 2009), indicate that the financial recession has created regional surpluses of nurses because of the number of patients who are foregoing care because of financial constraints. The literature review in this document attempted to explore this phenomenon in greater detail and specificity. The research study will also take this alleged surplus of caregivers (Carlson, 2009) into account when analyzing the effects of turnover and PPD on influencing the number of resident transfer injuries experienced by associates in the facility. If the surplus is truly regional, the literature should provide some clues on which part of the country is experiencing the surplus and how those facilities are being impacted with associate injuries.

## **Purpose of the Study**

The purpose of this study was to investigate if there were causal-comparative relationship variables within skilled nursing facilities with a significantly smaller proportion of resident transfer injuries when compared to skilled nursing facilities that experience significantly larger proportion of resident transfer injuries. The research study focused on investigating whether variables such as mechanical transfer devices, transfer training, dignity concerns, morale, age, and caregiver mix (RN-LPN-nurses' aids), turnover, census, TIPS safety score, individual efficacy, or other variables might be significantly related with the number of MSD injuries experienced in facilities. Therefore, by identifying and researching the numerous variables inherent in facilities which had a large proportion of MSD injuries, and comparing those variables with facilities which had a smaller proportion of resident transfer injuries in a comparative research study the variables with significant predictive potential were identified.

## **Research Questions**

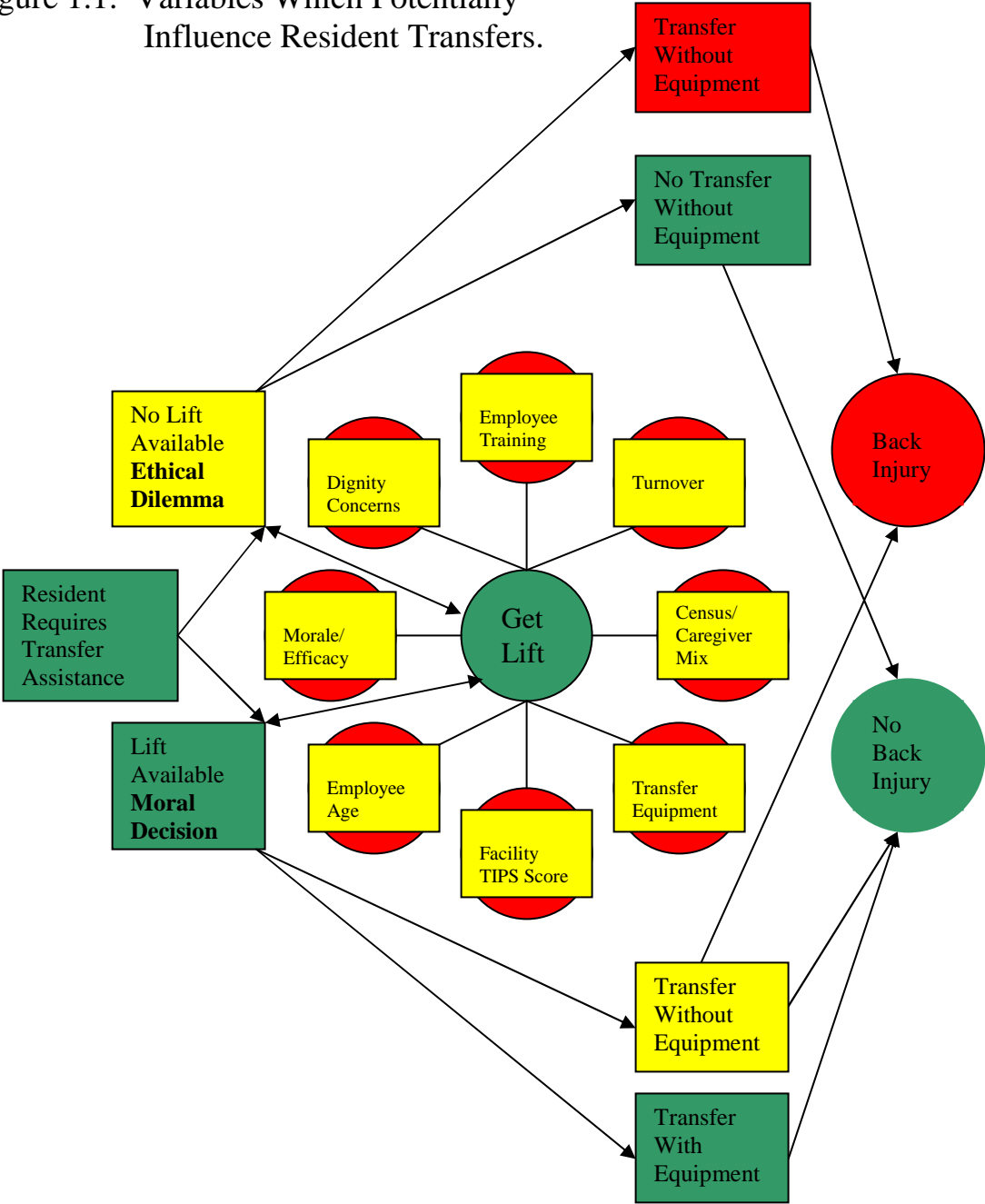
1. How did similarly sized skilled nursing facilities (SNF) that had a higher proportion of resident transfer injuries which were greater than or equal to six (GE 6) injuries for two of the last three years compare on the availability of mechanical transfer devices to similar facilities which experienced a lower proportion of resident transfer injuries which were less than or equal to one (LE 1) injury?
2. How did similarly sized skilled nursing facilities with an identified higher proportion of resident transfer injuries compare with skilled nursing

facilities with an identified lower proportion of resident transfer injuries on the following variables: transfer training, morale, age, turnover, TIPS score, census, and individual efficacy?

3. How did caregivers (LPN, RN, and nurses' aides) in similarly sized skilled nursing facilities compare between subgroup resident transfer injury rates?
4. How did similarly sized nursing facilities with an identified higher proportion of resident transfer injuries compare with nursing facilities with an identified lower proportion of resident transfer injuries on matters relating to resident dignity concerns?



Figure 1.1. Variables Which Potentially Influence Resident Transfers.



The conceptual framework pictured above illustrates the interaction between the resident transfer event and a multitude of variables which might influence the final positive or negative outcome of the transfer event. The framework is initiated with the need for a resident transfer to be performed by a caregiver and proceeds to illustrate how individual knowledge, cognitive processes, mental associations, individual experiences, and learning difficulty variables might impact the manner in which the transfer is performed. Furthermore, the potential effect of the mechanical transfer dignity concern variable may also ultimately influence the outcome of whether or not the caregiver experiences a back injury.

### **Rationale for the Study**

The rationale for the study was primarily centered on three premises. The first premise is the fundamental need for the nursing home industry to provide all resident caregivers with a safe and healthy work environment. The second premise was that there was a preponderance of literature indicting there was a shortage of available caregivers in the nursing home industry which was growing daily, and we need to protect from injury the caregivers we currently have working. The final premise was centered on the concept when we protect caregivers in the nursing home facilities from injuries they in turn will be able to provide the residents in those facilities with a higher quality of consistent care which in turn allows the opportunity for better resident outcomes. Residents in the nursing homes become familiar with caregivers and like the continuity of seeing the same friendly face each day which makes the caregivers seem like

extended family. When injuries plague the facility and caregivers have to juggle their schedules because of caregiver shortages, the residents become unfamiliar with the caregivers who are rotating daily throughout their stays which in turn can leave them lonely and disoriented. The research study is intended to provide the nursing home industry with baseline information on which variables may be associated with caregivers experiencing resident transfer injuries and thus provide nursing homes with the information to address those exposures.

### **Significance of the Study**

The research provided by this study could highlight the many variables which were associated with the number of resident transfer injuries experienced by caregivers in the nursing home industry. According to the Bureau of Labor and Statistics (2006), which is the reporting arm of the Occupational Safety and Health Administration, an ever expanding elderly population has projected staff increases to nursing aides, orderlies, and attendants to increase by 25% between 2002 and 2012. This increase will add an estimated 343,000 jobs and each of these jobs are directly exposed to potential resident transfer injuries.

Furthermore, a news release (Franken, 2009) indicated that a new bill has been introduced into the US Senate, by Senator Al Franken. The bill could significantly impact resident transfer protocol in health care and nursing home industries. The bill named *The Nurse and Health Care Worker Protection Act of 2009* (S. 1788, 2009), would require the Occupational Safety and Health Administration to develop and implement an occupational standard to reduce or eliminate the manual lifting, transferring, and repositioning of patient by direct-

care registered nurses, and other direct caregivers through the use of mechanical lifting devices.

This dissertation study indicated an influential relationship exists between the reduction of back injuries and the availability of mechanical lifting equipment. Furthermore, other potentially influential variables were identified in the facility lift program, and were explored during the research study. Based on the results of the study a cost versus benefits analysis could be conducted to demonstrate that buying more equipment, or controlling other potentially influential variables could save a quantifiable number of caregivers from potential back injuries. The healthcare industry can calculate as savings the massive amount of direct dollars paid in workers' compensation expenses while also combining with those savings the indirect dollar savings experienced by reduced turnover, higher associate job satisfaction, and better patient outcomes. These calculations could potentially demonstrate how much return on investment would be produced by purchasing additional resident transferring equipment or addressing other potential variables which influence the reduction of the injury rate experienced by associates transferring residents. The monetary rewards are far less significant as compared to the morale boost that will be created from reducing the health care industries associates' injuries. The ramifications of solving the injury crisis in the health care industry could be felt throughout the country. This study coupled with the recent introduction of Senate Bill 1788 (Franken, 2009) could potentially have an impact on the many variables which influence the direct caregivers in nursing homes and all other health care settings in the United States. The bill was brought

before the Committee on Health, Education, Labor and Pensions Subcommittee on Employment and Workplace Safety on May 11, 2010. This represented the first step in the legislative process which is required before the bill would be allowed to proceed to the full house of Congress for general debate.

### **Definition of Terms**

- **Acuity:** The physical or mental condition of the resident which is judged by their ability to perform their activities of daily living.
- **ADL:** Activities of Daily Living (sitting, standing, eating, walking, etc.).
- **Back belt:** A personal protective devices used to support the lower back and abdominal muscles during the lifting of materials or objects.
- **Back Injuries:** Often referred to as musculoskeletal disorders (MSD) that could develop gradually over time, or may result from instantaneous events such as a single heavy lift. MSD's include muscle strains and tears, ligament sprains, joint and tendon inflammation, pinched nerves, and herniated spinal discs.
- **Bariatric Lift:** A lift capable of lifting a person up to 500 pounds.
- **Bariatric Transfer:** The totally dependent or bariatric transfer involving the transferring of residents who weigh over 250 pounds, and who require mechanical lifting only. The mechanical lifting equipment used in a bariatric transfer is special equipment and designated for bariatric transfers. The bariatric lift can be used for a normal lift, but the normal lift cannot be used for a bariatric lift.

- BLS: Bureau of Labor Statistics which is the statistical recordkeeping arm of the Occupational Safety and Health Administration. The BLS compiles all injury data analysis.
- Caregiver: Caregivers are licensed employees in the skilled nursing facilities who provide direct hands on patient care. The caregivers can be certified nurses' aides (CNA), registered nurses (RN) or Licensed Practical Nurses (LPN).
- Data Initiative/Data Survey: The Data Initiative is a nationwide collection of establishment-specific injury and illness data from approximately 80,000 establishments. It collects data from establishments by using the "OSHA Work-related Injury and Illness Data Collection Form." The Data Initiative is OSHA's Annual Survey referred to in 29 Code of Federal Regulations 1904.41.
- DART (Days Away, Restricted, or Transferred): The DART rate includes cases involving days away from work, restricted work activity, and transfer to another job. It is calculated based on  $(N/EH) \times (200,000)$  where N is the number of cases involving days away and/or restricted work activity, and/or job transfer; EH (Earned Hours) is the total number of hours worked by all associates during the calendar year; and 200,000 is based on number of hours worked for 100 full-time equivalent associates.
- Dependant assist: The resident is solely dependent upon caregiver assistance to change position or to be moved from one location to another.

The dependent assist could be from sit to stand, stand to sit, bed to wheelchair, wheelchair to bed, toileting, bathing and lying down.

- GE: Greater than or equal to the following numeric value.
- High resident transfer injury rate facilities: Skilled nursing facilities which experience resident transfer injury rates in excess of the industry average injury rate which is defined as greater than or equal to 6 OSHA recordable injuries per 100 employees.
- Independent or minimal assist: Assisting a resident who is not solely dependent upon the caregiver to change position or to move from one location to another. The independent or minimal resident assist could be from sit to stand, stand to sit, bed to wheelchair, wheelchair to bed, toileting, bathing and lying down.
- LE: Less than or equal to the following numeric value
- Limited lift facilities: Skilled nursing facilities which have implemented policies and procedures to completely prohibit the manual transfer of residents.
- Low resident transfer injury rate facilities: Skilled nursing facilities which experience resident transfer injury rates significantly less than the industry average injury rate which is defined as less than or equal to 1 OSHA recordable injury per 100 employees.
- MSD: Muscular skeletal disorders and for the sake of this study will be defined as lower and upper back injuries.

- National Emphasis Program: The program is directed by the Occupational Safety and Health Administration to ensure all industries are recording injuries according to the specifications outlined in the 29 CFR 1904 official record keeping guidelines for occupational illness and injury.
- NIOSH: National Institute of Occupational Safety and Health which is the consulting and standards arm of the Occupational Safety and Health Administration.
- No lift facility: Skilled nursing home facilities which have implemented policies and procedures to completely prohibit the manual transfer of residents.
- OSHA: Occupational Safety and Health Administration which is the government agency responsible for the enforcement of the Occupational Safety and Health Act of 1970. The act provides for a safe working environment for all workplaces covered under the act.
- Patient Transfer Score: The patient transfer score is a rating system that quantifies for the caregivers how dependent or independent the residents are with their ability to transfer themselves. An independent transfer is where they can transfer themselves without assistance. The one person assist requires the aid of one caregiver or light mechanical device. The two person transfer requires the assistance of two or more caregivers and/or mechanical devices.



- Resident: Those individuals in the skilled nursing facility to whom care is being provided. The resident can be overnight patients or they may be occupants for several years.
- Resident Transfer: Resident transfer involves assisting the resident to change position or move them from one location to another. The resident transfer could be from sit to stand, stand to sit, bed to wheelchair, wheelchair to bed, toileting, bathing and lying down.
- Resident Transfer Injury: An injury which is experienced while assisting a resident with one or more transfer activities associated with the resident's activities of daily living.
- Site Specific Targeting: A program initiated by OSHA which targets certain industries that have excessive injury rates which are deemed significantly above or below the national average for their Standard Industrial Classification code.
- Skilled Nursing Facility: A skilled nursing facility is a building that provides care-giving to patients who require skilled licensed nursing care and active medical supervision. Skilled nursing facilities serve residents with dementia, Alzheimer's disease, and other acute types of acute care that require licensed medical observation. These facilities provide skilled licensed caregivers for residents who are dependent on those caregivers for providing them assistance with their activities of daily living.

- Transfer Related Injury: All injuries in the facility which happens during the repositioning or transferring from one position to another required in order to accommodate a resident's activities of daily living.
- TIPS Safety Score: Totally Integrated Protection System (TIPS) safety score consists of 20 questions which are answered go or no-go and the facilities are scored according to how well they comply with the questions.

### **Delimitations of the Study**

This study used a purposive sampling technique with a causal-comparative research model that identified two sample groups which were identified by a three year workers' compensation injury loss run. The samples included facilities that experienced small versus large resident transfer injuries by caregivers in their respective facilities. The study samples were restricted to 120 bed facilities with less than or equal to (LE) 1 as "low" resident transfer injuries as compared to facilities which experienced greater than or equal to (GE) 6 as "high" resident transfer injuries. The study is restricted to licensed caregivers who experienced back injuries while performing resident transfer related job duties which include certified nursing assistants and all licensed nurses.

1. The study focused only on resident transfer injuries to the back (MSD) that occur in the normal scope of a resident transfer.
2. The study excluded traumatic events where a patient or resident might fall while ambulating. These injuries might have resulted from a resident experiencing a slip or trip and not directly from the resident transfer.

3. The study excluded any type of caregiver slip, trip or fall event that might have caused the back injury. These types of accidents are above and beyond the control of any variables within the scope of this resident transfer study.
4. The study also excluded associates who can not adequately and concisely explain what happened during the event that resulted in their back injury. This allowed for an accurate interpretation of what actually happened during the resident transfer instead of what was perceived to have happened by interpretation.

### **Limitations of the Study**

This study is limited by the accuracy of the third party administrators' reporting system which officially documents injuries in the researched nursing homes. Furthermore, the study is limited by the accuracy of the associates who are reporting the injuries and the consistency to which they report all resident transfer injuries in the facilities. There are some studies which indicate in certain cultures injuries might go unreported or under reported, and this study is limited in that one has to accept the information provided as complete and available information.

- The study focused on analyzing back injuries received from transferring residents. The study was limited to the injuries reported in the historical third party administrators' data collection system.
- The equipment that is in the facility such as beds and mechanical lifting equipment were analyzed as reported.

- There was a recognized consistency of job duties, and how those job duties are performed, and examined by the study researcher.
- There is a limitation based on the working condition of the mechanical lifting equipment and all equipment reported as available is in good working condition.
- There is a limitation created by the training and the familiarity with the mechanical lifting equipment so that the caregiver is comfortable using the equipment.

### **Overview of Methodology**

The population consisted of skilled nursing facilities with a total population of over 200 individual facilities. The study identified from the population by purposive sampling technique two samples which were comprised of similarly sized (120 bed) nursing home facilities that were identified as Sample 1 having a “high annual resident transfer” injury rate (injury rate GE 6) for two of the last three years, and Sample 2 with a “low annual resident transfer” injury rate (injury rate LE 1) per year for two of the last three consecutive years. There were 21 facilities in the high resident transfer injury rate group (Sample 1), and 40 facilities in the low resident transfer injury rate group (Sample 2). A comparative study was conducted to determine if there were any identifiable influential variables which might have a strong predictive relationship for identifying the number of resident transfer injuries experienced in facilities. This mixed methods research study used a causal-comparative design for the quantitative aspect and a phenomenology design for the qualitative aspect.

## **Assumptions**

Methodological assumptions occurred while investigating the relationship between caregiver resident transfer injuries and variables such as the availability of mechanical lifting equipment, learning and leadership styles, dignity rights, morale, organizational culture, individual efficacy, supervision, turnover, etc. The methodological assumptions included, but were not limited to

- Facilities were accurately reporting the amount of equipment.
- The accuracy of reporting injuries included associates consistently reporting all injuries and facilities consistently filing reports.
- The amount and mixture of resident acuity remained stable.
- The amount and mixture of equipment remained stable.
- The amount and mixture of resident census remained stable.
- The lifting equipment in the facilities was being used when available and was being used appropriately.

## **Summary of the Study Outline**

The study utilized a purposive sampling technique with a comparative research model in order to explore many of the variables which had a potential influence on the number of resident transfer injuries experienced by nursing home facilities with a low number of resident transfer injuries compared to facilities with a high number of resident transfer injuries. The study had identified a few of the limitations and several of the delimitations, and the study explored the predominant variables which may ultimately influence resident transfer related injuries as identified by a rigorous literature review.

CHAPTER TWO  
REVIEW OF THE LITERATURE

**Introduction**

This chapter breaks down the literature into three primary areas of literary investigation. The first area of literature investigation to be explored is the historical literature review which includes articles, studies and literature dating back approximately four years or more. This historical literature review will provide a foundation for identifying the historically accepted variables which might influence resident transfer injuries experienced by direct caregivers in the nursing homes. Furthermore, the historical review will provide some prospective on how the experts have historically espoused solving the problem for many years while evaluating if those perspective have evolved.

The second area of the literature review focused on investigating the many ancillary variables which were identified in the literature search as having an influence on the number of resident transfer injuries experienced by caregivers in the nursing homes. This section of the literature review included both nationally accepted literature and internationally recognized literature which addressed the variables that impact resident transfer injuries in the health care homes.

Finally, the last section of the literature review included investigating the most recent studies which could indicate that perspectives are shifting due to recent national economic factors, additional studies, and greater literature exposure that may impact the number of caregivers available in the nursing homes. This recent literature section was limited to studies which were current,

and applicable to the most recent political, ergonomic, analysis, and economic developments in the year 2010.

### **Historical Studies in the Literature**

There are a number of historical papers written about the ergonomic stressors such as patient obesity, confined work spaces, poor lighting, improper working surfaces, some or all were experienced by caregivers in the skilled nursing industry. The Patient Safety Center of Inquiry, Veterans Health Administration and Department of Defense worked together developing an extensive guidebook and titled it, *Patient Care Ergonomics Resource Guide: Safe Patient Handling and Movement* (DOD, 2001). The guide was a wealth of information and examines the risks and exposure of caregivers in the skilled nursing industry to numerous muscular skeleton disorders (MSD). The guide was a detailed resource on how to implement a quality Safe Patient Handling and Movement System. However, there was an implied assumption that this is the only way to attack the problem and an assumption that lifting equipment is the key missing ingredient to ensuring a safe skilled nursing facility (Charney, 2000) (*Ergonomics*, 2005) (*Nursing Standard*, 2004).

Within the Department of Labor website was a speech delivered by Mike Seymour (OSHA, 2000), when he was the director of the Office of Physical Hazards in the Occupational Safety and Health Administration's directorate of standards and guidance. Mr. Seymour was very steadfast in his convictions that the answer to the injury and illness epidemic beleaguering the skilled nursing industry is the need for additional mechanical lifting equipment. According to

Mr. Seymour, it was not uncommon to hear workers say (after the implementation of a safe lifting program with additional equipment):

- Doubling the staff would not have helped us as much as the equipment..
- The lifts made my job 75% easier. I would not work at another nursing home without the equipment even if they paid me \$10 an hour more.
- Now at the end of the day, I have energy to go home and take care of my family.
- My husband is thankful that his wife has been given back to him.
- No more aches and pains.

The speech delivered by Mr. Seymour (DOL, 2000) was very opinionated about the causes of injuries in the skilled nursing facilities and set out to direct an effort to resolve those causes. However, there were so many variables introduced to the facility environment at one time that it is difficult to determine which one specifically, or all of them together caused the final effects (Harber, 1994). The speech introduced additional ergonomic training, additional lifting equipment, additional team support, additional accountability for not following protocol, additional ancillary equipment, as well as, the potential Hawthorne Effect brought to resident transfers and MSD exposures (Snook, 1978).

An article written by Steve Pierce (WLNI, 2002) who at the time was the Public Information Manager for the State of Washington's Department of Labor and Industry was uncovered during the literature review. The article asserted that the admirable goal for all skilled nursing facilities was to have a "zero lift" environment. It was his opinion that all transfers of residents should be



performed with mechanical lifting equipment in order to maximize the safety and health of the caregivers. Mr. Pierce at the time contended that his data indicated nursing homes and personal-care facilities are among, the most, hazardous environment in which to work. He used the rate of 14.2 injuries and illnesses per 100 full time workers which in contrast was above the nation's industrial average of 6.7. There were additional statistics presented in his article, supporting that nursing homes and health caregivers attribute 51% of all injuries to resident handling and of that 42% are back injuries. If this 42% of back injuries is compared to the national average of 27%, the problem becomes more significant. Furthermore, Mr. Pierce evaluated the need for additional staff in lieu of purchasing additional equipment, and concluded that additional staff would only incur additional injuries if the hazard was not eliminated (WDOL, 2002).

Another article *Success with Ergonomic; OSHA Success Stories* from the Department of Labor (DOL, 2002) with basically the same slant as the previously mentioned article was written about a company named Heritage Enterprises, Inc., located in Bloomington, Illinois. The primary difference between this study and the previous studies is that the population size was significantly larger with 2,400 employees in the population as compared to approximately 140 employees in the previous study. The company had taken the same "no lift" approach (Charney, 2000) as the previous article and obtained approximately the same results. The company did not provide statistical data to support the premise that a no lift approach works, and they did not control multiple variables that were entered into

the environment at the same time to determine any significance of one variable over another.

In *A Back Injury Prevention Guide for Health Care Providers*, written by the CAL/OSHA Consultation Service, Education and Training Unit, Sacramento, California (DOL, 1998), the literature once again was very detailed in providing direction on how to utilize proper lifting equipment to eliminate back injuries in the workplace, but failed to provide the foundation for the establishment of the problem. An article written by Marras (1999) in reflection to the CAL/OSHA guide did a much more intensive investigation on the many variables that could cause resident transfer related injuries. The article identified combative residents as being a possible injury exposure variable during the transfer of the resident. If during the transfer, residents without warning become aggressive, and loses his or her balance, the caregiver would likely be in an ergonomically unsafe position and therefore, prone to potential serious injury.

Another variable identified was that residents can become fatigued during the day, and a resident who might be an independent or minimal assist in the morning could easily become a totally dependent assist without warning later in the evening. Additionally, the article identified medication as being a variable that might cause residents to become unpredictable both mentally and physically. One of the areas identified in this article as a potential hazard was the physical layout of the skilled nursing home or health care work space. The article identified cramped quarters, oxygen tubes, electric cords, bed controls, IV tubes, and numerous other instruments or equipment that could create poor posture or

restrict the use of the mechanical lifting equipment because it would not fit where needed.

Posted on the Occupational Safety and Health Administrations web page (DOL, 2002), the department presented an article which centered on the qualitative analysis of the MSD injuries prevalent in the skilled nursing home, and health care industry. The article documented the first case study of a nursing home in Wyandot County, Ohio. The facility was a 100 bed skilled nursing home that was 28 years old at the time. There were 90 employees and 45 of the associates were caregivers and skilled nursing assistants. The study was primarily a qualitative analysis of the MSD problem and produced no quantitative statistical data. The population was relatively small, and many of the potential influencing variables were somewhat ignored. The results of the study were convincing with context validity, but the researchers did not identify the descriptive, interpretive, or procedural validity.

The research also produced some relatively recent literature which included an article entitled *Hospitals Lag in Safe Patient Handling* (Hospital Employee Health, 2007), which indicated “nurses and nurse’s aides’ remain among the top 10 occupations with the most MSD injuries.” Furthermore, the article continued to advance the idea that mechanical lifting equipment seems to be the key ingredient to making the health care environment a safer place to work. However, the article also explained how there are several variables which go along with equipment that are imperative to the success of the equipment. These

variables included, but are not limited to, items such as training, accountability, competence and team work.

One of the historical studies: *An Ergonomic Comparison between Mechanical and Manual Patient Transfer Techniques* (Silva, Blosswick, Lillquist, Wallace & Perkins, 2002), quantitatively evaluated the risk exposure of caregivers in the nursing home industry. The study proposed the following:

Many studies have concluded that manual patient handling is one of the primary causes for the high prevalence of low back pain among nurses and nurses aides [1,2,4,7,]. Smedley, *et. al.* [1] performed a study on manual handling techniques and the risk of low back pain in nurses. The study used the Michigan 3D Static Strength Model (Version 4.0) and electromyography (EMG) of the low back muscles, and they were compared for both sample groups. They found that patient reposition and patient transfers from bed to chair were associated with increased risk of low back pain [4]. The hazard associated with the lifts and transfers is not only a function of the weight of the patient but is a combination of many other factors including the patients size, shape, deformities, low limb functions, balance and co-ordination [1,4,5]. Also, the nurses may be in situations where the lifting posture is awkward, the lift is jerky or accelerated or the space available is constricted [1,5]. The risk associated with manual transfers and repositioning may be a result of a lack of training in the proper lifting techniques. It has been found, however, that the traditional approach of training in proper lifting and handling

techniques alone are of little or no long-term benefit [6]. (Silvia et. al., 2002, pp.19-20)

This study was significant because it researched and documented the many variables associated with transferring residents and their influence on reducing caregiver injuries. Ultimately, the study concluded that mechanical lifting devices should be used because they appear to provide a more desirable lift and a less hazardous lift. In the conclusion of the study was stated; “It is recommended that patient transfers be accomplished with mechanical assist devices. When mechanical assist devices are not available, two people should perform patient transfers” (Silvia et. al., 2002).

In another research study Keir and MacDonell (2004) examined muscle activity patterns during manual patient handling while performing manual transfers, and transfers using floor, and ceiling lifts. The study explored “EMG patterns during transfers from bed to wheelchair and wheelchair to bed as well as patient repositioning in novices versus experienced participants was also examined” (Keir & MacDonell, 2004, p.296). The conclusion of the study asserted “The difference between the muscle activity patterns between the experienced and novice patient handlers may suggest a learned behavior to protect the spine by distributing load to the shoulders” (Keir & MacDonell, 2004, p. 296). This conclusion was important because it highlighted the importance of training and exemplifies how additional variables outside of just equipment impact the risk exposure associated with resident transfers.

The Government Accounting Office (GAO, 2007) released a study in April, 2007 which indicated there is a critical shortage of nurses. The premise of the article was centered on the idea that Health and Human Services needed to focus its efforts on identifying facilities with a critical shortage of nurses (GAO, 2007). The study indicated that in the year 2000 the supply of nurses fell by approximately 111,000 short of what was actually needed at the time. Furthermore, the study indicated the shortage would continue throughout upcoming years. This study concurred with the Bureau of Labor and Statistics (2004) study which indicated that because of the rapidly increasing number of senior citizens in the United States, the need for nurses' aides and attendants was estimated to increase by approximately 25% between the years 2002 and 2012. This increase was projected to add an estimated 343,000 jobs.

### **Variables Identified in the Literature**

The literature review produced several potential variables which might influence the number of resident transfer injuries experienced by caregivers in the nursing home facilities. Some of the variables which were identified include mechanical transfer devices, training, dignity rights, morale, age, shift work, caregiver mix (RN-LPN-nurses' aide), turnover, census, patient acuity, organizational culture, individual efficacy, supervision, personal protective equipment, and other potential variables.

The most recent study about variables impacting the number of resident transfer injuries in the nursing homes found was sponsored by the Bureau of Workers' Compensation (BWC) in the state of Ohio (AJIM, 2009). The study

emphasized the serious problem related to resident transfer back injuries in the nursing homes in Ohio which was identified by the fact that back injuries with lost work days in Ohio are four times the national average.

The BWC study evaluated nursing homes in Ohio for the years 1995 – 2004 using Poisson regression. The results of the BWC study indicated there was a 21% decrease in the number of back injuries for every \$500.00 purchase of equipment. Furthermore, the BWC study indicated there was a relationship between the dollars spent, and the reduced numbers of injuries experienced by workers were also related to the magnitude of the injury. The BWC study pointed out that total costs associated with back injuries in the nursing homes included medical costs, lost productivity at work as well as at home. The study indicated the personal suffering of nursing home caregivers to be approximately 1.9 billion dollars. The intervention variables which the study examined were ergonomic and capital expenditure (lifts and beds) variables. The BWC study included all claims with multiple injuries sites which were coded with at least one of the injury sites being coded as a back injury.

The most significant finding of this BWC study was the back injury rates chart for injuries by size of employer. The study documented that over a 10 year (1995 – 2004) period the average number of back injuries experienced by nursing homes with an average of 120 employees' average 5.9 injuries per 100 full time employees (AJIM, 2009). The BWC study explained some internal research study limitations and the most significant one was the confounding of motivational variables between facilities that were trying to improve their safety

standards and those that were just reporting injuries. The conclusion confirmed the BWC study findings that substantiate that equipment purchases were the primary contributor for reducing workers' compensation claims costs which were directly associated with the physical stress involved in transferring residents. The other variables which were not substantiated as having a significant relationship with reducing claim costs were training, consulting, and staffing ratios.

Another study reviewed focused on the ergonomic solutions which would be beneficial for an aging workforce. This ergonomic study focused on ergonomic concerns encountered in all work places and was not restricted to healthcare workplaces. The study was important to this literature review because it provided credibility to the variable of age and its relationship to influencing injury rates. The article was written by Roper (2007) which outlined the importance of ergonomic factors and its influence on productivity improvements in the workplace. The study indicated the workforce is aging significantly in the next decade by referencing as support for its position the American Association of Retired Persons aging report. The American Association of Retired Persons indicated in their literature, "between 2000 and 2002, the number of individual in the 55-64 age range will increase nearly 40 percent, and those in the 65 plus category will increase more than 40 percent" (Roper, 2007). Roper reported in 2007 using the data between 2000 and 2002 the study needed to take a more comprehensive, integrated, and multi-disciplinary research effort while exploring organizational culture, policy, procedures, individual behaviors, and the physical



layout of the environment. However, the study brought into focus the importance of evaluating age when researching the impact of transfer related injuries in the nursing facilities as a variable.

One study published in *Compliance & Risk Management* (Demby, 2009) dealt with the influence of employees' ethnic culture and norms as they impact safety culture in the workplace. The study was not directly related to nursing homes but was significant because in many nursing homes there is a wide representation of ethnic backgrounds. The study examined the Korean Airlines and explored how their ethnic culture had a direct impact on their safety culture and directly related to the airline having the worst safety record in the industry. Once the ethnic culture variable was explored and remedied the safety culture was significantly improved and led them to maintain a crash free record from 1999 to 2009. The importance of this study was to highlight the part that the variable ethnic culture plays in establishing a workplace which has a defined safety culture.

In *Raising the Bar: Along with Expectations, the No-lift Movement has Raised Questions for Providers' Intent on Doing the Right Thing* (McKnight's Long-Term Care News, Sept. 2006), an entirely new variable was identified which may need inclusion in any additional research efforts into the comparative analysis of MSD injuries in the health care setting. The variable was the "right to dignity" bestowed on the patients to be handled in a manner they feel provide them with care and dignity. The dignity issue encompasses the workers as well as

the resident and is basically a perfect storm forming between what is safe for the worker clashing with what is dignified for the resident.

One of the international studies reviewed was a Denmark study which was conducted by the National Research Centre for the Working Environment (Skotte & Fallentin, 2008). The focus of the research was to explore low back load experienced by caregivers during repositioning patients in their bed while assessing the variable of patient's weight and acuity. This study was extremely important because it quantified the effect of load on the caregiver's spine while performing the common daily task of repositioning a resident in their bed.

The primary importance of the findings of the Skotte and Fallentin study was that it provided alternative conclusions versus many of the research findings which were professionally accepted in the nursing home industry. Using scientifically acceptable research techniques it determined how transfer devices and transferring techniques exerted a major influence on reducing transfer injury exposures as compared with patient's weight and disability. The conclusion of the study was that repositioning residents in their bed frequently exceeds the NIOSH action level of spine load of 3400 N with 25% at high risk of injury. The key findings for this study which are pertinent to the proposed research study are the importance of variables such as transfer technique and assistant devices on reducing the number of transfer related injuries experienced in the nursing homes.

Another international research article was written by Suzanne Fullbrook (2004) and published in the *British Journal of Nursing*. The research article highlighted the potential legal impact of patient dignity rights and how dignity

concerns impacted both the patient, and the caregiver in the health care setting. The reason the article was intriguing is that it is mainly focused on the concept of dignity rights versus the ethical dilemma of personal safety rights for caregivers. Do the dignity rights of the resident and ensuring their psychological well being are maintained outweigh the potential physical injury to the caregiver who is exposed to potentially grievous injury due to manually lifting the patient? The ethical dilemma centers around the fact the resident feels less dignified by being transferred using mechanical equipment and that the caregiver is exposed to serious injury by not using mechanical transferring equipment. The study explored the question of who has the greatest rights. The literature ultimately ruled in favor of the resident and concluded that English law indicates the rights of the disabled resident exceed those safety concerns of the caregiver. The impact of dignity on the propensity to use mechanical lifting equipment on residents would be an extremely interesting variable to explore further in future research.

Another study which encompassed the variable of dignity rights for patients during transferring events was written by Richard Griffith and Mary Stevens (2004). This article was a reiteration of the previous study performed in England and centers around the English laws that require residents' rights to dignity outweigh the caregivers' right to safety. The article also brings to light a study by Moody, *et al* (1996) which suggested that nurses are hesitant to use mechanical lifting equipment on patients because they feel it is not the same as manual lifting.

This study is important because it brings into account another variable which is the dignity concern of nurse. The article said “the nurses in the study argued that the great majority of patients were strongly opposed to being lifted by mechanical means. Patients complained of being degraded and being unsafe in this equipment” (Griffith, 2004, p. 39). The two main issues were the dignity of the patient and the perceived dignity the caregiver had for the patients’ feelings which might in fact be a true bias of their own.

A recent study took into account the variable of wearing a non-expanding weight lifting belt while performing manual material handling transfers (Ciriello, 2008). This study was not directly related to resident care in the nursing homes but it did present a viable variable which might impact the number of potential resident transfer injuries in the nursing home industry. Transferring a resident has many more variables involved with the transfer as compared to transferring a solid object with handle holes, and many of the principles applied to the study of transferring material handling could by theory apply to transferring residents in the nursing home. Some of the nursing homes utilized back belts and some of the nursing homes did not utilize back belts. Additional study needs to be performed as to whether these back belts actually relate to reduced injuries. The study indicated that back belts were commonly used in the industrial setting, but there was little empirical evidence supporting the facts as to whether they had any impact on reducing the number of back injuries. The study came to the conclusion, “While the evidence to support the back belt as a preventive device for low back pain(LBP) or low back disability (LBD) might be less than

conclusive, there is some indication that workers who already have LBP or LBD may benefit from the use of the back belts” (Ciriello, 2008 p. 1049).

Another study (McGlothlin & Streetman, 2007), summarized the importance of training as a variable which ultimately could influence reducing transfer related back injuries in the nursing home industry. The study was a case study and the hypothesis of the case study was the following:

Engineering controls designed to minimize or eliminate manual transfers of residents will result in a significant reduction of injuries to nursing home staff and residents, and will result in a significant reduction in both direct and indirect injury related costs. (McGlothlin & Streetman, 2007. p. 2)

The study is one of the few studies reviewed which used quantitative and qualitative research methodologies together. The primary intervention analyzed by the research team was the development of a training program and did not use introducing additional equipment into the facility as an intervention. The study centered on training the caregivers to use the equipment correctly they already had in the facility. Though the study espoused both quantitative and qualitative methodologies the conclusion of the article failed to present any statistical findings.

One overseas study (Faber & Van Dieen, 2007) was a research project performed by a respected university in the Netherlands. The study was a quantitative methodological approach to analyzing the impact of interventions on lifting behaviors. The study utilized academically accepted statistical procedures

(ANOVA) and included extensive corroborating literary citations. One major concern with the study was the author's attempt to evaluate too many intervention variables which ultimately confounded the conclusion of the study. The study ultimately concluded that changes in lifting behavior did impact low back moments. This study was important because it provided some baseline information on the effects of a caregiver's behavior on the attenuation of their low back moments which in turn might help reduce the potential for reducing transfer injuries in the nursing home industry.

Engst, Chhokar, Miller, Tate and Yassi (2005) did a study in Canada under the auspices of the Occupational Health and Safety Agency for Healthcare in British Columbia, Canada. The study centered around the premise that resident and patient handling was the leading cause of injuries in the Canadian healthcare industry. Therefore, the Canadian government decided to evaluate the effectiveness of overhead ceiling lift programs at reducing the exposures of injuries from resident transfers by comparing injury data and the staff perceptions of the program from before the program was initiated as compared to after the program was implemented. The study performed a comparative analysis and used two groups. The first group was the program group which had overhead lifting devices and the second group was caregivers who did not have overhead lifting devices.

The study used a qualitative instrument in the form of a questionnaire to assess perceived risk of injury and discomfort as well as what the caregiver perceived as the preferred resident handling method. Furthermore, the study

examined via the questionnaire the caregivers perceived physical demands of the lift and comfort of the lift, frequency of the lifts, the way the work was organized and the overall staff satisfaction. It was determined by the study that the caregivers definitely preferred the overhead lifting devices as the preferred method for performing resident transfers as compared to other alternative ways which included floor lifts or manual lifts. Furthermore, there was a significant reduction in perceived risk of injury and discomfort to the upper extremities.

Ultimately, the workers' compensation costs for transfer related (lifting) injuries were reduced by approximately 68%; this was a significant reduction while the comparison group increased by 68%. It was extremely interesting that the results indicated floor lifting devices were not significantly beneficial at reducing the perceived risks or had any of the other costs saving associated with repositioning residents. This study was particularly important because it brought to light by default that floor lifts were ultimately involved in a 68% increase in injuries and compensation costs while overhead ceiling lifting reduced overall exposure by 68%. The 68% increase when using floor lifts opposes much of the current literature and case studies being espoused today.

Concluding this section is an article entitled *Day of the Week Lost Time Occupational Injury Trends in the US by Gender and Industry and Their Implications for Work Scheduling* (Brogmus, 2007). The significance of this article was that it introduced an additional variable which might impact the number of transfer related injuries experienced in the nursing home environment. Nursing homes are a twenty-four hour a day, seven days a week, and 365 days a

year operation. The study examined if the day of the week resident transfer injuries happen in this non-stop work environment might have had some relationship with other variables which impact the total number of injuries experienced by individual nursing homes. The day of the week injuries happening during resident transfers needs to be further explored in the nursing home industry. The study (Brogmus, 2007) indicated there has been little research into the variable of injuries accruing during which day of the week, and additional research was warranted. However, their analysis indicated clear differences for day of the week injury rates. The study (Brogmus, 2007) indicated Sunday was the highest overall injury day of the week with an injury rate which was almost 37% higher than any of the other days of the week.

### **Government Regulations in the Literature**

The literature which references back injuries experienced by caregivers in the nursing home industries dates back several years. The first agency to which literature provides guidelines to the Occupational Safety and Health Administration was the article written in *Ergonomics* (2009) concerning the National Institute for Occupational Safety and Health which provides standards and safety guidelines to OSHA. The article indicated NIOSH had established a 35-lb limit as the maximum weight for a safe lift. The article uses as an example a 180 lb. patient who is partially dependent and only capable of lifting half their own weight. In this article if two nurses were used to help the 180 lb. resident, each would be required to lift 45 lbs. each. The conclusion of the article is that almost every lift of a resident is going to exceed the NIOSH safety limit. The



article also explains how people are not inanimate objects (boxes) and therefore the 35 lbs. box lifting regulation should not apply equally to lifting or transferring human beings. Lifting patients is never an endeavor which is performed under optimal conditions. Patients are not boxes and do not have handles and therefore, the caregiver is not capable of maintaining ergonomically proper body mechanics.

A study performed in 2008 by the *HC Pro's Advisor, Strategies for Nurse Managers* (2008), supported the aforementioned study. The *HC Pro's Advisor* (p. 4) indicated that in one of their studies 35% of the 58% of patients which required full transfer assistance were in excess of 200 pounds each. This would require more than 6 caregivers performing the transfer in order to maintain compliance with the NIOSH 35 pound limit.

The new ergonomic standards as outlined in the *Nursing Economics* (2001) indicates OSHA estimates approximately 6.1 million employers and 102 million employees will be affected by the new OSHA ergonomic standards. The article outlined how approximately 38% of all nurses were personally affected by back injuries. The majority of the back injuries experienced by nurses is associated with the transfer or lifting of patients. The article indicated that nurses will experience this back pain because 98% of the time the nurse will utilize manual lifting techniques.

Another article written in the *Orthopedic Nursing* (2006) journal reported the results of a national survey indicate nursing aides, orderlies, and attendants are classified as the highest risk job categories for the potential of experiencing a back injury. These caregiver job categories were expected to experience an

annual 269,000 injuries each year. In this same article the author discussed another study which was funded by NIOSH in order to research the effects of Zero-Lift programs on influencing the reduction of back injuries. The study evaluated eight nursing home facilities which varied in size and patient acuity. The finding of the second study in *Orthopedic Nursing* (2006) indicated the facilities had an overall decrease in injuries of approximately 32%, and there was a 62% decrease in lost work days and a 55% reduction in overall compensation costs. The government literature and studies seemed to indicate the key variable for reducing the number of injuries experienced by caregivers in the nursing homes as a result of resident transfers was the need for additional lifting equipment.

A final literature article included a directive published by the Occupational Safety and Health Administration which targets workplaces to ensure the strict adherence to accurate safety record keeping. OSHA has enacted a new national directive (OSHA, 2009) as the National Emphasis Program (NEP) and it targets those facilities that have potentially been consistently under-recording their injuries on the OSHA 300 log as identified by their low injury rates. The OSHA 300 log is the official form which records the number of injuries experienced by associates working in that individual facility. The NEP directive specifically targeted identified work places where the injury rate for musculoskeletal disorders recorded in 2007 are significantly higher than general industry injury rate. The NEP directive (OSHA, 2009) also outlined the Site-Specific Targeting program for 2009. Skilled nursing facilities were specifically targeted by the National

Emphasis Program as work places that had excessive injury rates. These facilities were targeted for the Site-Specific Targeting program during 2009 because of the exorbitant number of back injuries experienced in the nursing home environment.

### **Latest Developments in Literature (2009 - 2010)**

An on-line article in *Risk and Insurance.com* (2009) was a study researched by the Liberty Mutual Research Institute for Safety. The study concluded that overexertion continued to top the list of causes of most disabling work-related injuries. The Research Institute recently published their annual *Workplace Safety Index*. The index compiled injuries which occurred from 1998 through 2006 and analyzed them according to the most disabling work-related injuries. Ultimately the index estimated that in the year 2006 the United States businesses spent in excess of 48.6 billion dollars in workers' compensation costs and overexertion accounts for 25.7 percent of all injury costs which are approximately 12.4 billion dollars. The study by *Liberty Mutual* (2009) was extremely important because it validated the seriousness of the problem. It is still relevant and significant measures to reduce the number of overexertion injuries in the workplace needs immediate action.

In another study published in the *Ergonomics Journal* (2009) evaluated if the asymmetry multiplier incorporated in the 19911 NIOSH lifting formula was properly evaluating the biomechanical spine loads during lifting. This study was performed under ideal conditions and with inanimate objects which would not be comparable to lifting residents. This study upheld the NIOSH lifting

requirements but did not take into account the variables associated with transferring residents in a nursing home setting.

Another research article in the *Health Care Management Review* (Castle, Engberg, Mendeloff, & Burns, 2009) had the expressed objective of examining the associations between workplace injuries and organizational factors, staffing levels (PPD), and quality of care. This research article was important because its relevance to the research environment. The research article identified approximately 18,000 nursing homes in the United States which encompassed approximately 1.4 nurses' aides (NNHS, 2004). The research study stated that nurses' aides were at higher risk level than most anyone else in the nursing home setting with approximately an 18.8 percent higher risk of work related back injury. The study further highlighted that nurses' aides suffered approximately 13.5 injuries per 100 workers as compared to 4.0 injuries per 100 workers for the mining industry. The study emphasized that despite the disproportionate number of injuries suffered by those caregivers in the nursing home industry there still have been few if any significant studies conducted which examine causes of injuries in the nursing home industry. The conclusion of the study was summarized by the assertion that nursing home injuries were associated with organizational factors, caregiver, and quality characteristics of the nursing home environment itself, and this might be an opportunity for injury reduction.

An additional article focused mainly on the occupational injuries that occur during a resident transfer (Nurse Aide/VIP, 2009). The article pointed out that the Occupational Safety and Health Administration consistently said there

was relatively no safe way to manually transfer a resident in a nursing home. The first reason the study gave was that even under ideal transferring conditions the load limit will exceed the lifting capacity of the caregivers' spine. The second reason was there were very few ideal lifting or transferring conditions and most lifts are performed in cramped or confined spaces. The most important reason the study stated for most manual lifts being extremely hazardous was because when lifting and transferring residents, the load is unstable and residents are often unpredictable which leads to sudden shifts in motion. The study concluded by reemphasizing the fact there was no safe way to manually lift, transfer or reposition a resident.

Finally was an article published in the *American Journal of Industrial Medicine* (2009) evaluated MSD injury claims which occurred in nursing homes residing in the state of Ohio BWC and analyzed the impact of state sponsored interventions on reducing injury claims. The state sponsored intervention evaluations included training, consultation services, and grant equipment purchases (Park, et al, 2009). This study was important because it documented additional potential variables which might impact the overall reduction of injuries experienced by caregivers in the nursing home facilities nationwide. Many of the previously mentioned research studies have explored equipment purchases and training, but this study acknowledged additional potential influential variables as also including staffing ratios, resident acuity, and consultation services.

The results of the study indicated that consultation services on their own did not demonstrate a significant influential reduction in injury claim rates.

However, equipment purchase coupled with training had an approximate 21 percent reduction in injury claim rates which confirmed many of the previously mentioned studies. Furthermore, the research study indicated that a subset of nursing facilities which had the data available for research analysis indicated resident acuity was modestly associated with increased caregiver back injuries and the injury rate increased with a reduction in the resident to staff ratio. The importance of this study was that it highlighted the need to explore resident acuity and staffing ratios as potentially significant variable which might influence the reduction of resident transfer injuries experienced by caregivers in the nursing home industry.

A news release in *US Newswire* (2009) indicated a new bill in the US Senate which was introduced by Senator Al Franken was proposed to address the massive back injury problem in the health care industry. The bill was named *The Nurse and Health Care Worker Protection Act of 2009* (S. 1788, 2009) which would require the Occupational Safety and Health Administration to develop and implement an occupational standard to reduce or eliminate the manual lifting, transferring, and repositioning of patient by direct-care registered nurses and other direct caregivers through the use of mechanical lifting devices.

The passage of this bill could significantly alter the resident/patient and caregiver relationship. The bill did not take into account the other variables which have been identified in the literature as influential variables for impacting the number of transfer related injuries experienced by the direct caregivers in the hospital, nursing homes, and health care industries. The bill emphasized the use

of mechanical lifting devices as the primary variable which will eliminate or reduce the number of transfer related injuries experienced by direct caregivers. All health care facilities could be required to develop a facility wide plan for eliminating manual lifting techniques, and outline a strategy for acquiring additional mechanical lifting equipment along with identifying the transitional time frame for having the equipment available on the floor.

### **Summary of Literature Review**

The majority of literature available either utilized qualitative research methodology or supported their conclusions with minimally small sample size quantitative data analysis. There is a significant void in the available literature of large sample size quantitative research on resident transfer related injuries and the potential contributing variables which may influence injuries experienced by caregivers in the skilled nursing homes, and other health care environments. The majority of the literature was predominately in support of reform, and recommended that drastic action was needed immediately to address the serious problem of resident transfer injuries beleaguering the direct caregivers in the nursing home workplaces. However, the preponderance of these studies concluded that mechanical transferring equipment was the unequivocal answer for reducing resident transfer injuries. However, the premise is not scientifically supported with empirical evidence nor adequately defended with scholarly rigor.

The government as well as private industry became very active in recent years at promoting a safer workplace for skilled nursing providers (Frankel, 2009). The accepted school of thought seemed to be to direct an overwhelming

amount of attention, equipment, effort, and supervision at the problem and believe it was bound to get better. There also seemed to be an industry wide consensus that better was achieved by simply a numerical reduction regardless of the increased exposure levels, and this also included any numerical reduction irrespective of the costs versus benefit analysis to the financial viability of the facility. The literature review identified several studies which concluded that there was a need for additional scholarly research and data analysis of the resident transfer injuries being suffered by the caregivers in the nursing home industry. Finally, there is a call for additional research which could provide caregivers and managers with additional insight into addressing these influential variables which will ultimately reduce the number of injuries experienced by those caregivers.

In conclusion, the literature review identified several variables such as staffing, available equipment, mechanical transfer devices, training, dignity rights, morale, age, shift work, caregiver mix (LPN-RN-nurses' aides), turnover, census, patient acuity, organizational culture, individual efficacy, supervision, PPE, which are just a few of the totality of variables identified that might influence the number of resident transfer injuries experienced by caregivers in the nursing homes. There were no studies or literature found during the literature review which addressed injury free nursing home facilities and how these facilities maintained a zero resident transfer injury rate. Furthermore, there is a glaring void in the availability of research studies focused on exploring how some nursing home facilities experience little or no resident related transfer injuries.



## CHAPTER THREE

### METHODOLOGY

#### **Introduction**

This research study investigated why 61 seemingly identical nursing home facilities with seemingly similar variables had significantly different resident transfer injury rates. The study explored which variables might influence why skilled nursing facilities which have experienced significantly low resident transfer injury rates which is LE 1, (identified as smaller by the national average for the Standard Industrial Code for nursing homes) have consistently smaller resident injury rates than similar sized nursing facilities with high resident transfer injury rates which is GE 6. Furthermore, the research study identified and compared potentially influential variables within the skilled nursing facilities that might assist at identifying the differences between facilities which are at or above the national injury rate average for their Standard Industrial Code from those significantly below the average. The study used a mixed methods approach to analyzing which variables had an influence on positively or negatively influencing the number of resident transfer injuries experienced by the caregivers in the skilled nursing facilities.

#### **Research Questions**

1. How did similarly sized skilled nursing facilities (SNF) which have a higher proportion of resident transfer injuries (GE 6) for two of the last three years compare on the number of mechanical transfer devices to

similar facilities which experience a lower proportion of resident transfer injuries (LE 1)?

2. How did similarly sized skilled nursing facilities with an identified higher proportion of resident transfer injuries compare with skilled nursing facilities with an identified lower proportion of resident transfer injuries on the following variables: transfer training, morale, age, turnover, TIPS safety score, census, and individual efficacy?
3. How did caregivers (LPN, RN, and nurses' aides) in similarly sized skilled nursing facilities compare between subgroup resident transfer injury rates?
4. How did similarly sized nursing facilities with an identified higher proportion of resident transfer injuries compare with nursing facilities with an identified lower proportion of resident transfer injuries on matters relating to resident dignity concerns?

### **Research Hypotheses**

1. Hypothesis #1 (research questions #1): Similarly sized skilled nursing facilities with low resident transfer injury rates (LE 1) as compared to nursing facilities with high resident transfer injury rates (GE 6) experienced significant differences in the number of mechanical transfer devices.
2. Hypothesis #2 (research questions #2): Similarly sized skilled nursing facilities with low resident transfer injury rates (LE 1) as compared to nursing facilities with high resident transfer injury rates (GE 6)

experienced significant differences in variables such as transfer training, morale, age, turnover, TIPS safety score, census, and individual efficacy.

3. Hypothesis #3 (research question #3): Caregivers subgroups (LPN, RN, and nurses' aides) in similarly sized nursing facilities experienced significantly different injury rates.
4. Hypothesis #4 (research question #4): Skilled nursing facilities with low resident transfer injury rates differed from nursing facilities with high resident transfer injury rates on matters relating to resident dignity concerns.

### **Institutional Review Board Approval**

Institutional Review Board (IRB) approval was obtained prior to collecting any data or conducting research (Appendix A). Permission was received from the nursing home company to utilize corporate data while performing the field research component of the study. Waivers were not needed to be signed by any of the residents because the study examined only the results of the transfer, and did not study the individual resident. Workers' compensation data were exempt from Health Insurance Portability and Accountability Act (HIPAA) protection because it was the right and responsibility of the company to have full disclosure of all work related injury information. Based on the above, the company was entitled to grant permission to use corporate data for purposes of this research.

## **Population and Sample**

The study employed a purposive sampling technique which identified facilities for inclusion in the study based on their transfer injury rates. The total population of the research study is over 200 nursing home facilities from which a sample of 61 facilities was extracted. The 61 facilities selected from the population were chosen based on having a LE 1 or GE 6 annual resident transfer injury rates. The 61 facilities were divided into two sample groups comprised of similarly sized (120 bed) facilities. The samples were identified as Sample 1 which had a “high annual resident transfer” injury rate with GE 6 injuries per year for two of the last three years, and Sample 2 which had a “low annual resident transfer” injury rate with LE 1 injuries per year for two of the last three consecutive years. The sample size of the high resident transfer injury rate sample consisted of 21 facilities while the second sample containing the low resident transfer injury rate consisted of a sample size of 40 facilities.

## **Research Design**

The research study utilized a mixed methods (quantitative and qualitative) design (Bryman, 2008). The study identified two contrasting sample groups which were selected based on the facilities resident transfer injury rates. The resident transfer injury rates of the facility determined whether they were included in the high injury rate (GE 6 injuries per year for two of the last three years) or the low injury rate (LE 1 injuries per year for two of the last three years); using these rates the facility was assigned to the appropriate sample group.

The research design explored which variables might influence why certain facilities ultimately were classified as low versus high injury rate groups. The two sample groups (sample 1 is high and sample 2 is low) had contrasting injury rates which were experienced while transferring residents in the nursing homes. The causal-comparative analysis centers on the idea that logic of comparison can help researchers to understand social phenomena better when the phenomena are compared in a logical and meaningful situation (Bryman, 2008).

### **Quantitative Research Design**

The research study utilized the third party administrators' data collection system in order to conduct a causal-comparative quantitative analysis of resident transfer injury variables in the high versus low injury rate groups. The research utilized historical data available from the facilities to analyze mechanical transfer equipment available, transfer training, age, caregiver mix, morale, turnover, internal locus of control, and census. The study used the computer program maintained by the company marketing team for quantifying the facility satisfaction survey in order to analyze the facility morale variable. The company satisfaction survey is a Mark Reflex form (Appendix B) and consisted of 32 questions which were answered using a 5 choice Likert scale which was used for measuring employee morale. The study utilized the ROPELOC instrument which was a professionally accepted and validated Likert Scale questionnaire used for analyzing caregiver self efficacy (Appendix D). The historical company TIPS survey document (Appendix E) was used for analyzing and comparing facilities safety scores between groups.

**Data collection for quantitative instrumentation.** The study primarily utilized the historical data which was maintained by the third party administrators' workers' compensation data collection system. Furthermore, the study utilized the facility workers' compensation and personnel data files for conducting the historic quantitative data analysis. The third party administrators' data collection system was able to provide historical data for caregiver age, job title, and the shift of the transfer injury event. The facility documents and supplemental workers' compensation files provided the historical data for quantitative analysis of the variables such as the amount of mechanical transfer equipment, transfer training, caregiver mix, turnover, morale, TIPS safety score, and census. The quantitative field research utilized the ROPELOC instrument as the instrument for assessing caregiver individual efficacy and Locus of Control. The ROPELOC instrument assisted the researcher in quantifying a nonparametric measure which might influence the caregivers and its potential impact on overall facility resident transfer injury rates. The ROPELOC instrument which analyzed the self efficacy variable was the only quantitative field instrument that was used in the study. The company administered associate satisfaction survey was a historic quantitative Likert scale document which was used to analyze the caregiver morale variable.

Table 4.1

Instrumentation and Corresponding Quantitative Research Variable

Instrument	Research Variable
ROPELOC	Caregiver Self Efficacy
Mark Reflex	Caregiver Morale
TIPS Safety Audit	Facility Safety Awareness
Transfer Training Audit	Caregiver Transfer Training

***ROPELOC.*** The ROPELOC instrument was utilized for the quantitative analysis of the caregivers’ internal locus of control/self efficacy score between the two sample groups. The ROPELOC survey consisted of 45 questions which are designed with a Likert Scale with a sliding choice of 1 to 8 (1= FALSE not like me while the selection of 8= TRUE like me). Three of the questions within the ROPELOC survey were specifically targeted to measure the participants’ internal locus of control – self efficacy (Question IL105, Question IL221, and Question IL337). The research study utilized the Mann-Whitney U nonparametric test for two independent samples for analyzing the three self efficacy questions contained in the ROPELOC survey. The ROPELOC instrument has a Cronbach’s alpha internal reliability rating of .85

***Mark reflex.*** The Mark Reflex instrument was utilized for the quantitative analysis of the associate satisfaction morale variable between the high injury rate sample group and the low injury rate sample group. The Mark Reflex survey consists of 32 questions which is designed with a Likert Scale with a sliding scale

of 1 to 5 (1=Strongly Agree, 2=Agree, 3=Disagree, 4=Strongly Disagree, and 5=Not Applicable). All the questions contained in the Mark Reflex survey are phrased positively so consequently a lower average facility score indicates a higher overall associate morale score. Because the Mark Reflex instruments were offered to all facility associates for completion this quantitative variable is representative as a facility variable for the purposes of choosing a data analysis test. The independent samples *t* test was therefore selected as the appropriate statistical test using SPSS software.

***TIPS safety audit.*** The TIPS safety audit worksheets were used as the quantitative instrument which represented the TIPS safety score variable. The TIPS safety audit instrument consisted of 20 safety related questions which were scored on a pass or fail basis. If the facility successfully passed a question they receive 5 points and if the facility fails a question they received 0 points. There were a total of 20 questions and each question was worth 5 points which makes the entire safety audit worth 100 points. Therefore, the higher facility safety scores were purportedly related to the higher the overall perceived safety awareness of the associates working in the facility.

***Transfer training audit.*** The Transfer Training instrument consisted of a spreadsheet documenting a historical records analysis of the extent to which the facilities were performing caregiver transfer training. The facility was assessed on an overall 5 point scale where 0 was assigned to those facilities who did not conduct formal orientation transfer training for both mechanical and manual resident transfers; 1 point was earned by facilities for conducting formal



orientation transfer training for both mechanical and manual resident transfers; 2 points were earned by facilities for achieving the first point while also performing annual caregiver transfer training; 3 points were earned by facilities for achieving points 1 and 2 while also conducting post accident caregiver transfer training; 4 points were earned by facilities for achieving points for 1, 2, and 3 while also conducting any additional documented caregiver transfer training. The caregiver training records were reviewed in order to verify the training and the points were assigned as a facility wide score accordingly.

#### **Procedures for quantitative analysis.**

This study addressed three research questions which required utilizing quantitative data collecting instrumentation. The instrumentation employed for the first three research questions primarily engaged a computerized historical records data collection technique which investigated quantifiable difference between eight independent variables between the two purposive sample groups. The investigation of the research questions required four separate research instruments in order to quantifiably measure 5 of the 10 variables identified for analysis in study as outlined in Table 4.1 The four instruments engaged in the study are the ROPELOC Instrument, Mark Reflex instrument, TIPS safety audit instrument, and the Transfer Training instrument. The remaining 5 of the 10 identified research variables were analyzed using a quantitative facility historical records data analysis technique.

Statistical Package for the Social Sciences (SPSS) 17<sup>th</sup> edition was used as the computer software program for the analysis of the data collected during the

research gathering and analysis stages of this research study. The textbook *Using SPSS for Windows and Macintosh*, 5<sup>th</sup> edition, (Green & Salkind, 2008) was the principal reference resource for citing and presenting the results of each of the tests that were employed. Each of the statistical tests employed in the research study were interpreted with a confidence interval of 95%, and if the 2-tailed significance (p value) with or without equal variance was less than .05, the null hypothesis was rejected. Furthermore, if the 2-tailed significance (p value) was more than .05 the null hypothesis was accepted.

**Quantitative data analysis.** The study made use of descriptive statistics such as the means, standard deviations, and *t* distribution whenever applicable to analyze the quantitative instrumentation (Urdan, 2005). The quantitative data collected consisted of ordinal and ratio data so the researcher reported means and percentages. The quantitative analysis utilized inferential statistics which included *t*-tests for the interval and ratio data collected, and the Mann-Whitney U test for the ordinal data collected from the ROPELOC questionnaire. The important aspect of utilizing quantitative inferential statistics for analyzing data was to make inferences about populations; causality can be suggested but is not established using these statistical methods (Giventer, 1996). Statistics is only one tool of establishing causality and the other components are logic and research design, validity and reliability of instrumentation utilized (Jaeger, 1990). The researcher was careful for not confusing statistical significance (Lipsey, 1990) with practical significance because often the two concepts are mistakenly accepted as being identical.

## **Qualitative Research Design**

A single structured caregiver question was used for analyzing the potential caregiver dignity concern variable (Patton, 2002). The dignity concern variable was sub-divided into independent dimensions of caregiver concerns.

Academically acceptable constant comparative qualitative research methods were followed (Corbin & Strauss, 2008, p.73). Corbin & Strauss explain constant comparative methods as follows:

“Comparing incident with incident in order to classify data is not difficult to comprehend. As the researcher moves along with analysis, each incident in the data is compared with other incidents for similarities and differences. Incidents found to be conceptually similar are grouped together under a higher-level descriptive concept” (p. 73).

This type of constant comparison method was essential to the qualitative data analysis because it allowed the researcher to differentiate one category/theme from another and to identify properties and dimensions specific to dignity concerns.

**Data collection for qualitative instrumentation.** The fourth and final research question necessitated the use of a researcher produced open ended qualitative questionnaire instrument. The instrument was designed to assess potential dignity concerns experienced by caregivers while transferring resident with mechanical transferring devices as follows:

Please take a brief moment to reflect upon your experience with transferring residents with a mechanical lift versus manual transfer. What

are your impressions about residents' comfort level and frame of mind when being transferred using mechanical lifts as compared to manual transfers?

The assessment instrument presented the caregivers with a single question aimed at analyzing the caregivers' perception of any potential dignity concerns which might be experienced while transferring resident with mechanical transferring equipment.

Table 4.2

Instrumentation and Corresponding Qualitative Research Variable

Instrument	Research Variable
Qualitative Question	Caregiver Dignity Concerns

**Procedures for qualitative analysis.** The study utilized appropriate qualitative research methods for analyzing the caregivers' responses for their perception of resident dignity concerns while using mechanical lifting equipment for resident transfers. The research study qualitative data collection duties were shared equally between seven workers' compensation subject matter experts. The workers' compensation subject matter experts reviewed and confirmed the data which was collected and utilized for the study. The data was collected using a field research technique for collecting the qualitative data which analyzed the caregiver dignity concern variable. The study employed the dignity concerns instrument by distributing it to all caregivers working at the facility the day the instrument was distributed. The administrators of the dignity concerns instrument were diligent for ensuring there was inter-rater reliability for the qualitative data

being collected. The question was written as an addendum page to the ROPELOC instrument which was distributed on the same day. The data collection took approximately two months and included 1709 caregiver completed qualitative dignity concern instruments.

**Qualitative data analysis.** The research study employed some content analysis of responses to open ended items using open coding (Corbin & Strauss, 2008) for percentages of responses given for certain types of responses. The qualitative data collection helped identify the training and dignity perspectives, attitudes, behaviors, and experiences of the caregivers who perform resident transfers in the nursing homes. The qualitative instrument and subsequent data collection were performed in the field by trained company workers' compensation subject matter experts who all had several years of experience gather qualitative information for inclusion in workers' compensation accident investigations.

### **Validity and Reliability Concern**

The research study employed the professionally recognized ROPELOC instrument which has been institutionally accepted as academically valid and reliable for addressing both issues within the research study. The ROPELOC validity and reliability concerns were addressed by Ellis and Neil by citing two trials as follows:

The first trial sample (n = 1250) had internal reliabilities (Cronback alpha) for its 14 subscales of between .79 and .93 and an average internal reliability of .85 and an overall alpha of .96. In the second trial sample (n = 1475) the internal reliability ranged between .71 and .90 (mean = .83)

for younger students aged 11 – 13 and between .73 and .91 (mean = .84) for older students aged 14 – 16 yrs. The average inter-scale correlations was .43 (highest correlation = .62) indicating good discrimination between the closely allied dimensions of life effectiveness and measured by the ROPELOC instrument.

According to Patten (2005), an instrument was valid when it measures what it is supposed to measure. Furthermore, it is important to understand that validity is relative to the reason the researcher is collecting the data. This research study has ensured there is content validity inherent within the instrument. The researcher employed self reflection and peer review for ensuring accuracy and consistency of data collection and analysis. The quantitative research analysis performed in this study focused on historically available injury data that will ensure continuity. Validity and reliability were maintained by making certain the content within the injury data was gathered consistently and without bias or prejudice (Corbin & Strauss, 2008). The quantitative data collection consistency and accuracy transpired because a single researcher gathered all the quantitative data from a single source collection data site.

### **Role of the Researcher**

The role of the researcher was to provide a focused research study with a clear and focused effort for collecting and analyzing the data gathered. The researcher coordinated with subject matter workers' compensation experts which work in the field and analyze the data on a daily basis. The researcher was diligent for ensuring there was inter-rater reliability for the qualitative data

instrument. Furthermore, at the time of this writing the researcher was a high level administrator (Director of Safety and Workers' Compensation) with the company where the study was being conducted. The researcher was directly responsible for identifying the two sample groups of nursing home facilities and subsequently collecting quantitative and qualitative data for comparison between each of those two sample groups. The researcher enlisted the assistance of workers' compensation subject matter experts as independent data reviewers where they compared their analyses and thus resolved any differences in order to validate the findings (Stake, 1995).

### **Summary**

The research study made use of a mixed method research methodology for investigating the variables which have been identified in the literature search as having influence on the resident transfer injury exposure for caregivers in the nursing home industry. The two purposive samples chosen consisted of the first sample consisting of the high resident transfer injury rate group which had experienced six or more injuries in the last two of three consecutive years. The second purposive sample consisted of the low resident transfer injury rate group which had experienced one or less resident transfer injuries in the last two of three years. The high versus low facilities were studied as a whole using a causal-comparative research design by exploring which variable had more influential impact on reducing or raising the number of resident transfer injuries experienced by the caregivers in their respective injury rate group.

## CHAPTER FOUR

### PRESENTATION AND ANALYSIS OF DATA

#### **Introduction**

The research study investigated why seemingly identically operating skilled nursing facilities with ostensibly similar variables have dramatically different resident transfer injury rates. The study analyzed ten potential variables which might individually influence why some nursing home facilities have experienced significantly lower resident transfer injury rates as compared to those nursing home facilities with higher resident transfer injury rates. Furthermore, the research study identified and compared potentially influential variables within the nursing home facilities that might assist in identifying the differences between facilities which are at or above the national injury rate average for their Standard Industrial Code from those significantly below the average. The research study used a mixed methods approach to analyzing which variables have a potential positive or negative influence on the number of resident transfer injuries experienced by the caregivers in the identified nursing facility sample groups.

#### **Population and Sample**

The population for the research study consisted of over 200 health care facilities (exact number withheld for confidentiality reasons) from which 61 facilities were selected to represent two purposive sample groups. The first purposive sample group consisting of 21 skilled nursing facilities was selected because these facilities have experienced six or more resident related transfer injuries to their direct caregivers during two of the last three years. The second



purposive sample consisting of 40 skilled nursing facilities was selected because these facilities have experienced 1 or less resident related transfer injuries to their direct caregivers during two of the last three years.

### **Analysis of Data**

#### **Research Question 1 - Mechanical Transfer Devices**

The first research question presented in the study is the foundational research question and simply states: Do skilled nursing facilities which have a higher proportion of resident transfer injuries have the same number of mechanical transfer devices available for caregiver use as compared to skilled nursing facilities which experienced a lower proportion of resident transfer injuries? This first research question is tested through a single null hypothesis.

**Null hypothesis 1 for research question 1.** There is no significant difference between the number of mechanical devices available to caregivers in the high injury rate group and the low injury rate group.

**Results for null hypothesis 1.** An independent-samples *t* test was conducted for evaluating this null hypothesis. The null hypothesis was rejected ( $t(29.82) = -2.17, p = 0.038$ ). The mean number of mechanical transfer devices for the low injury rate group ( $M = 4.0, SD = 1.34$ ) was significantly less than the mean number of mechanical transfer devices for the high injury rate group ( $M = 5.05, SD = 1.99$ ). This information is presented in Table 4.3. The results are contrary to what was expected.

Table 4.3

Analysis of Mechanical Devices

Variable	Low Injury Group			High Injury Group			<i>t</i>	<i>p</i>
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>		
Mechanical Lifts	40	4.00	1.34	21	5.05	1.99	-2.17	.038

**Research Question 2**

The second research question asked: How do skilled nursing facilities with an identified higher proportion of resident transfer injuries for two of the last three years compare with skilled nursing facilities with an identified lower proportion of resident transfer injuries on variables such as transfer training, morale, age, turnover, TIPS safety score, census, and caregiver self efficacy?

Seven null hypotheses were tested for this second research question. The statistical test used for testing all these seven null hypotheses is the independent samples *t* test, hence the results will be presented in a similar manner to that of null hypothesis 1. These null hypotheses are numbered 2a to 2f. The non-parametric Mann-Whitney U test was used to test null hypothesis 2g.

**Null Hypothesis 2a Transfer Training**

Skilled nursing facilities with low resident transfer injury rates have no significant difference in transfer training score when compared to similarly sized nursing facilities with high resident transfer injury rates.

**Results for null hypothesis 2a.** The null hypothesis was rejected, (*t* (59) = 6.51, *p* = .000). The mean facility transfer training score for the low injury rate

group ( $M= 3.30, SD= .69$ ) was significantly higher than the high injury rate group ( $M= 2.00, SD= .84$ ). The information is presented in Table 4.4.

Table 4.4

Analysis of Transfer Training

Variable	Low Injury Group			High Injury Group			<i>t</i>	<i>p</i>
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>		
Transfer Training	40	3.30	.69	21	2.00	.84	6.51	.000

**Null Hypothesis 2b Morale**

Skilled nursing facilities with low resident transfer injury rates have no significant difference in caregiver morale score when compared to similarly sized nursing facilities with high resident transfer injury rates.

**Results for null hypothesis 2b.** The null hypothesis was rejected, ( $t (59) = -2.52, p = .014$ ). The mean facility morale score for the high injury rate group ( $M= 2.14, SD= .17$ ) was significantly higher than the low injury rate group ( $M= 2.01, SD= .20$ ). The information is presented in Table 4.5.

Table 4.5

Analysis of Morale Score

Variable	Low Injury Group			High Injury Group			<i>t</i>	<i>p</i>
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>		
Morale	40	2.01	.20	21	2.14	.17	-2.52	.014

### Null Hypothesis 2c Age

Skilled nursing facilities with low resident transfer injury rates have no significant difference in average caregiver age when compared to similar size nursing facilities with high resident transfer injury.

**Results for null hypothesis 2c.** The null hypothesis was rejected, ( $t(59) = 2.89, p = .005$ ). The mean facility caregiver age for the low injury rate group ( $M = 40.88, SD = 3.12$ ) was significantly higher than the high injury rate group ( $M = 38.43, SD = 3.17$ ). The information is presented in Table 4.6.

Table 4.6

#### Analysis of Age Data

Variable	Low Injury Group			High Injury Group			<i>t</i>	<i>p</i>
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>		
Age	40	40.88	3.12	21	38.43	3.17	2.89	.005

### Null Hypothesis 2d Turnover

Skilled nursing facilities with low resident transfer injury rates have no significant difference in facility caregiver turnover when compared to similarly sized nursing facilities with high resident transfer injury rates.

**Results for null hypothesis 2d.** The null hypothesis was rejected, ( $t(59) = -3.12, p = .003$ ). The mean facility caregiver turnover rate for the low injury rate group ( $M = 2.76, SD = 1.07$ ) was significantly lower than the mean of the high injury rate group ( $M = 3.70, SD = 1.21$ ). The information is presented in Table 4.7.

Table 4.7

## Analysis of Turnover Data

Variable	Low Injury Group			High Injury Group			<i>t</i>	<i>p</i>
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>		
Turnover	40	2.76	1.07	21	3.70	1.21	-3.12	.003

**Null Hypothesis 2e TIPS Score**

Skilled nursing facilities with low resident transfer injury rates have no significant difference in facility TIPS safety score when compared to similarly sized nursing facilities with high resident transfer injury rates.

**Results for null hypothesis 2e.** The null hypothesis was rejected, ( $t(22.34) = 3.59, p = .002$ ). The mean facility TIPS score for the low injury rate group ( $M = 94.63, SD = 5.93$ ) was significantly higher than the mean TIPS score for the high injury rate group ( $M = 80.24, SD = 17.85$ ). The information is presented in Table 4.8.

Table 4.8

## Analysis of TIPS Score Data

Variable	Low Injury Group			High Injury Group			<i>t</i>	<i>p</i>
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>		
TIPS Score	40	94.63	5.93	21	80.24	17.85	3.59	.002

### Null Hypothesis 2f Facility Census

Skilled nursing facilities with low resident transfer injury rates have no significant difference in facility census rate when compared to similarly sized nursing facilities with high resident transfer injury rates.

**Results for null hypothesis 2f.** The null hypothesis was retained, ( $t(59) = .393, p = .696$ ). The mean facility census rate for the low injury rate sample group ( $M = 86.88, SD = 10.97$ ) was not significantly different from the mean for the high injury rate group ( $M = 85.84, SD = 7.03$ ). The information is presented in Table 4.9.

Table 4.9

#### Analysis of Facility Census Data

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Variable	Low Injury Group			High Injury Group			<i>t</i>	<i>p</i>
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>		
Facility Census	40	86.88	10.97	21	85.84	7.03	.393	.696

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Table 4.10 is a composite of all the results for research question 2. It indicates that all but one null hypothesis are rejected.

Table 4.10

Summary Chart Independent Samples *t* Tests

Variable	Low Injury Group			High Injury Group			<i>t</i>	<i>p</i>
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>		
Mechanical Lifts	40	4.00	1.34	21	5.05	1.99	-2.17	.038
Transfer Training	40	3.3	.69	21	2.00	.84	6.51	.000
Morale	40	2.01	.20	21	2.14	.17	-2.52	.014
Age	40	40.88	3.12	21	38.43	3.17	2.89	.005
Turnover	40	2.76	1.07	21	3.70	1.21	-3.12	.003
TIPS Score	40	94.63	5.93	21	80.24	17.85	3.59	.002
Facility Census	40	86.88	10.97	21	85.84	7.03	.39	.696

**Null Hypothesis 2g Self Efficacy**

Caregivers in nursing facilities with low resident transfer injury rates have no significant difference in caregiver self efficacy when compared to similarly sized nursing facilities with high resident transfer injury rates.

**Results for null hypothesis 2g.** The researcher performed the independents samples Mann-Whitney U (non parametric) test to determine that the Null Hypothesis was retained, ( $z = .235$ ,  $p > .05$  for Question IL105,  $z = -1.002$ ,  $p > .05$  for Question IL221, and  $z = -1.686$ ,  $p > .05$  for Question IL337). Table 4.10 and Table 4.11 below outlined the statistical data which was mined using the Mann-Whitney U test.

Table 4.11

Self Efficacy Questions: Mann-Whitney U Test

Question	Z	Sig.(2-tailed)	Mann Whitney
Question IL105	-.235	.814	404.500
Question IL221	-1.002	-1.002	354.000
Question IL337	-1.686	.092	309.000

Table 4.12

Mean Ranks Mann-Whitney U Test

Question	Injury Code	N	Mean Rank
Question 5	1	40	31.39
	2	21	30.26
Question 21	1	40	32.65
	2	21	27.86
Question 37	1	40	33.78
	2	21	25.71

### Research Question 3

The third research question explored asked: How do caregivers (LPN, RN, and nurses' aides) in similarly sized skilled nursing facilities compare between subgroup resident transfer injury rates? The intent of the research question was to examine the concept that caregiver subgroups potentially have an individual subgroup relationship needing to be explored by a scholarly research study.



**Null hypothesis 3 Caregiver Mix.** Caregiver subgroups (LPN, RN, and nurses' aides) in similarly sized nursing facilities experienced no significant differences between subgroup injury rates.

**Results for null hypothesis 3.** The null hypothesis was neither rejected nor retained. Due to the unearthing of a previously unknown variable the study was unable to adequately investigate the hypothesis. The discovery emphasized the company staffing directives which required facilities to staff licensed nursing at a level of 1.0 hour per resident per day while requiring 3.0 hours per resident per day for nurses' aides. This is considerably higher than the state mandates. Therefore, the facility caregiver staffing ration should be approximately three times as many nurses aides exposed to back injuries when compared to nurses exposures.

The data indicated there were a total of 301 caregiver injuries experienced in the year which was analyzed for the research study. The data analysis utilized historic accident data analysis techniques which indicated that of the 301 recorded resident related transfer injuries the nurse's aides experienced 269, the licensed practical nurses experienced 17 transfer related injuries, and the registered nurses experienced 15 resident transfer injuries. The study was unable to document by facility exactly how many LPN versus RN exposures there were in the facilities during the analysis period because the staffing levels does not differentiate what is specifically required by licensed nursing staff subgroup, and the regulatory requirements basically treat LPN and RNs as the same job. Therefore, the study was only able to glean from the data that licensed practical nurses were injured at

approximately the same frequency as registered nurses during the analysis period. Licensed practical nurses experienced 6.3% of the resident transfer injuries experienced in the facilities while registered nurses experienced 5.5% of the resident transfer injuries.

#### **Research Question 4**

Research question four examined the internal perceptions of the caregivers to explore: How do similarly sized nursing facilities with an identified higher proportion of resident transfer injuries compare with nursing facilities with an identified lower proportion of resident transfer injuries on matters relating to resident dignity concerns experienced by caregivers while using mechanical transferring devices?

**Null hypothesis 4 Dignity Concerns.** Nursing facilities with low resident transfer injury rates have no difference in perceived caregiver mechanical transfer dignity concerns compared to nursing facilities with high resident transfer injury.

**Results for hypothesis 4.** The phenomenological data mined concerning perceived caregiver mechanical transfer dignity concerns indicated that the low injury rate sample group had half as many dignity concerns espoused in the dignity questionnaire results as compared with the high injury rate sample group. The high injury rate sample group was comprised of 20 facilities which produced 19 specific statements referencing dignity concerns centered on transferring residents with mechanical transferring equipment. Comparatively, the low injury rate sample group was comprised on 41 facilities, over twice as

many, which produced only 15 specific statements referencing dignity concerns for transferring residents using mechanical transferring equipment. The qualitative questionnaire data which was collected clearly indicates there are dignity concern issues experienced by caregivers while using mechanical transferring equipment. One out of every two of the dignity concerns were expressed by caregivers that are included in the high injury rate sample group. Two examples of dignity concerns espoused by caregivers expressed by each of the injury rate sample groups are as follows. “I think it’s an invasion of people’s dignity – they need to be told that all of their privates will be exposed, they won’t be in control and it might be scary”. The second caregiver states, “How would you feel hanging in the air like a damn circus act? Lifts are not replacement for people. Hire more staff.”

CHAPTER FIVE  
OVERVIEW, SUMMARY, DISCUSSION, & RECOMMENDATIONS

**Introduction**

The chapter presents a summary of the important findings and highlights which have the most potential for future research studies. Once the discussion is complete regarding the results of the study, this chapter endeavors to explain the potential implications which may result from the research study. This chapter will explore what future studies should investigate, and how those future investigations could employ the results of this study as a foundational tool for improving the understanding of what potential variables may ultimately influence the resident transfer injury rate experienced by caregivers in nursing home facilities.

**Statement of the Problem**

The United States is indeed in a skilled nursing facility caregiver crisis, and every single caregiver has to be protected from injury because replacing injured caregivers with healthy caregivers who are soon to become injured is not a solution to the problem. If health care safety professionals can make the health care environment safer, and prevent future injury to our caregivers, in return these caregivers will be able to provide care longer and be happier.

An on-line article by *Liberty Mutual* (2009) which was a study researched by the Liberty Mutual Research Institute for Safety, concluded that overexertion continues to top the list of causes of most disabling work-related injuries. The Research Institute recently published their annual *Workplace Safety Index*. The

index compiled injuries which occurred from 1998 through 2006 and analyzed them according to the most disabling work-related injuries. Ultimately the index estimated that in the year 2006 we spent in excess of 48.6 billion dollars in workers' compensation costs and overexertion accounts for 25.7 percent of all injury costs which is approximately 12.4 billion dollars. The study by *Liberty Mutual* (2009) was extremely important because it validates the seriousness of the problem. It is still relevant and significant measures to reduce the number of overexertion injuries in the workplace needs immediate action.

According to the Bureau of Labor Statistics, the United States health care labor force grew by only 1% each year between 1995 and 2005 (BLS, 2006). Then the average age of today's caregiver was 47 and by 2017, 50% of all working registered nurses will reach retirement age. This potential mass retirement will happen as 78 million baby boomers celebrate their 65<sup>th</sup> birthday. The ratio of potential caregivers to the rising elderly population will decrease by 40% between 2010 and 2030 and may limit access to health care. The United States will need 1,754,000 registered nurses by 2020 due to growth in the health care industry. Based on current trends, we will only have 635,000 registered nurses (BLS, 2006). In light of the fact there is already a significant shortage of caregivers, keeping the caregivers we have healthy and productive will be a critical part of providing the needed health care for all elderly baby boomers coming of age in the near future. More recent studies indicate as of 2004 there are more than 2.4 million registered nurses working in the health care industry (GAO, 2007). Even with 2.4 million caregivers working in health care it is

estimated by the Department of Health and Human Services that the supply of caregivers fell approximately 111,000 short of the demand with the project shortage widening in years to come.

### **Overview of the Literature**

The literature references muscular skeletal injuries experienced by caregivers as being directly related to the transfer and repositioning of residents in the nursing home industry. An article written in the *Occupational Health Management Journal* (2008) concluded that almost every lift of a resident is going to exceed the NIOSH safety lifting limit. Repositioning and transferring patients was never an endeavor which is performed under optimal conditions, and subsequently leaves caregivers vulnerable to ongoing serious muscular skeletal injury exposure.

### **Research Question 1**

The initial research question investigated the premise that having additional mechanical lifting devices available for use during resident transfers performed by caregivers would ultimately reduce MSD injuries. This assertion was supported by the literature (Lavender, 2009) (Waters, 2007) (*HC Pro's Advisor*, 2008) and the practitioners in the healthcare safety profession. The *HC Pro's Advisor* (p. 4) indicated that in one of their studies the patient lifting ratio would require more than six caregivers for performing a bariatric transfer in order to maintain compliance with the NIOSH 35 pound limit.

The literature review revealed how approximately 38% of all nurses were personally affected by back injuries (*Ergonomics*, 2009; *Nursing Economics*,

2001; *American Society of Safety Engineers*, 2007). The majority of the back injuries experienced by nurses are associated with the transfer, repositioning, or lifting of residents and (Skotte & Fallentin, 2008) (*American Journal of Industrial Medicine*, 2009). The literature also indicated that nurses will experience this back pain because 98% of the time the nurse will utilize manual lifting techniques rather than mechanical transfer devices. Therefore, according to the literature reducing the number of injuries experienced by caregivers in the nursing homes as a result of resident transfers is directly related to the need for using lifting equipment (*Orthopedic Nursing*, 2006).

## **Research Question 2**

The second research question investigated the influential additional variables such as transfer training, morale, age, turnover, TIPS safety score, census, and caregiver self efficacy and their impact on reducing transfer related MSD injuries.

The supporting research literature was found in the *Health Care Management Review* (Castle, Engberg, Mendeloff, & Burns, 2009) which had the expressed objective to examine the associations between workplace injuries and organizational factors, staffing levels (PPD), and quality of care. The research literature was important because its relevance to the research environment centered on independent variables such as using personal protective equipment and transfer training (Burke & Hutchins, 2008) (Ciriello, 2008; Burke & Hutchins, 2008). The conclusion drawn from the literature is summarized by the assertion that nursing home injuries were associated with caregiver quality and

the characteristics of the nursing home environment itself, and addressing these areas might be an opportunity for injury reduction (Kostiwa & Suzanne, 2009) (Kostiwa & Suzanne, 2009).

### **Research Question 3**

The third research question investigated how caregivers (LPN, RN, and nurses' aides) in similarly sized skilled nursing facilities compare between subgroup resident transfer injury rates.

*The American Journal of Industrial Medicine* (2009) published a study which indicated that consultation services on their own did not demonstrate a significant influential reduction in caregiver injury claim rates. Furthermore, the research literature indicated that resident acuity was modestly associated with increased caregiver back injuries and the injury rate increased with a reduction in the resident to staff ratio (Castle, Engberg, Mendeloff, & Burns, 2009).

### **Research Question 4**

The final research question investigated the idea of there being a potential dignity concern experienced by caregivers that might influence their inclination to use mechanical transfer devices while repositioning or transferring their patients.

In *Raising the Bar: Along with Expectations, the No-lift Movement has Raised Questions for Providers' Intent on Doing the Right Thing* (McKnight's *Long-Term Care News*, Sept. 2006), an important variable was identified which was the "right to dignity" bestowed on the patients to be handled in a manner they feel provide them with care and dignity. The dignity issue encompasses the workers as well as the resident (Griffith & Stevens, 2004) and is basically a



perfect storm forming between what is safe for the worker clashing with what is dignified for the resident (Fullbrook, 2004).

In conclusion, the literature review identified several variables such as staffing, available equipment, mechanical transfer devices, training, dignity rights, morale, age, shift work, caregiver exposure rate, turnover, census, patient acuity, organizational culture, individual efficacy, supervision, and personal protective equipment which are just a few of the totality of variables identified that might influence the number of resident transfer injuries experienced by caregivers in skilled nursing facilities. However, there were no studies or literature found during the literature review which addressed injury free nursing facilities and specifically how these facilities maintained an injury free resident transfer injury rate. Furthermore, until this study was performed there was a void in the availability of research data focused on exploring how seemingly identical nursing home facilities experience little or no resident related transfer injuries and others similar facilities experience excessive injuries.

### **Methodology**

The research study population consisted of skilled nursing facilities with a total population of over 200 individual facilities. The study identified from the population using a purposive sampling technique two sample groups which were comprised of similarly sized (120 bed) nursing home facilities that were identified as Sample 1 having a “high annual resident transfer” injury rate, and Sample 2 with a “low annual resident transfer” injury rate. There were 21 facilities in the high resident transfer injury rate group (Sample 1), and 40 facilities in the low

resident transfer injury rate group (Sample 2). A causal-comparative study between the two samples was conducted to determine if there are any influential variables which might have a strong predictive relationship for identifying the number of resident transfer injuries experienced in skilled nursing facilities.

The research study engaged a mixed methods (quantitative and qualitative) design (Bryman, 2008). The study identified two contrasting sample groups which were selected for inclusion based on the facilities resident transfer injury rates. The research design included the organizing, analyzing, and interpretation of the data collected (Stufflebeam, 1973). The resident transfer injury rates of the facility determined if they were included in the study and to which sample group the facility was assigned. The causal-comparative analysis centers on the idea that logic of comparison can help researchers to understand social phenomena better when the phenomena are compared in a logical and meaningful situation (Bryman, 2008). The research data was compiled by utilizing, and analyzing existing historical injury records for caregivers who work in skilled nursing facilities. The ROPELOC ® instrument portion of the analysis was employed to measure and analyze caregiver internal locus of control – self efficacy. The data analysis of the instrument required the data entry of 1709 surveys with each survey comprised of 45 questions answered using a Likert scale of 1 to 8.

## **Results and Discussion**

The results of the research study are promising and opened the door to additional future research efforts. The results clearly contradict the commonly accepted belief that the quantity of lifts available to caregivers is the all important variable which if addressed alone will reduce if not eliminate most resident related transfer injuries experienced by caregivers in the nursing home facilities. Based on the finding of this research study the commonly accepted belief is not empirically supported by the quantitative data.

The quantitative data was analyzed by performing the independent-samples *t* test on the variables in research questions 1 and 2 which included: mechanical lifting devices, transfer training, morale, age, turnover, TIPS safety score, and facility census. The reason this data analysis test was chosen was because by definition the independent-samples *t* test is simply comparing the two sample group means to see if they are significantly different from each other (Urdan, 2005). For example; the mean age of the caregivers working in the high injury rate group was compared to the mean age of the caregivers working in the low injury rate sample group to see if there was a significant difference.

### **Research Question 1**

Research Question 1 asked: Do skilled nursing facilities which have a higher proportion of resident transfer injuries have the same number of mechanical transfer devices available for caregiver use as compared to skilled nursing facilities which experienced a lower proportion of resident transfer injuries? An independent-samples *t* test was conducted using the quantity of

mechanical transfer devices available for use by caregivers working in high injury rate sample group compared to the low injury rate sample group. The results actually indicated an inverse negative relationship. The data analysis clearly demonstrated in the study that the high injury rate sample group when compared to the low injury rate sample group had significantly ( $p = .038$ ) more lifts available to the caregivers. The mean number of mechanical transfer devices for the low injury rate group ( $M= 4.0, SD= 1.34$ ) was significantly less than the mean number of mechanical transfer devices for the high injury rate group ( $M= 5.05, SD= 1.99$ ).

These statistics seem to contradict most of the prevailing journal articles and the beliefs of the commonly recognized experts of resident transfer injury reduction movement. It could be a possibility that facilities that have high resident transfer injury rates invest in mechanical transfer devices as their sole solution for reducing the injury rate, and they do not address the other potential variables which might be directly contributing to high injury rates. Therefore, the availability of additional mechanical transfer devices may have no significant impact on reducing the facility injury rates.

## **Research Question 2**

Research Question 2 asked: How do skilled nursing facilities with an identified higher proportion of resident transfer injuries for two of the last three years compare with skilled nursing facilities with an identified lower proportion of resident transfer injuries on variables such as transfer training, morale, age, turnover, TIPS safety score, census, and caregiver self efficacy?

**Transfer training.** The quantity of facility transfer training was identified in the data analysis phase using the independent-samples *t* test as a variable which significantly ( $p = .000$ ) influenced high versus low facility transfer injury rate sample groups. The mean facility transfer training score for the low injury rate group ( $M= 3.30, SD= .687$ ) was significantly higher than the high injury rate group ( $M= 2.00, SD= .837$ ). The data analysis provided a clearer picture of the potential influence transfer training might have on protecting caregivers from resident transfer injuries. The relationship was extremely strong between facilities that scored high on their transfer training score and the facility having a low transfer injury rate. It can be concluded that transfer training is significantly influential for reducing transfer injuries. Transfer training's influence when compared to the insignificant influence of the quantity of mechanical devices available may be explained by the fact the caregivers are not comfortable using the transfer devices regardless of the number of devices the facility has available.

**Morale.** The facility morale data analysis using the independent-samples *t* test produced an outcome that did not surprise the researcher/practitioner. The outcome highlighted the significant relationship which associate morale ( $p = .014$ ) seems to influence on the number of resident transfer injuries experienced by caregivers in high versus low injury rate nursing home facilities. The mean facility morale score for the high injury rate group ( $M= 2.14, SD= .171$ ) was significantly higher than the low injury rate group ( $M= 2.01, SD= .202$ ).

There is a management principle advocated for years by safety professionals that happy workers make safe workers. The research study data validates this principle and indicates a strong relationship between high employee satisfaction and the low facility resident transfer injury rate group. It can be concluded that facility caregiver morale is potentially an extremely significant variable when trying to influence the reduction of transfer injury rates experienced by caregivers in nursing home facilities.

**Age.** The caregiver age data analysis using the independent-samples *t* test revealed an outcome that surprised the researcher/practitioner. The results underscored the significant relationship which associate age ( $p = .005$ ) seemed to have on the number of resident transfer injuries experienced by facilities in the high versus low sample groups. The mean caregiver age for the low injury rate group ( $M= 40.88, SD= 3.12$ ) was significantly higher than the high injury rate group ( $M= 38.43, SD= 3.17$ ).

There has been an ergonomic model endorsed by safety managers for years which advocates younger workers make physically stronger workers and thus are less prone to becoming injured workers. This research study data analysis invalidated this model, and indicated an inverse relationship between caregiver ages, and facility resident transfer injury rate group. In other words, younger caregivers tend to be associated with higher injury rates than their older counterparts. It was concluded that facility caregiver age has a significant relationship with the reduction of transfer injury rates in nursing home facilities. However, contrary to prevailing beliefs, the caregivers' age may indicate the

importance of work experience as being a key attribute to properly performing resident transfers. Furthermore, older caregivers may demonstrate a more mature propensity to use the mechanical transfer equipment when directed to do so by the resident transfer treatment plan.

**Turnover.** The turnover variable identified and investigated with the independent-samples *t* test indicated there was a significant relationship in that turnover ( $p = .003$ ) appears to be related to the number of resident transfer injuries experienced by caregivers in the nursing home facilities. The mean facility turnover rate for the low injury rate group ( $M= 2.76, SD= 1.07$ ) was significantly lower than the mean of the high injury rate group ( $M= 3.70, SD= 1.21$ ).

There has been a basic safety anecdote advocated for years which promote the tenet that low turnover in workers make safer workers. The research study data supports this anecdote, and indicates a significant relationship exists between turnover rate and facility resident transfer injury rates. It can be concluded that a stable workforce with low turnover is potentially a significant variable when trying to control the variables which might influence the reduction of transfer injury rates in nursing home facilities. When facilities have excessive turnover it requires ongoing training for the continuous flow of new caregivers. This training duty puts a workload burden on the existing caregivers who are taking their allotted resident care time to train the new caregivers. However, caregivers still have to keep up with their normal resident care giving workload and balance the continuous distraction of training new caregivers, and the ensuing stress may result in higher associate injury rates.

**TIPS safety score.** An independent samples *t* test indicated that TIPS safety awareness in the facility potentially has an apparent relationship to the transfer injury rate for those caregivers in the corresponding sample groups. The TIPS safety score is an overall safety assessment of facility safety awareness, and based on the apparent significant relationship ( $p=.000$ ). The mean facility TIPS score for the low injury rate group ( $M= 94.63, SD= 5.93$ ) was significantly higher than the mean facility TIPS score for the high injury rate group ( $M= 80.24, SD= 17.85$ ). The TIPS safety system has a significant relationship to the number of transfer injury experienced by caregivers in the nursing home facility.

**Census.** An independent samples *t* test data analysis of census data indicated an insignificant relationship ( $p = .696$ ) has between high and low injury rate sample groups. The mean facility census rate for the low injury rate sample group ( $M= 86.88, SD= 10.96$ ) was not significantly different from the mean for the high injury rate group ( $M = 85.84, SD = 7.03$ ). The data results were surprising and logic would conclude a relationship should exist, but the data output indicated that the facility census rate had no significant relationship between injury rate sample groups and their census rate. It would be logical to assume that facilities with higher census rates have more residents to provide care, and caregivers therefore have less time to care for the higher resident work load.

**Caregiver self efficacy.** The study examined three Self Efficacy - Internal Locus of Control questions which were imbedded in the 45 question ROPELOC survey. An independent-samples Mann-Whitney *U* (non parametric)



test indicated there was no significant difference in caregiver internal locus of control scores between high and low injury rate sample groups. The data indicated a stronger relationship between sample groups exists with internal locus of control question #3 between sample groups. The internal locus of control question #3 was the last internal locus of control question asked in the survey and 37<sup>th</sup> question asked of the 45 questions survey. The researcher perfunctorily concluded the survey was too long, and the survey participants tired easily, and participants started to answer the questions towards the end of the survey with little to no thought. The possibility that participants were bored could explain why the participants filled in blanks by repetitiously picking a number, and staying with it. However, the data analysis indicates the last internal locus of control question answered (#37) has a stronger relationship between groups compared to the first internal locus of control question (#5).

Furthermore, while performing the data entry portion of the research study the researcher made a cursory observation which indicated that personnel in low injury rate facilities seemed to spend more time completing the entire survey as compared with high injury rate facilities. Furthermore, the questionnaire completion rate in high injury rate facilities was seemingly lower as compared to the low injury rate facilities. The quantity and quality of the surveys were consistently stronger for low injury rate facilities as observed by the researcher compared to high injury rate facilities. The observation of the quantity and quality of the surveys returned to the researcher was not a variable in the current

research study, but needs to be identified as a possible research variable in future studies. The explanation for these observations will require additional research.

### **Research Question 3**

Research Question 3 asked: How do caregivers subgroups (LPN, RN, and nurses' aides) in similarly sized skilled nursing facilities compare between resident transfer injury rate sample groups? The focus of this research question was to explore the injury exposure rate each caregiver job title had when compared between injury rate sample groups. After researching the laws and regulations which govern the caregiver subgroups required in skilled nursing facilities it was discovered that licensed practical nurses are treated the same as registered nurses for the purposes of staffing requirements. Therefore, caregiver subgroup exposures could not be documented, and the difference between injury rate sample groups could not be assessed. However, it was determined that licensed caregivers have three times less exposure for becoming injured because the staffing requirements require three hours of nursing aides care for every hour of licensed staff care. Future studies may be conducted to explore the potential difference between licensed staff and nursing aides which will focus on hours of exposure and specific job duties. It was also discovered that licensed staff have more individualized policies on whether or not to perform resident transfers or not. Additional investigations need to be conducted to explore what seems to be a lack of management policy or procedure which directs the licensed staff on when and if it is their job requirement to assist with resident transfers or not.

Due to the confounding effects of previously unidentified research study caregiver subgroup staffing factors, the null hypothesis was unable to be analyzed.

#### **Research Question 4**

Research Question 4 asked: How do similarly sized nursing facilities with an identified higher proportion of resident transfer injuries compare with nursing facilities with an identified lower proportion of resident transfer injuries on matters relating to resident dignity concerns experienced by caregivers while using mechanical transferring devices?

The research study brought to culmination the exploration of many of the important components of what should be included in an effective transfer injury reduction program. The key to reducing transfer injuries in the nursing home facilities is not solely the number of mechanical transfer devices available for the staff to use but rather a myriad of variables which all significantly impact the potential success of the program. The myriad of variables involved in resident transfer safety are exemplified by the fact even in an ideal world where every resident had his or her own individual mechanical transfer device next to his or her bed the device would still be worthless if the caregiver decided it was undignified to use a mechanical device for transferring a resident because it treated the resident as if they were a “circus acts”. Furthermore, according to the written answers if the caregiver was not properly trained to utilize the readily available mechanical transfer device, the data indicated the caregiver would not use it, and subsequently she or he would be more confident performing a manual

transfer even though it exposes the caregiver to a tremendous risk of personal injury. Thus, training is vital to ensure caregivers are confident to utilize the equipment, and utilize it properly for the safety of the resident along with the safety of the caregiver.

The qualitative questionnaire data which was collected clearly indicates there are dignity concerns experienced by caregivers while using mechanical transferring equipment. One out of every two of the dignity concerns were expressed by caregivers who work in facilities that are included in the high injury rate sample group. The data analysis indicated the high injury rate group expressed proportionally more dignity concerns. This identified level of dignity concern could explain a hesitancy by caregivers to utilize the available mechanical transfer equipment, which in turn suggests the inverse relationship as to why high injury rate facilities have a significantly higher number of lifts available, but still experience significantly higher transfer injuries. Two examples of dignity concerns written by caregivers during the qualitative question survey were as follows. “I think it’s an invasion of people’s dignity – they need to be told that all of their privates will be exposed, they won’t be in control and it might be scary”. The second caregiver states, “How would you feel hanging in the air like a damn circus act? Lifts are not replacement for people. Hire more staff.”

The data collection and analysis for the qualitative portion of the research study was seemingly the most fruitful and impactful part of the entire research study. The open-ended question was answered in ways that would never have been imagined. The answers from the caregivers seemed to be honest and

thoughtful, and in some instances the caregivers were apparently being brutally honest. The caregivers who participated in the questionnaire survey identified many potential ancillary variables which were embedded in their comments for possible inclusion in future transfer injury studies.

The historic data collected and the subsequent analysis it provided when combined with the other data collection techniques utilized in the study uncovered a wealth of pertinent phenomenological discoveries. The most impactful discovery from the historical records data analysis was the fact that one of the 28 states had all of the facilities in that state included in the same transfer injury rate sample group, and no other state shared this trait.

### **Implications of the Study**

The research study has produced relatively important implications not only for the caregivers who perform the resident transfers in nursing home facilities, but implications for the caregivers' loved ones and the residents they are caring for as well as the residents' loved ones. When caregivers are injured performing resident transfers it directly affects the caregiver, but it also affects all the caregivers' family members, as well as the resident they are caring for, and the family of the resident. The implications of this study could assist with finding a more effective caregiver transfer training program and also could illuminate the complexity of maintaining an effective resident transfer program in the facilities. The research study has the potential of impacting hundreds of thousands of individuals across the entire health care industry.

The results of this research study highlight the importance of ensuring caregivers are trained to utilize the mechanical transfer devices properly, which have implications for a safer, more stable, happier, and healthier care giving workforce. According to the results of this research study the more stable, happy, and healthier care-giving workforce will allow the resident to see the same familiar happy face everyday. Furthermore, having a stable workforce in turn brings a sense of security and stability to what is an already confusing resident's world. Finally, when the resident is happy, because they have someone they know, and appreciate taking care of them, the family of the resident is in turn happier because their loved one is more content. When the caregiver is safe from physical injury they are more likely to interact with their own families in a more harmonious way which could makes their family life more satisfying, and in turn potentially leads to higher associate morale.

The research data can readily be explained by a scenario (expressed by a caregiver written on a returned questionnaire) where the facility is experiencing excessive associate injuries due to transferring residents manually and not utilizing the mechanical transfer devices. Therefore, the associates are on modified duty and unable to perform the entirety of their jobs and other associates are required to pick up the workload. This additional workload diminishes the morale of the associates who are uninjured and being unhappy with their workload they decide to find another job. The ensuing turnover requires additional workload on the remaining caregivers who are not only required to perform the duties of the injured modified duty caregivers, but also train the new

caregivers which exponentially increases the workload to their day. Thus, the caregivers who are trying to cover the workload for injured caregivers, new caregivers and themselves make a conscious decision that they do not have time to retrieve a mechanical transfer device and decide it is quicker to manually perform the transfer and risk injury to themselves. This scenario is all too possibly realistic in the work day of the average caregiver in the nursing home facility.

In conclusion to this section there is a need to examine the importance of a well-rounded and all encompassing transfer injury rate reduction program in order to truly solve the transfer injury rate epidemic experienced by caregivers in the nursing home facilities. The potentially influential facility variables which were identified are morale, turnover, age, transfer training, and the presence of an overall facility safety awareness system. All these variables are possibly intertwined and an effective transfer training program will require that all these variables need to be given their duly respected attention.

The implications of the study are far reaching, and all start with ensuring we have safe caregivers by providing them with the proper tools which are needed in order to perform safe resident transfers. Resident transfer injuries are by far the most numerous and serious injuries experienced by caregivers in nursing home facilities, and reducing this number of injuries will potentially impact families, residents, friends, and communities for the rest of their lives.

## **Conclusions**

The statistical data analysis and research question analysis results clearly indicated that 6 out of 9 of the identified quantitative research variables had statistically significant relationships between caregivers who work in the high injury rate sample group when compared to those working in the low injury rate sample group. The research study was extremely broad and investigated seven variables which could have a possible predictive relationship to either increasing or decreasing the number of resident related transfer injuries experienced by caregivers in the nursing facilities. After an exhaustive analysis some of the variables explored appeared they could have confounding influence on each other in the research questions, but to explore those potential influences was not in the scope of this research investigation. The study presented four straightforward clear and concise research questions, and the first two research questions which analyzed the influence of mechanical transfer devices, morale, age, turnover, and TIPS safety score were directly answered by the research study, and are supported by statistical data. However, the third research question which analyzed caregiver mix ratio was unable to be answered in the scope of this research study and will need to be explored after reevaluating the premise of the research question. The research study substantiated several longstanding managerial assumptions about the organizational impact that morale, turnover, and job training have as being potentially influential on impacting facility transfer injury rates. The most surprising and profound analysis uncovered in the research study is the inverse relationship mechanical device availability has between the two sample groups. It



was expected that high injury rate sample group would have lower mechanical device availability but the research study data analysis ascertained the opposite outcome.

In summary, the research study was enormously revealing and unearthed many opportunities for potentially impacting the number of transfer injuries experienced by caregivers in the nursing home facilities. The study helped to identify how complex and intertwined the variables are which might influence the reduction of these injuries. The commonly accepted opinion and industry-wide consensus champions the perception that the primary way to reduce transfer injuries in the health care industry is to ensure mechanical transfer devices are readily available for use by the health care staff. This accepted opinion seems to lack a broad quantified research base conducted by independent researchers who are not vested in the outcomes in order to dispel this accepted anecdote. However, studies like this, and additional studies in the future will prove beyond a doubt that the availability of mechanical transfer devices is only a small and sometimes insignificant variable when compared to other potentially more significant variables.

### **Recommendation for Practice**

The results of the research study have identified the need for a more holistic approach to preventing transfer related injuries by caregivers in the nursing facilities. In light of the findings of this study the following industry wide practices are recommended:

1. Caregivers in the nursing facilities who perform resident transfer duties should be trained on the proper utilization of mechanical transfer devices before they are allowed to start providing resident care and as needed there after.
2. A nursing facility should implement a visual aide system which the caregivers will recognize as their visual cue indicating what mechanical transfer device should be used while performing each resident's transferring events.
3. Caregivers who perform resident transfer duties should be educated to address any dignity concerns they may have for using mechanical transfer devices for transferring residents.
4. Residents who require transfer assistance should be educated about the added safety and efficiency of using mechanical transfer devices.
5. Nursing facilities should evaluate the feasibility of implementing a complete no-manual transferring, repositioning or lifting of residents' policy. While each facility has its own unique challenges the no-manual resident transferring policy should encompass training all caregivers working in the nursing facility.

### **Recommendation for Future Research**

This research has uncovered several internal elements of the study which might be improved upon for future research study which could assist future researchers to find even more meaningful data. The study was conducted as one of the largest population study of its kind, and a few changes could improve the data validity for future studies.

The first change is directly related to the qualitative data received from the caregivers in regard to Research Question 4. The research question explores the perceived caregiver dignity concerns experienced by caregivers while transferring residents using mechanical transfer devices. The qualitative question which was distributed seemed to produce some unintended caregiver interpretations of the question which could be interpreted as a result of possible vagueness in the wording of the question. The preface to the question should have defined what the difference is between a mechanical lift device and a manual transfer. Some of the caregivers are not familiar with the exact terminology, and were confused by the fact that some of the mechanical transfer devices are manual pump machines, and thus are called manual transfers. Therefore, it was logical to conclude that some of the caregiver responses provided reflected some confusion on their part.

The second recommended change is to use an abbreviated internal locus of control instrument and not utilize the 45 question ROPELOC instrument. Conjecture leads me to believe that some caregivers became bored half way through completing the 45 question instrument, and just picked a number, and completed the survey making the same answer continuously there after. Some of the caregivers actually wrote on the survey they were tired of answering the same questions over and over again. A shorter instrument might sacrifice some reliability and validity strengths, but would potentially ensure a more complete and thoughtful answer throughout the entire instrument.

The internal locus of control variable is an important variable to try and measure within caregivers because the literature indicates the possible behavioral

traits of a strong internal locus of control are correlated with a resistance to submit to authority and a reduced sympathy for others (Kostiwa & Suzanne, 2009). If in fact the research study can quantify the caregivers' propensity for a strong level of internal locus of control, it could relate to their resistance to submit to authority within the nursing home facility which is telling them to use the lifts. The current research study could have been designed to eliminate the long arduous instrument and replace it with a more concise and user friendly instrument.

Finally, Research Question 3 did not produce any quantifiable data. The research study data concluded that licensed nursing staff is getting hurt and it was at a lower rate when compared to nurses' aides, but the study was unable to quantify the exact injury rate. Due to the fact many of the states have different staffing regulations it requires some states to treat licensed nursing staff as one job class. The research study conclusively documented the important fact that the licensed nursing staff is exposed to transfer injuries, and identified the fact that nurses need to be included in all future transfer injury research studies. However, the research study was unable to specifically quantify the exact injury exposures by the licensed nursing staff subgroup as compared to the exposures experienced by the nurses' aides.

The recommended changes to the current study are minimal, but are necessary, and would provide future research studies with additional cogent findings. It is important that future studies are better able to solicit more specifically targeted responses from caregivers in reference to their feelings and impressions about dignity concerns experienced while transferring residents with

mechanical transfer devices. Once the researcher can accurately understand the caregivers' dignity concerns about transferring residents with mechanical transfer devices, then the researcher can more accurately recommend how to better train, or persuade the caregiver that mechanical transfer devices are the safest, and most comfortable way to transfer residents and can be used in a way that dignity is not completely disregarded.

In addition, this study was large in population size, and incorporated vastly more research variables in this single study than any other study which was uncovered during the literature search. Future research studies might determine it more useful to analyze a smaller population size while also limiting the number of research variables investigated during the data analysis. This does not mean that future researcher should ignore certain variables at the detriment of other potential variables, but should analyze a smaller number of variables within the same research study at one time. Once future research studies are performed on samples with limited research variables, the future researchers will be able to perform meta-analysis on these research study results, and cohesively analyze those studies along side each other. Finally, future studies may want to consider limiting their investigations to a narrower geographical area for selecting its sample groups of facilities. A limited geographical area will allow for a greater depth of analysis of the relationships that exist between the facilities included in the studies and will better control for some of the confounding influences of different state laws and possible cultural phenomena.

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# Appendix A



Institutional Review Board  
Dept. 4905  
615 McCallie Avenue  
Chattanooga, TN 37403-2598  
Phone: (423) 425-4443

## MEMORANDUM

TO: David Weitz **IRB # 10-034**  
Dr. Hinsdale Bernard

FROM: Lindsay Pardue, Director of Research Integrity  
M. D. Roblyer, IRB Committee Chair

DATE: February 23, 2010

SUBJECT: IRB # 10-034: A Comparative Analysis between Skilled Nursing Facilities Experiencing High Versus Low Resident Transfer Injury Rates

The Institutional Review Board has reviewed and approved your application and assigned you the IRB number listed above. You must include the following approval statement on research materials seen by participants and used in research reports:

***The Institutional Review Board of the University of Tennessee at Chattanooga (FWA00004149) has approved this research project # 10-034.***

Please remember that you must complete Form C when the project is completed or provide an annual report if the project takes over one year to complete. The IRB Committee will make every effort to remind you prior to your anniversary date; however, it is your responsibility to ensure that this additional step is satisfied.

Please remember to contact the IRB Committee immediately and submit a new project proposal for review if significant changes occur in your research design or in any instruments used in conducting the study. You should also contact the IRB Committee immediately if you encounter any adverse effects during your project that pose a risk to your subjects.

For any additional information, please consult our web page <http://www.utc.edu/irb> or email [instrb@utc.edu](mailto:instrb@utc.edu)

Best wishes for a successful research project.

# Appendix B

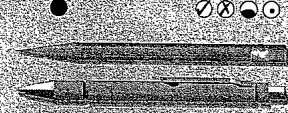
## Associate Satisfaction Survey

### Marking Instructions

- Use No. 2 pencil or blue or black ink pen only.
- Do not use pens with ink that soaks through the paper.
- Make solid marks that fill the circle completely.
- Make no stray marks on this form.
- Do not fold, tear, or mutilate this form.

CORRECT MARK

INCORRECT MARKS



#### Length of Employment

- Less than 3 months
- 3 months to 6 months
- 6 months to 1 year
- 1 - 4 years
- 5+ years

#### Department (optional)

- Nursing
- Dietary
- Housekeeping/Laundry
- Social Services; Maintenance; Marketing; Admissions; Health Information Management; Other
- Activities
- Rehab
- Business Office

#### Position (optional)

- Department Head
- Front-line Supervisor
- Associate

	Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
1. I know what is expected of me in my job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I have the supplies and equipment I need to do my job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I have the opportunity to do what I do best every day.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I have received recognition or praise for doing good work in the last 7 days.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I can think of at least one person at work who cares about me as a person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Someone at work encourages my career development.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. My opinions count at work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. [redacted] mission/values make me feel my job is important.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. My co-workers are committed to giving quality resident care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I have a close friend at work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Someone at work has talked to me about my progress in the last six months.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. This facility hires good people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. My facility orientation was helpful and welcoming.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. My on-the-job training helped me understand my job duties.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. I receive ongoing training, which makes me a more productive associate.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. My immediate supervisor practices fair treatment among associates.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. My immediate supervisor shows appreciation for my efforts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. I can go to my immediate supervisor with concerns and questions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. I trust and respect my immediate supervisor.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. My performance is evaluated at least once per year.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. My performance evaluation was given on time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. My immediate supervisor treats me with dignity and respect.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. My Executive Director's leadership is good for this facility.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. My Director of Nursing's leadership is good for this facility.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. Scheduling at this facility is fair.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26. My pay is competitive with other local healthcare facilities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27. My medical benefits are competitive with other local healthcare facilities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28. My non-medical benefits (i.e., vacation) are competitive with other local healthcare facilities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29. This facility's attendance policy is fair.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30. Communication is good at this facility.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
31. We have good teamwork at this facility.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
32. I would recommend this facility for employment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If you could make three improvements to this facility, what would you do? (use back of survey if needed)

- 1)
- 2)
- 3)



## **Appendix C**

### **Qualitative Question**

Please take a brief moment to reflect upon your experience with transferring residents with a mechanical lift versus manual transfer. What are your impressions about residents' comfort level and frame of mind when being transferred using mechanical lifts as compared to manual transfers?

## Appendix D

NAME: _____ AGE: ____ (years) ____ (mths) DATE: ____/____/____ MALE / FEMALE (circle one) PROGRAM: _____ GROUP: _____
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ROPELOC©	GER20/9/00
----------	------------

**PLEASE READ THESE INSTRUCTIONS FIRST**  
**This is not a test** - there are no right or wrong answers.

This is a chance for you to look at how you think and feel about yourself. It is important that you:

- are honest
- give your own views about yourself, without talking to others
- report how you feel NOW (not how you felt at another time in your life, or how you might feel tomorrow)

Your answers are confidential and will only be used for research or program development. Your answers will not be used in any way to refer to you as an individual.

Use the eight point scale to indicate how true (like you) or how false (unlike you), each statement over the page is as a description of you. Please do not leave any statements blank.

FALSE  
NOT LIKE ME

TRUE  
LIKE ME

1	2	3	4	5	6	7	8
This statement doesn't describe me at all; it isn't like me at all		More false than true		More true than false			This statement describes me very well; it is very much like me.

### SOME EXAMPLES

- |  |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|--|---|---|---|---|---|---|---|---|
- A. *I am a creative person.*  
 (The 6 has been circled because the person answering believes the statement "I am a creative person" is sometimes true. That is, the statement is sometimes like him/her.)
- |  |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|--|---|---|---|---|---|---|---|---|
- B. *I am good at writing poetry.*  
 (The 2 has been circled because the person answering believes that the statement is mostly false as far as he/she is concerned. That is, he/she feels he/she does not write good poetry.)
- |  |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|--|---|---|---|---|---|---|---|---|
- C. *I enjoy playing with pets.*  
 (The 6 has been circled because at first the person thought that the statement was mostly true but then the person corrected it to 7 to show that the statement was very true about him/her.)

**If still unsure about what to do, ASK FOR HELP.**



	<b>FALSE</b> not like me	<b>TRUE</b> like me						
01. When I have spare time I always use it to paint.	1	2	3	4	5	6	7	8
02. I like cooperating in a team.	1	2	3	4	5	6	7	8
03. No matter what the situation is I can handle it	1	2	3	4	5	6	7	8
04. I can be a good leader.	1	2	3	4	5	6	7	8
05. My own efforts and actions are what will determine my future.	1	2	3	4	5	6	7	8
06. I prefer to be actively involved in things.	1	2	3	4	5	6	7	8
07. I am open to different thinking if there is a better idea.	1	2	3	4	5	6	7	8
08. In everything I do I try my best to get the details right.	1	2	3	4	5	6	7	8
09. Luck, other people and events control most of my life.	1	2	3	4	5	6	7	8
10. I am confident that I have the ability to succeed in anything.	1	2	3	4	5	6	7	8
11. I am effective in social situations.	1	2	3	4	5	6	7	8
12. I am calm in stressful situations.	1	2	3	4	5	6	7	8
13. My overall effectiveness in life is very high.	1	2	3	4	5	6	7	8
14. I plan and use my time efficiently.	1	2	3	4	5	6	7	8
15. I cope well with changing situations.	1	2	3	4	5	6	7	8
16. I cooperate well when working in a team.	1	2	3	4	5	6	7	8
17. I prefer things that taste sweet instead of bitter.	1	2	3	4	5	6	7	8
18. No matter what happens I can handle it.	1	2	3	4	5	6	7	8
19. I am capable of being a good leader.	1	2	3	4	5	6	7	8
20. I like being active and energetic.	1	2	3	4	5	6	7	8
21. What I do and how I do it will determine my successes in life.	1	2	3	4	5	6	7	8
22. I am open to new thoughts and ideas.	1	2	3	4	5	6	7	8
23. I try to get the best possible results when I do things.	1	2	3	4	5	6	7	8
24. When I apply myself to something I am confident I will succeed.	1	2	3	4	5	6	7	8
25. My future is mostly in the hands of other people.	1	2	3	4	5	6	7	8
26. I am competent and effective in social situations.	1	2	3	4	5	6	7	8
27. I can stay calm and overcome anxiety in almost all situations.	1	2	3	4	5	6	7	8
28. I am efficient and do not waste time.	1	2	3	4	5	6	7	8
29. Overall, in all things in life, I am effective.	1	2	3	4	5	6	7	8
30. When things around me change I cope well.	1	2	3	4	5	6	7	8
31. I am good at cooperating with team members.	1	2	3	4	5	6	7	8
32. I can handle things no matter what happens.	1	2	3	4	5	6	7	8
33. I solve all mathematics problems easily.	1	2	3	4	5	6	7	8
34. I am seen as a capable leader.	1	2	3	4	5	6	7	8
35. I like to get into things and make action.	1	2	3	4	5	6	7	8
36. I can adapt my thinking and ideas.	1	2	3	4	5	6	7	8
37. If I succeed in life it will be because of my efforts.	1	2	3	4	5	6	7	8
38. I try to get the very best results in everything I do.	1	2	3	4	5	6	7	8
39. I am confident in my ability to be successful.	1	2	3	4	5	6	7	8
40. I communicate effectively in social situations.	1	2	3	4	5	6	7	8
41. My life is mostly controlled by external things.	1	2	3	4	5	6	7	8
42. I am calm when things go wrong.	1	2	3	4	5	6	7	8
43. I am efficient in the way I use my time.	1	2	3	4	5	6	7	8
44. I cope well when things change.	1	2	3	4	5	6	7	8
45. Overall, in my life I am a very effective person.	1	2	3	4	5	6	7	8

## Appendix E

**Score** \_\_\_\_\_  
**Certification Level Attained** \_\_\_\_\_

Facility: \_\_\_\_\_ Current Date: \_\_\_\_\_ Date of last audit: \_\_\_\_\_  
Executive Director: \_\_\_\_\_ ED Signature: \_\_\_\_\_

Please mark yes or no in the completed/reviewed areas. Please add 4 points for each area marked yes. Comment below on any areas that did not meet criteria:

- \_\_\_ 1. New hires are receiving T.I.P.S training on Guidebook and video
- \_\_\_ 2. Management, Department Heads, Supervisors have received T.I.P.S. training
- \_\_\_ 3. Conducts monthly Safety Committee meetings with 50 % front line associates
- \_\_\_ 4. Analyzes accidents, incidents and injury trends at the safety committee
- \_\_\_ 5. Investigates, documents and reports incidents in a timely manner (lag = 3)
- \_\_\_ 6. Documented retraining of associates who are involved in an accident or incident
- \_\_\_ 7. Distribute, perform, analyze and post corrective actions for all monthly safety inspections
- \_\_\_ 8. Maintain DART rate below standard industry average
- \_\_\_ 9. Current years OSHA log and the last five years are available and accurate
- \_\_\_ 10. Adherence and correction of previous DC facility safety audit results
- \_\_\_ 11. All authorized company drivers have had Fleet Safety Training prior to driving
- \_\_\_ 12. All authorized company drivers have had their MVR reviewed in the past 12 months
- \_\_\_ 13. All authorized company drivers have performed a Record of Road Test.
- \_\_\_ 14. Facility has received Kroll background checks prior to putting associates to work
- \_\_\_ 15. Facility is performing the safeguarding winners Post Offer Screen prior to working
- \_\_\_ 16. Facility has applicants sign P.O.S. waiver of liability prior to performing the P.O.S.
- \_\_\_ 17. Facility have selected and trained a designated Post Offer Screen-screener
- \_\_\_ 18. Facility is always making TMD available to qualified injured associates
- \_\_\_ 19. Facility has associates complete orientation prior to working on the floor
- \_\_\_ 20. Facility has a dedicated T.I.P.S. / Risk Management Coordinator

## Appendix F

ORIENTATION	ANNUAL	POST ACCIDENT	MECHANICAL	BODY	OTHER	TOTAL
1				1		2
1	1	1	1	1		5
1		1	1	1	1	5
1	1		1	1		4
1		1	1	1	1	5
1		1	1	1		4
1		1	1	1	1	5
1		1	1	1	1	5
	1					1
1			1	1		3
1	1	1	1	1	1	6