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Transformational leadership and workplace injury and absenteeism: Analysis of a National Nursing Assistant Survey

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ABSTRACT

Background. Transformational leadership (TL) has long been popular among management scholars and health services researchers, but no research studies have empirically tested the association of TL with workplace injuries and absenteeism among nursing assistants (NAs).

Purpose. This cross-sectional study seeks to explore whether TL is associated with workplace injuries and absenteeism among NAs.

Methodology. We analyzed the 2004 National Nursing Assistant Survey (n=2,882). A multivariate logistic regression analysis was performed to test the role of TL in the context of workplace performances.

Principal Findings. Results reveal that the TL model was positively linked to workplace injury in the level of NAs. Injury related absenteeism was also associated with the TL style, indicating that the TL behaviors may help address workplace absence among NAs.

Practice Implications. Findings suggest that introducing TL practices may benefit NAs in improving workplace performances.

Keywords. Transformational leadership, nursing assistants, workplace injury, absenteeism, performance, occupational health

Transformational Leadership (TL) and Workplace Injury and Absenteeism: Analysis of a National Nursing Assistant Survey

Nursing assistants (NAs) are an important human resource in health care. NAs provide direct care to over 1.5 million nursing home patients in about 16,100 nursing home settings (Centers for Disease Control and Prevention, 2009) and importantly, the higher turnover rate (about 66% in 2007) among NAs may be linked to reduced quality of patient care in nursing homes (Castle and Engberg, 2005).

Workplace injury is a serious concern among NAs. Over the past 10 year period (1995-2004), about 800,000 nursing, psychiatric and home health aides were injured in the workplace, and over the same period, 154 workers in the occupation were killed on the job (Hoskins, 2006). Nursing aides, orderlies, and attendants experience the third highest number of injuries and illness, exceeded only by truck drivers and laborers and material movers (U.S. Department of Labor, 2006). In a prospective study investigating workplace injuries among NAs (n=180) in Washington State, Myers and colleagues (2002) revealed that about 46% of the sampled respondents reported back and shoulder injuries. The Squillace et al study (2009), based on a national survey, reports that more than half of certified NAs had at least one work-related injury in the past 1 year. Prior studies have suggested that occupational injury may be blamed for the attrition rate of NAs (Geiger-Brown et al., 2004; Owen, 2000; Wunderlich et al., 1996). For example, Geiger-Brown and colleagues (2004), in a qualitative analysis of 394 licensed nurses practicing in N.Y. and Illinois, found that physician injury on the job was one of the reasons to leave the workplace. Another study (Owen, 2000) revealed the similar finding that 20% of nurses switched employment and 12% left nursing because of injuries on the job.

Prior safety leadership research has broadly investigated and found the association between TL and workplace safety (Mullen and Kelloway, 2009; Barling et al., 2002), but very little is known about the potential role of TL in relation to workplace injury and injury-related absenteeism in health care. This research, using a nationally representative sample, for the first time, attempts to explore the association of TL with injuries and absenteeism among NAs.

Transformational Leadership

Coined by Burns (1978), transformational leadership attempts to satisfy needs, resulting in a mutual affiliation between organizational leaders and staff followers, and to merge roles between leaders and followers so both benefit. Burns believes that a leader's power is inseparable from the followers' needs. Burns differentiated between TL and most other leadership models that were previously categorized as transactional leadership (Northouse, 2004). Bass (1990) further listed components of TL as: (a) idealized influence or charisma (e.g., gaining the trust of followers), (b) inspirational motivation, (c) intellectual stimulation, and (d) individualized consideration. Northouse (2004) defined TL as a process whereby a subject connects with others and creates an association that can raise the level of motivation in both the leader and the follower. In TL, the leader creates valuable and positive change in the followers. A transformational leader puts emphasis on "transforming" other individuals in an organization to help each other, to take care of others, and to look out for the organization as a whole. In TL, the leader enhances the motivation and performance of her/his follower group.

Conceptual Framework

The present study tests a role of TL theory in relation to workplace injuries and absenteeism among NAs. Figure 1 illustrates the conceptual framework of this study. We argue

in this framework that the application of TL practices may be positively influential at the organizational level (in a nursing home care setting) in an effort to increase workplace performances (reducing injury and absenteeism) among NAs in the context of the current active and turbulent health care market system environment. Some organizational and personal factors are added to the framework as they may influence the relationship between the two. We live in a turbulent health care market environment (e.g., regulations changes, merger and acquisition, health care reform) and TL styles remain significant in the changing health care environment (Trofino, 1995). Nursing health care settings are affected by both personal and organizational factors. TL can influence both individual and institutional inputs and resources in the process. Workplace performances are the results and outcomes. Worker injuries and absenteeism are examples of such output measures. TL can be used as an effective managerial tool to significantly reduce nurse employee injury and absenteeism. Figure 1 shows the relationship between and among these various variables.

[Figure 1 about here]

The link between the TL model and safety or occupational health is well understood in the literature (Barling et al., 2002; Conchie and Donald, 2009; Sellgren et al., 2007). Despite the growing body of safety knowledge, safety management remains a major challenge for many organizations (National Health Council, 2009). Testing a model linking safety-specific TL and occupational injuries, Sellgren et al. (2007) revealed "gardeners" (transformational leaders) who establish a culture by motivating and supporting employees in creative thinking were linked to decreasing injuries and staff turnover. Sosik and Godshalk (2000) empirically investigated the importance of leadership mentoring functions and found mentor TL associated with reduced job related stress. Another recent study that randomly interviewed German government officials

(n=244) documents TL styles linked to reducing chronic stress and increasing productivity (Rowold and Schlotz, 2009). In an extensive review of the literature, Judge and Piccolo (2004) found the positive correlation between TL styles and performance. Surveying 494 employees and 60 leaders in 21 long-term health care organizations in Canada, Mullen and Kelloway (2009) reported that, using the pre-training and post-training design, leadership training resulted in significant effects on the safety-specific TL and safety outcomes. Finally, the Parmelee et al study (2009), that surveyed NAs to uncover perceived workplace barriers and dissatisfaction, found lack of teamwork and exclusion from communication processes most problematic.

Hypotheses

The understanding of what role nursing leadership plays in relation to workplace performances among NAs has mostly been overlooked. Under the current health care delivery system in the U.S., labor shortages in nursing have long been prevalent and are a major concern to medical providers and policymakers. Labor shortage is related to the attrition rate among NAs. The American Health Care Association (AHCA) (2007) reports a 66% turnover rate among NAs, which indicates that sustaining nursing assistants is imperative to the maintenance of a long-term health care business. In an effort to combat labor shortage and attrition in nursing, past research has offered alternatives such as nursing education policy initiatives (Aiken et al. 2009), nurse funding collaboration (Davis and Napier 2008), transforming the hospital work environment (Hassmiller and Cozine, 2006) and nursing education (Bosher and Pharris, 2008), transforming organizational culture (Mulcahy and Betts, 2005), and recruitment efforts (U.S. Department of Health and Human Services, 2001). Given that performance improvement reduces attrition and that effective management and leadership can help sustain nurses in the

workplace (Sellgren et al., 2007), an effective leadership role may benefit NAs in enhancing workplace performances (e.g., reducing injuries and absenteeism). But this is verifiably unknown and hence we explore the topic further here. In addition to workplace injury, nurse absenteeism is another serious concern in health care (Unruh et al., 2007) and the role of leadership may be linked to absenteeism. There are only two studies (Zhu et al., 2005; Richardson and Vandenberg, 2005) investigating the link between TL and absenteeism. Surveying 1,050 senior human resource managers and CEOs in Singapore, the Zhu et al. study (2005) revealed the positive association between TL and lowered absenteeism. One survey study of 167 American managers conducted by Richardson and Vandenberg (2005) also found a positive link of TL with reduced absenteeism. However the correlation between TL and absenteeism among NAs has not been empirically tested, and thus we further investigate this linkage. Given that the roles of nurse leaders and supervisors are essential for the management of nursing homes including employment turnover (Kash et al., 2010), a TL practice can potentially enhance occupational safety upon introducing TL into practices. TL is a real consideration in the subordinate-supervisor relationship and the well-being of an employee (Barling et al., 2002). Having considered the aforesaid analysis of the literature regarding the relation of TL and performance, the present research tested the following two specific hypotheses:

Hypothesis 1. *The application of TL will be associated with a lower rate of self-reported occupational injury among NAs in a nursing home setting.*

Hypothesis 2. *The application of TL will be associated with a lower rate of injury related absenteeism among NAs in a nursing home setting.*

METHODS

Data Source

In an effort to test the aforesaid research hypotheses, we analyzed the 2004 National Nursing Assistant Survey (NNAS) conducted by the National Center for Health Statistics (NCHS) at the Centers for Disease Control and Prevention (CDC). The 2004 NNAS is the first comprehensive national survey of NAs in the United States. Using stratified and multistage probability design sampling, the survey selected a subsample of 790 facilities from 1,500 nursing home sites that were included in the 2004 National Nursing Home Survey. Of 790 facilities, 21 were considered out of scope, and another 187 cites were excluded from the survey because of various reasons (including inability to contact the nursing assistants, refusal to participate, no time to do an interview, confidentiality concern, and inadequate compensation). A total of 3,017 NAs from 582 eligible facilities participated in the survey. NAs were eligible to participate in the study if they: (1) provided assistance with Activities of Daily Living (ADLs); (2) were paid to provide those services; (3) were certified (or in the process of certification) to provide Medicare/Medicaid reimbursable services; (4) worked at least 16 hours a week; and (5) were employed in a nursing home setting and were not contract employees.

The response rate of the survey was 53%. The survey used a Computer-Assisted Personal Interviewing (CAPI) data collection system. The facility component of the CAPI included facility qualifications (bed-size category and geographical area status) and facility characteristics (certification status, hospital-based and nonhospital-based, ownership) data items. Interviewers were instructed to complete the facility qualifications data items first to ensure that a nursing home was eligible to participate in the 2004 NNAS. The survey instrument was pilot tested (n=63) and content validity of the survey instrument was established by "a technical advisory panel with expertise in survey methodology and sample design, long-term care

paraprofessional workforce issues, health policy, and evaluation." More detailed information about the NNAS methods and study design is available elsewhere (U.S. Department of Health and Human Services [U.S. DHHS], 2006).

Sample

For the purpose of the study, we included only 2,882 NAs (out of 3,017) in the analysis who were currently employed in a nursing home facility. About 92% of the sample were female, and the majority of respondents were Whites (53.32%), followed by African Americans (38.74%) and Asians (3.89%). The mean age was 38.6 years and the average education was 12.28. Over 51% of respondents were married (40.54%) and living with a partner (10.71%) and 26.22% were the never-married. With respect to the annual total household income, over 63% of respondents report making less than $30,000. Approximately 58% were working for for-profit nursing home facilities, and the majority (67.14%) of the sample were employed in a large nursing home facility setting (over 100+ beds).

Measurement

Dependent variables

Workplace injuries were used as dependent variables in the present study. Specifically each respondent was asked, "Have you had any of the following workplace injuries during the past 12 months?" Workplace injuries include the following: (1) back injuries; (2) other strains or pulled muscles; (3) human bites; (4) scratches, open wounds or cuts; (5) black eyes or other types of bruising; and (6) other workplace injuries. All six workplaces injuries were combined into a single injury variable. Each response was categorical (yes=1, no=0). Another important workplace performance concept in management is workplace absenteeism (total days unable to

work because of injuries) and was included in the analysis as another dependent variable. The response was 0-365 days.

Covariant variables

Consistent with Jung and Avolio (2000) and Antonakis et al. (2003), the following 4 response items were combined to assess the TL model: (1) my supervisor is open to new and different ideas, such as a better way of dealing with resident care (*innovation*); (2) my supervisor is supportive of progress in my career, such as further training (*career development*); (3) my supervisor helps me with my job tasks when help is needed (*helping*); and (4) my supervisor listens to me when I am worried about a resident's care (*listening*). The response used a 4-point scale from 1 (strongly disagree) to 4 (strongly agree).

The survey also collected other information including age, gender, race (Whites, African Americans, Asians, and others), and education. These personal factors were controlled in the multiple regression analysis.

Following Myers et al. (2002) portraying the importance of organizational structure in workplace injuries among NAs and other previous research (Temple et al., 2010) implying the importance of organizational characteristics related to recruitment and retention in nursing home settings, we assessed two organizational factors. The ownership type (1=for-profit, 2=all others) and the total number of nursing home beds (1=3-49 beds; 2=50-99 beds; 3=100-199 beds; and 4=200+ beds) were included in the analysis. The U.S. Office of Management and Budget (OMB) collects the metropolitan and micropolitan statistical areas information (as of June 2003, MSA codes from OMB) (1=Metropolitan, 2=Micropolitan, 3=Neither) and we included this in the analysis.

The following two quality-related items also were included in the analysis as covariates: (1) job satisfaction (how satisfied with current job) (1=extremely satisfied, 2= somewhat satisfied, 3=somewhat dissatisfied, 4=extremely dissatisfied), (2) communication difficulty because of language (how often is there difficulty communicating with residents because they speak a different language) (1=always, 2=sometimes, 3=never).

Statistical Analyses

STATA 10.1 (StataCorp., 2007) was used for all analyses. Descriptive analyses were first conducted using a chi-square test and a t-test. Understanding the association of workplace injuries and absenteeism in relation to TL practices is the goal in the study. Thus, a multivariate logistic regression analysis is appropriate. Controlling for both demographic factors (age, gender, and race) and organizational factors (ownership & organization size), we then undertook a multivariate logistic regression analysis in order to determine whether certain TL behaviors are linked to workplace injuries and absenteeism. Using a *vif* ("variance inflation factors") statement command available in STATA, we tested for multicollinearity. No variable had a tolerance value lower than 0.1., suggesting that all variables analyzed in the regression model are stable. As with other large national surveys, accurately estimating sampling variances is important for the complex survey design (Lee et al., 1989) and the 2004 NNAS data files accordingly provide necessary information on sampling weights and analysis parameters to correctly estimate variances. Hence, sampling weights were all applied using the STATA 'svy' commands. Coefficient scores and standard errors (s.e.) are reported in the regression model.

RESULTS

Table 1 displays descriptive statistics of the sample and correlations. The mean age was 38.6 years. Mean education was 12.28. Mean total days unable to work because of injury were 6.89.

[Table 1 about here]

Table 2 highlights the prevalence rate of each workplace injury among NAs. In this analysis, 17.34% of the sample experienced back injuries and 16.09% reported black eye injuries (or other bruising) in the past year. There were slightly over 44% self-reported workplace injuries such as scratches, open wounds, or cuts, in the past 12 months.

[Table 2 about here]

Results of a multivariate logistic regression analysis showing workplace injury and absenteeism in relation to TL are presented in Table 3. After controlling for demographic confounding factors (age, sex, race, and education), the TL style was associated with injuries (β= -.17, p=.018) and injury related absenteeism (β= -3.65, p= .05), supporting our proposed hypotheses. This simply suggests that NAs whose supervisors practice TL behaviors are less likely to experience injuries and absenteeism.

[Table 3 about here]

DISCUSSION

Using a nationally representative database of 3,017 clinical NAs, this analysis has explored the association between TL and workplace injuries and absenteeism among NAs. This study builds on the TL literature concerning the performance of NAs and makes the following specific contributions to the field.

This analysis is the first empirical research effort, using the 2004 National Nursing Assistant Survey (NNAS), to investigate the relation of TL to workplace injuries and absenteeism among NAs. Our findings offer a national estimate of workplace injuries among NAs. The prevalence rate of open wounds and cuts is 44%, which is the highest among other workplace injuries reported in our study. Other workplace injury rates reported in the present study are in the range of 7%-17%. Back injuries and pulled muscles are understandable and common, and our 17.34% back injury rate is in line with a 2001 national study (Goldman et al., 2001), who found a 18% back injury rate among nursing aides, orderlies, and attendants. Our prevalence rate is consistent with past research documenting the back injury rate of NAs being more than twice the rate of nurses (Hoskins 2006). We did not investigate the causation of injuries, but black eyes (16.9%) are noteworthy as it implies that either patients or other employees physically may cause harm to NAs. Little is known about the causation and incidence/prevalence of black eyes among NAs. This injury rate information is important to policymakers and managers who can construct efforts to counteract occupational injuries, particularly often caused violence injuries such as black eyes.

Second, consistent with prior research (Barling et al., 2002), our findings suggest that overall TL behavior is linked to workplace performances. Given that safety-specific TL combined with other safety trust factors increases safety effectiveness (Conchie and Donald, 2009) and other employment factors mediate the effects of TL on performance (Pillai et al., 1999), TL behaviors found to be positively associated with injuries in our study may be effective if combined with other organizational supporting trust factors. No previous TL studies exist exploring the association of specific workplace injuries in nursing home settings. Future study

might investigate how the TL style combined with other mediating factors functions in a way to enhance workplace performance among various health care professionals.

Third, our finding of TL being linked to a decrease of absenteeism is encouraging and warrants further research. Not enough is known about the role of a TL style in lowering levels of workforce absenteeism in health care. Our finding is consistent with prior management research (Zhu et al., 2005; Richardson & Vandenberg, 2005) but is not in line with a recently conducted study in the U.K. (Mellor et al., 2009), revealing TL behaviors insignificant in the prediction of reduced absence. One plausible explanation of the difference is that Mellor and colleagues surveyed local authorities and police officers, while our study surveyed a health care workforce (clinical NAs).

This research comes with several limitations. First, respondents in this study were predominantly female (92%) and thus our findings may be inapplicable to male NAs. Considering that most NAs in the U.S. are female, our findings are still appropriate and represent a large portion of NAs in the U.S. Given the 53% survey response rate in the sample, study findings may not represent those NAs who did not participate in the survey. Second, our findings are subject to respondent bias. Supervisor perceptions alternatively could have been examined and compared with those of NAs, but the survey did not collect such information. Particularly, the injury prevalence rates in our study may be unreliable as self-reported occupational injuries are often underreported (U.S. Government Accountability Office, 2009). Third, another limitation for our study is the inability to understand respondents' supervisors (e.g., how many supervisors NAs have had when surveyed? who is the current/past supervisor that would affect employee performances?). Future study may want to take an additional step to explore the association between the number of supervisors and workplace performances among

health care professionals including NAs. Fourth, this analysis is cross-sectional and does not investigate causal relationships between TL and workplace performances. A longitudinal or experimental study may correctly estimate the causation between the two. Fifth, one potential limitation is the inability to address the practical significance of the coefficients. Our findings are based on statistical coefficients and small differences of the coefficients may not be important in practice. Finally, we measured injury-related absences but we do not know the full extent of other reasons for absenteeism. Future research might further investigate the short-term or long-run effects of TL on absence duration.

PRACTICE IMPLICATIONS

The implications of this study are both managerial and clinical. Most of the implications are economic in nature. If workplace injury and absenteeism can be reduced, and they can, huge dollar savings are the result. TL behaviors can be practiced in the form of safety training which research has shown pays off tremendously. Accidents and injuries are extremely costly not just in term of human pain and suffering. Injuries can lead to low performances and higher insurance payments each of which typically today run into thousands and often hundreds of thousands of dollars per case.

Excessive absenteeism often results in voluntary or involuntary turnover and employee separation from an organization. The costs of recruiting a new person are at least several thousand dollars and often tens of thousands of dollars per replaced employee. If moving costs are involved, add another $10-20,000 per case. Factor in lost time and training charges and you are talking big money expenses for each and every replaced employee. TL leaders must be efficient and effective human resource administrators. Personal managers are aware of big ticket expenses items including work safety, recruitment, training, development and turnover.

Intangibles such as teamwork, morale, job satisfaction, motivation and corporate culture also have "costs" associated with them – although dollar amounts are much more difficult to determine. Especially in the world of nursing and health care workers who are in very short supply and extremely high demand, the fiscal implications alone of TL practices are worthy of our immediate serious attention and application.

CONCLUSION

In conclusion, we found that TL styles are directly linked to reducing certain workplace injuries and injury related absenteeism among NAs. Given that safety training appears to be simple and cost-effective and that leadership training on safety-specific TL style is credited with positive outcomes (Mullen and Kelloway, 2009), health care professionals including nursing aides can benefit from the TL model when training managers in order to advance workplace practices. Because the health care industry has been forced to manage many rapid changes, the implementation of our findings for health care leaders is the need to modify supervisory philosophies and leadership styles within organizations in times of transition. Managers and leaders in nursing home care settings can develop certain skills and abilities to become true transformational leaders and increase nurse assistant satisfaction and thereby reduce injuries and prevent excessive turnover. More efforts by health care organizations and policymakers to encourage and develop effective and appropriate TL behaviors are needed to advance NA job satisfaction, recruitment, retention, and healthy work environments, particularly in light of the current nursing shortage and health care worker/staffing marketplace.

REFERENCES

Aiken, L.H., Cheung, R.B. & Olds, D.M. (2009). Education policy initiatives to address the nurse shortage in the U.S. *Health Affairs*, 28(4), w646-656.

American Health Care Association (AHCA). (2007). Report of findings 2007 AHCA survey of nursing staff vacancy and turnover in nursing facilities. *AHCA Department of Research.* Retrieved October 1, 2010, from: http://www.ahcancal.org/research_data/staffing/documents/vacancy_turnover_survey2007.pdf.

Antonakis, J., Avolio, B.J. & Sivasubramaniam, N. (2003). Context and leadership: an examination of the nine-factor full-range leadership theory using the multifactor leadership questionnaire. *The Leadership Quarterly,* 14(3), 261-295.

Barling, J., Loughlin, C., & Klloway, E.K. (2002). Development and test of a model linking safety-specific transformational leadership and occupational safety. *Journal of Applied Psychology*, 87(3), 488-496.

Bass, B.M. (1990). *Bass & Stogdill's handbook of leadership: Theory, research, & managerial applications.* 3rd Edition. New York: Free Press.

Bosher, S.D., Pharris, M.D. (2009). Transforming Nursing Education: The culturally inclusive environment. N.Y.: Springer Publishing Company.

Burns, J.M. (1978). *Leadership.* New York: Harper & Row.

Castle, N.G., & Engberg, J. (2005). Staff turnover and quality of care in nursing homes. *Medical Care*, 43, 616-626.

Centers for Disease Control and Prevention (2009). *Faststats: Nursing home care*. *Retrieved December 29, 2009, from:* http://www.cdc.gov/nchs/fastats/nursingh.htm

Conchie, S.M., & Donald I.J. (2009). The moderating role of safety-specific trust on the relation between safety-specific leadership and safety citizenship behaviors. *Journal of Occupational Health Psychology*, 14(2), 137-147.

Davis, D.A., & Napier, M.D. (2008). Strategically addressing the nurse shortage: A closer look at the nurse funders collaborative. *Health Affairs*, 27(3), 876-881.

Geiger-Brown, J., Trinkoff, A.M., Nielsen, K., Lirtmunlikaporn, S., Brady, B., Vasquez, E.I. (2004). Nurses' perception of their work environment, health, and well-being: A qualitative perspective. *AAOHN Journal,* 52(1), 16-22.

Goldman, R., Jarrard, M.R., Kim, R., Loomis, S., & Atkins, E.H. (2001). Prioritizing back injury risk in hospital employees: Application and comparison of different injury rates. *Journal of Occupational Environmental Medicine,* 42(6), 645-652.

Hassmiller, S.B., & Cozine, M. (2006). Addressing the nurse shortage to improve the quality of patient care. *Health Affairs*, 25(1), 268-274.

Hoskins, A.B. U.S. Bureau of Labor Statistics. (2006). *Occupational injuries, illnesses, and fatalities among nursing, psychiatric, and home health aides, 1995-2004*. Retrieved March 3, 2010, from: http://www.bls.gov/opub/cwc/print/sh20060628ar01p1.htm.

Judge, T.A., & Piccolo, R.F. (2004). Transformational and transactional leadership: Ameta-analytic test of their relative validity. *Journal of Applied Psychology*, 89(5), 755-768.

Jung, D.I., & Avolio, B.J. (2000). Opening the black box: An experimental investigation of the mediating effects of trust and value congruence on transformational and transactional leadership. *Journal of Organizational Behavior,* 21(8), 949-964.

Kash, B.A., Naufal, G.S., Dagher, R.K., & Johnson, C.E. (2010). Individual factors associated with intentions to leave among directors of nursing in nursing homes. *Health Care Manage Review*, 35(3), 246-255.

Lee, E.S., R.N. Forthofer, R.J. Lorimor. (1989). Analyzing Complex Survey Data. Newbury Park, CA: Sage Press.

Mellor, N., Arnold, J., & Glade, G. (2009). The effects of transformational leadership on employees' absenteeism in four UK public sector organisations. *Health and Safety Executive*. Retrived Feb. 26, 2010, from: http://www.hse.gov.uk/research/rrhtm/rr648.htm

Mulcahy, C., Betts, L. (2005). Transforming culture: an exploration of unit culture and nursing retention within a neonatal unit. *Journal of Nursing Management*, 13, 519-523.

Mullen, J.E., & Kelloway, E. K. (2009). Safety leadership: A longitudinal study of the effects of transformational leadership on safety outcomes. *Journal of Occupational and Organizational Psychology*, 82(2), 253-272.

Myers D., Silverstein, B., Nelson, N.A. (2002). Predictors of shoulder and back injuries in nursing home workers: A prospective study. *American Journal of Industrial Medicine*, 41, 466-476.

National Health Council (2009). Report on Injuries in America. *Highlights from Injury Facts, 2009 Edition.* Retrieved January 23, 2010, from*:* http://www.nsc.org/news_resources/injury_and_death_statistics/Pages/HighlightsFromInjuryFacts.aspx.

Northouse, P.G. (2004). *Leadership: Theory and practice* (3rd edition). Thousand Oaks, CA: Sage.

Owen, B.D. (2000). Preventing injuries using an ergonomic approach. *AORN Journal*, 72(6), 1031-1036.

Parmelee, P.A., Laszlo, M.C., & Taylor, J.A. (2009). Perceived barriers to effective job performance among nursing assistants in long-term care. *Journal of American Medical Directors Association*, 10(8), 559-567.

Pillai, R., Schriesheim, C.A., & Williams, E.S. (1999). Fairness perceptions and trust as mediators for transformational and transactional leadership: A two-sample study. *Journal of Management*, 25(6), 649-661.

Richardson, H.A., Vandenberg, R.J. (2005). Integrating managerial perceptions and transformationalleadership into a work-unit level model of employee involvement. *Journal of Organizational Behavior*, 26(5), 561-589.

Rowold, J., & Schlotz, W. (2009). Transformational and transactional leadership and followers' chronic stress. *Leadership Review*, 9, 35-48.

Sellgren, S., Ekvall, G., & Tomson, G. (2007). Nursing staff turnover: Does leadership matter? *Leadership in Health Services*, 20(3), 169-183.

Sosik, J.J., & Godshalk, V.M. (2000). Leadership styles, mentoring functions received, and job related stress: A conceptual model and preliminary study. *Journal of Organizational Behavior*, 21(4), 365-390.

Squillace, M.R., Remsburg, R.E., Harris-Kojetin, L.D., Bercovitz, A. Rosenoff, E., Han, B. (2009). The national nursing assistant survey: Improving the evidence base for policy initiatives to strengthen the certified nursing assistant workforce. *The Gerontologist*, 49(2), 185-197.

StataCorp. (2007). *Stata Statistical Software: Release 10*. College Station, TX: StataCorp LP.

Temple, A., Dobbs, D., Andel, R. (2010). The association between organizational characteristics and benefits offered to nursing assistants: Results from the National Nursing Home Survey. *Health Care Management Review*, 35(4), 324-332.

Trofino, J. (1995). Transformational leadership in health care. *Nursing Management*, 26(8), 42-47.

Unruh, L., Joseph, L., Strickland, M. (2007). Nurse absenteeism and workload: negative effect on restraint use, incident reports and mortality. *Journal of Advanced Nursing*, 60(6), 673-81.

U.S. Government Accountability Office (GAO). (2009). *Workplace Safety and Health: Enhancing OSHA's Records Audit Process Could Improve the Accuracy of Worker Injury and Illness Data*. GAO-10-10. Retrieved March 20, 2010, from: http://www.gao.gov/new.items/d1010.pdf

U.S. Department of Health and Human Services (DHHS). (2001). *HHS awards $30 million to address emerging nurse shortage. HHS News.* Retrieved December 5, 2009, from: http://www.hhs.gov/news/press/2002pres/20020604.html.

U.S. Department of Health and Human Services (DHHS). (2006). Assistant Secretary for Planning and Evaluation. Office of Disability, Aging and Long-Term Care Policy. An Introduction to the National Nursing Assistant Survey: Programs and Collection Procedures. Retrieved November 19, 2009, from: http://aspe.hhs.gov/daltcp/reports/2006/NNASintro.pdf.

U.S. Department of Labor. (2006). *Bureau of Labor Statistics*. Retrieved March 4, 2010, from: http://www.bls.gov/iif/oshsum1.htm.

Wunderlich, G.S., Sloan, F.A., & Davis, C.K. (Editors). (1996). *Nursing Staff in Hospitals and Nursing Homes: Is It Adequate?* Institute of Medicine (IOM). Washington, DC: National Academy Press.

Zhu, W., Chew, I. K. H., & Spangler, W. D. (2005). CEO transformational leadership and organizational outcomes: The mediating role of human-capital-enhancing human resource management. *The Leadership Quarterly, 16,* 39-52.

TABLE 1
Descriptive Statistics and Correlations for All Variables (n=2,881)

Variables	Mean	s.d.	Mini	Max.	1	2	3	4	5	6	7	8	9	10	11
Injury	1.54	.18	1	4											
Absent	6.89	61.05	0	365	.02										
TL	3.22	.85	1	4	-.21**	-.06**									
Ownership	1.41	.49	1	2	.01	.007	.06**								
Org. size	2.73	.71	1	4	-.06**	.01	-.004	-.14**							
Location	1.35	.67	1	3	.05**	-.006	-.02	.07**	-.28**						
Comm	2.54	.58	1	3	.04	.01	.003	.07**	-.09**	.23**					
Satisf.	1.92	.80	1	4	.25**	.02	-.41	-.06**	-.05*	-.02	.02				
Age	38.61	12.61	16	65	-.09**	.02	.07**	.02	-.02	-.05*	-.10**	-.06**			
Sex	1.92	.26	1	2	.06**	.02	.007	-.02	-.01	.05**	-.007	-.002	-.006		
Race	1.58	.75	1	4	-.13**	-.008	.03	-.08	.12**	-.24**	-.12**	-.009	.06*	-.05*	
Edu.	12.33	5.97	0	17	.004	-.006	.02	.02	.02	-.06**	.17**	-.02	-.02	-.04*	.05**

**p<.05, **p<.01*

TABLE 2
The Prevalence Rate of Workplace Injuries Among NAs (%)

Workplace Injury and Absenteeism	Total (n=2,881)
Back injury	17.34
Other strains or pulled muscles	15.63
Human bites	11.44
Scratches, open wounds or cuts	44.39
Black eyes or other bruising	16.09
Other workplace injuries	7.16

TABLE 3
Coefficients of Workplace Performances Related to Transformational Leadership

	Injury[b]			Absenteeism[c]		
	Coefficients (C.I)	*t*	*p*	Coefficients (C.I)	*t*	*p*
TL[a]	-.17 (-.31, -.03)	-2.37	**.018**	-3.65 (-7.31, -.003)	-1.97	**.05**
Ownership	.03 (-.18, .25)	.30	.766	1.75 (-4.92, 8.44)	.52	.606
Organization size	-.06 (-.18, .07)*	-.90	.369	-.69 (-4.07, 2.69)	-.40	.690
Location	.02 (-.11, .16)	.31	.755	-1.18 (-6.06, 3.69)	-.48	.633
Communication	.07 (-.11, .26)	.78	.434	2.32 (-2.81, 7.47)	.89	.374
Satisfaction	.50 (.33, .68)	5.77	**<.001**	-1.95 (-5.27, 1.38)	-1.15	.251
Age	-.01 (-.02, -.005)	-3.18	**.002**	.12 (-.18, .26)	1.70	.089
Sex	.49 (.16, .82)	2.92	**.004**	5.8 (1.5, 10.1)	2.65	**.008**
Race	-.28 (-.41, -.14)	-3.92	**<.001**	-1.42 (-4.09, 1.25)	-1.04	.297
Education	.003 (-.01, .02)	.39	.693	-.08 (-.20, .03)	-1.50	.135
N	2,875			1,730		

[a]TL (Transformational Leadership)

[b]Injury (back injury, other strains/pulled muscles, human bites, scratches, open wounds/cuts, black eyes, other bruising, and other injuries, all combined)

[c]Absenteeism (Total days unable to work because of injury)

FIGURE 1
Conceptual Framework