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Safety culture of nursing homes: opinions of top managers

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Abstract

Background—Examining the perception of the patient safety culture (PSC) of top managers in healthcare settings is important because their orientation to PSC can have a large influence on the facility.

Purposes—In this research, the perception of the PSC of Nursing Home Administrators (NHAs) and Directors of Nursing (DONs) is examined.

Methodology/Approach—Primary data were collected to examine the opinions of the PSC from NHAs and DONs. Information was collected from a large nationally representative sample of 4,000 nursing homes. The Nursing Home Survey on Patient Safety Culture (NHSPSC) survey instrument was used as a measure of PSC. This has 12 domains and 38 items. Bias indexes, intraclass correlation coefficients, and Pearson's product-moment correlation coefficients of the differences between NHA and DON item scores were examined.

Findings—Using a 0–100 scale, most scores fell into the 55–80 range. Higher scores represent a higher (more favorable) PSC. Agreement between the NHA and DON was excellent for 10 items, good in 15 items, moderate in 4 items, and poor in 8 items. Of the 4 largest differences in scores, the NHA scores were higher than the DON scores for one item and DON scores were higher than the NHA scores for 3 items.

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Implications—The overall perception from both NHAs and DONs, would appear to represent a somewhat “positive” outlook from these top managers on their institution’s PSC. However, NHAs in general report higher scores than DONs. The areas of divergence between these top managers are further discussed, with a view towards directing future patient safety investigations and initiatives in nursing homes.

In this research, the perception of the patient safety culture (PSC) of Nursing Home Administrators (NHAs) and Directors of Nursing (DONs) from a large nationally representative sample of nursing homes are examined. First, the overall perception of PSC from these top managers is examined. Using information from both NHAs and DONs may be important, as it provides a more-complete view of PSC than from either top manager alone. Second, the perception of PSC of these top managers is compared. NHAs and DONs perform different duties while running the facility (Castle, Ferguson, & Hughes, 2009). Thus, they may have different opinions of some elements of PSC. Examining similarities and differences in PSC may prove useful in directing future patient safety investigations and initiatives in nursing homes. For example, reasons for discordant opinions of PSC should be investigated further as these may be areas representing possible barriers to improvement activities; whereas, concordant opinions may represent the most amenable areas for PSC improvement activities.

Examining the perception of the PSC of top managers such as NHAs and DONs, is important because their orientation to PSC can have a large influence on the overall PSC of the facility. This is because top managers provide support and influence that can affect other staff members who contribute to the overall PSC of the facility (Lia, 2007). Research from hospitals has shown that top management support is “the critical element of creating a culture of patient safety” (Association of periOperative Registered Nurses [AORN], 2006, p. 6).

PSC is influenced by a healthcare organization addressing care and safety based on beliefs, characteristics, values, skills, and mannerisms (Agency for Healthcare Research and Quality [AHRQ], 2004). Thus, PSC is complex and not surprisingly there is no widely agreed upon definition of PSC. One often-cited definition of PSC is “the way things are done around here” (Davies, Nutley, & Mannion, 2000, p. 111). A further often-cited, more comprehensive definition is “[T]he safety culture of an organization is the product of individual and group values, attitudes, perceptions, competencies, and patterns of behavior that determine the commitment to, and the style and proficiency of, an organization’s health and safety management. Organizations with a positive safety culture are characterized by communications founded on mutual trust, by shared perceptions of the importance of safety, and by confidence in the efficacy of preventive measures” (Advisory Committee on the Safety of Nuclear Installations, 1993, p. 5).

AHRQ (Agency for Healthcare Research and Quality) defined patient safety by describing some of the “way things are done” which is reflected in the PSC survey developed by AHRQ (described below). AHRQ included as important: acknowledgment of the high-risk, error-prone nature of an organization’s activities; a blame-free environment where individuals are able to report errors or close calls without fear of reprimand or punishment;

an expectation of collaboration across ranks to seek solutions to vulnerabilities; and, a willingness on the part of the organization to direct resources for addressing safety concerns (www.psnet.ahrq.gov/glossary.aspx).

In acute care settings, PSC has emerged as a critical component of efforts to improve patient safety due to the association of this measure with initiatives that influence both safety and quality of care (Guldenmund, 2000). That is, an improved PSC can lead to patients' experiencing a safer environment and better outcomes (Guldenmund, 2000). We examine the perceptions of PSC from approximately 4,000 nursing homes, consisting of responses from both the NHA and DON perspectives. The Nursing Home Survey on Patient Safety Culture (NHSPSC), recently developed by AHRQ (under contract to Westat; www.ahrq.gov/qual/nhsurvey08), was used to examine PSC.

Patient Safety

Patient safety is defined as, "Freedom from accidental or preventable injuries produced by medical care" (AHRQ, 2008, p. 1). Acute care facilities have traditionally been more focused on patient safety. This may be partly due to organizations including the Joint Commission (JCAHO) and AHRQ fostering initiatives aimed at promoting and improving patient safety in acute care settings (Bahl et al., 2009). These initiatives include mandatory and voluntary reporting of patient safety measures, such as adverse drug events, hospital acquired infections, and wrong site surgery (i.e., "never events") (Bahl et al., 2009; Tjia et al., 2009).

Nursing homes have a long history of addressing quality-of-care issues. Many of these quality-of-care issues overlap with patient safety issues (e.g., physical restraint use). Nevertheless, the emphasis on the topic of patient safety in nursing homes has, to date, been less prominent than in acute care settings. However, this is changing as nursing home quality improvement projects, State certifications, Joint Commission accreditation, and regulatory efforts evolve.

AHRQ has recently promoted several nursing home specific patient safety quality improvement initiatives. This includes research addressing specific areas of concern such as use of physical restraints and falls, and also includes dissemination of best practices, evidence reports, primers, and innovations exchange (www.ahrq.gov/qual/advances/). State certification (which is more relevant to nursing homes than Joint Commission accreditation) has likewise recently started to address patient safety issues. This includes use of many deficiency citations (commonly called F-tags) for patient safety issues (e.g., lighting levels (F-256); environment free of accident hazards (F-323); and, medication administration (F-332)). Following patient safety initiatives in acute care settings, the Centers for Medicare and Medicaid Services (CMS) recently extensively updated the pharmacy and medication regulatory F-tags (i.e., F-329, F-425, F-428, and F-431) addressing medication errors (Krechting, 2006). Most recently, similar to hospitals, certain states are beginning to consider implementing "never events" in the nursing home setting (e.g., www.legis.state.pa.us/CFDOCS/Legis/).

Patient Safety Culture

PSC has begun to emerge as an important metric because: it is pertinent to all facilities providing hands-on patient care; can be measured relatively easily; and, is standardized via instruments developed and endorsed by national and federal agencies. Most significantly, PSC is an important metric because it is associated with both patient safety and quality measures (Guldenmund, 2000). For example, some research in nursing homes has shown an association between PSC and quality indicators such as physical restraint use (Bonner, Castle, & Handler, 2009).

Acute care settings are actively using PSC tools. This includes using PSC tools for benchmarking, making internal comparisons, and improvement initiatives (Sorra et al., 2007). Acute care settings have implemented patient safety improvement initiatives and used PSC assessments as a measure of success (Hellings, Schrooten, Klazinga, & Vleugels, 2007). Recent literature reviews provide details of some of these initiatives (Farley et al., 2009; Tzeng & Yin, 2007). For example, medication administration practices and patient identification figured prominently (Farley et al., 2009; Tzeng & Yin, 2007).

Nursing homes are lagging behind in the implementation of PSC tools compared to acute care settings (Farley et al., 2009). To date, state certification initiatives have not required nursing homes to measure their PSC. However, the 9th Scope of Work (SOW) for Quality Improvement Organizations (QIOs) assesses PSC (CMS, 2009; implemented in 2009). Nevertheless, very little is known about the PSC of nursing homes since the results of the PSC in QIO nursing homes is not made publicly available.

Bonner and associates (2008) recently reviewed this literature, and identified five studies examining PSC in nursing homes. This review characterized PSC as problematic with many nursing homes having low scores (indicating poor PSCs), providing further rationale for additional research in this area. As part of this prior literature review (Bonner et al., 2008), and our own literature search, only one empirical study (i.e., Castle & Sonon, 2006) was identified that examined the PSC from the perspective of nursing home top managers. Most of the other studies examined PSC using information coming from nurse aides (Bonner et al., 2008). Castle and Sonon (2006) examined PSC from the perspective of NHAs.

Information came from 425 NHAs, and a hospital PSC instrument was modified for use in nursing homes (i.e., the Hospital Survey on Patient Safety Culture (HSOPSC); Sorra et al., 2007). Low PSC scores were identified on all of the scales in this instrument. However, this research used a relatively small sample size, used an instrument initially designed for the hospital setting, and only examined the opinion of NHAs.

Conceptual Framework for Examining Top Management and Patient Safety Culture

Despite few empirical studies examining PSC from the perspective of nursing home top managers, many authors believe they are highly influential. In reviewing the literature, we identified several studies showing the importance of top management in influencing aspects of patient safety. For example, Scott-Cawiezell (2003) determined leadership and

communication essential to ensuring resident safety. As Lia (2008, p. 18) states, “The results an organization is experiencing (good or bad) are a product of the organizational design and management.”

The conceptual framework that guided this study (see Figure 1) includes the top management team as a potential influence on PSC. This same conceptual model was recently used to as part of research on PSC in nursing homes by Bonner, Castle, and Handler (2009). The influence of the top-management team is highlighted as extremely influential in this conceptual framework.

The conceptual framework was developed using concepts coming from Donabedian (2003) and Stone and colleagues (2006). The concepts coming from Donabedian include the use of structures, processes and outcomes ((SPO) in examining healthcare organizations (Donabedian, 1986). This framework has been widely applied in health systems research, including a large number of nursing home studies. Stone and colleagues included SPO concepts, and PSC was identified as an outcome measure in healthcare organizations. Feedback between PSC, safety behaviors, top management, and the organizational structures and process is integral to this model. Following our empirical understanding in this area, leadership is proposed to influence the organizational climate (Schein, 2000). Moreover, the Safety Climate of the organization was also proposed to influence the PSC.

The climate is the collective view of people. That is, the climate represents members’ perceptions of events and conditions that occur in the organization (Becker, 2007). Culture is the attitudes and approaches of people (Schneider, Bowen, Ehrhart, & Holcombe, 2000). That is, culture represents members’ common views (Becker, 2007). Although we note that some ambiguity exists when defining and using these concepts of climate and culture (Schneider, 2000). Culture is considered to be “useful in attempting to diagnose problems in organizational settings” (Becker, 2007, p. 1); thus, the importance of PSC in this conceptual model and the examination of PSC in general.

DATA AND METHODS

In the research presented here, a recently developed nursing home specific PSC survey instrument was used (i.e., NHSPSC [Nursing Home Survey on Patient Safety Culture]; www.ahrq.gov/qual/nhsurvey08/). From a large nationally representative sample of nursing homes, this instrument was used to collect data from both NHAs and DONs. Thus, the PSC ratings of nursing homes from the perspective of both NHAs and DONs is examined, and similarities and differences between these top managers are identified.

Data Source

In this research, the NHSPSC instrument (described further below) was used to collect information on PSC from NHAs and DON. First, a random sample of 6,000 nursing homes was used (selected from all 50 states). Only nursing homes participating in Medicare and/or Medicaid certification (which includes approximately 97% of all U.S. nursing homes) were included in the sample. This eligibility specification was used because these Medicare and/or Medicaid certified nursing homes are included in the Online Survey, Certification,

and Reporting system (OSCAR) data, which was used to identify the mailing address of the nursing homes.

Hospital-based nursing homes were excluded from the sample (N=2,210). This was because hospital-based facilities tend to staff differently from other nursing homes and it may be more appropriate for these settings to consider using the HSOPSC. At the time of this study (Fall 2008), eligible facilities included approximately 15,000 nursing homes.

As part of the data collection strategy, follow-up reminder post cards were mailed two and four weeks after the survey mailing and a repeat survey was sent after two months. No follow-up phone calls were used. The author's telephone number and email address were also included in the mailings, and top managers were directed to call if they had any questions or needed any clarification.

Nursing Home Survey on Patient Safety Culture

As noted above, AHRQ had previously developed a survey to assess PSC in acute care settings. Subsequently, AHRQ responded to the need for a PSC instrument specifically aimed at the nursing home setting because of the well-known differences in clinical care provided, emphasis on providing functional, and cognitive support, and that the roles of many of the healthcare workers that differ in nursing homes compared to acute care settings. The NHSPSC instrument (AHRQ, 2008a) was developed by Westat, under contract to AHRQ, to measure the culture of resident safety in nursing homes.

As part of the instrument development process, the Westat research team discussed patient safety with researchers and nursing home top managers and conducted a review of the safety literature. The NHSPSC instrument was piloted, revised, and released in September 2008. The development process is extensively described in a technical report, including findings from the pilot testing in 40 nursing homes with 3,698 nursing home staff (AHRQ, 2008b).

Briefly, results of the pilot testing conducted by Westat showed that confirmatory factor analyses model fit statistics, reliability analyses, and validity analysis of the PSC domains of the NHSPSC all met acceptable criterion for good conformance (AHRQ, 2008b).

Cronbach's alpha, for the domains were shown to have acceptable levels of reliability, with the lowest value of 0.71 and the highest of 0.86; moreover, 9 of the 12 domains of the instrument had Cronbach's alphas of greater than 0.80. The NHSPSC is also further described by Castle and associates (2010), which includes details of the nursing home sample and scores for each item included in the questionnaire.

Thus, the NHSPSC consists of 62 questions, with 12 domains of resident safety. These 12 domains of resident safety are listed as part of Table 2. However, for purposes of this analysis, we exclude information from one domain (i.e., supervisor expectations and actions promoting resident safety) as it generally does not apply to most nursing home top managers.

Analyses

An agreement scale is used as part of the NHPSC. To conduct the analyses, a score was computed, using this agreement scale. The agreement scale uses: Strongly Agree, Agree, Neither, Disagree, Strongly Disagree. As a summary score of the PSC items, the percent of positive responses was computed. That is, Agree/Strongly Agree for positively worded items and, Disagree/Strongly Disagree responses for negatively worded items were treated as positive responses. So, for example, if the distribution of responses for an item were 20% Strongly Agree, 20% Agree, 20% Neither, 20% Disagree, and 20% Strongly Disagree, then the computed score would be 40 (representing 20% Strongly Agree and 20% Agree). Thus, the summary scores range from 0 to 100.

This approach is consistent with the method recommended by AHRQ for use with this data (www.ahrq.gov/qual/nhsurvey08/nhguide.pdf). However, one limitation of calculating scores in this way is that some bias may occur if the full range of responses is not normally distributed. In preliminary sensitivity analyses, we found the responses to most items had a small positive skew. However, when the full range of responses was used (e.g., assigning a score of 2 for strongly agree, 1 for agree, 0 for neither, -1 for disagree, and -2 for strongly disagree) the findings were almost identical to those presented.

Several analyses were used to examine the difference between the scores for NHAs and DON: (1) bias indexes; (2) intraclass correlation coefficients (ICCs), and; (3) Pearson's product-moment correlation coefficients. The first measure used was the absolute difference between the NHA and DON scores. Positive values indicate NHAs give higher scores than DONs, and vice versa. Student's paired sample t-tests were used to determine whether the differences were significantly different from zero, with significant t-tests indicating systematic differences are present.

The second measure examines the magnitude of any systematic differences, and is the difference between NHA and DON scores, divided by the standard deviation of the NHA scores. Following Cohen's effect sizes (Cohen, 1977), absent, small, moderate, and large over- (under) estimates were defined as values of <0.2, 0.2–0.5, >0.5–0.8, and >0.8, respectively.

The agreement between NHA and DON responses were examined using ICCs. The ICC is a chance corrected index of agreement (Sneeuw et al., 1997). This measure ranges from 0 to 1, with scores of 0 indicating no agreement beyond chance alone. Excellent, good, moderate, and poor agreement scores are at levels of >0.80, 0.80–0.60, 0.41–0.59, and ≤ 0.4, respectively (Gasquet et al., 2003).

To examine the strength of the relationship between NHA and DON ratings, Pearson's product-moment correlation coefficients (r) were used. ICCs and Pearson's correlation coefficients can produce similar values using the same data; but, this is not always the case. Pearson's correlation coefficients do not necessarily account for systematic bias in data, whereas the ICC accounts for these differences (Marshall et al., 1994; McGraw & Wong, 1996). By systematic bias, we mean for example, NHA ratings being consistently higher than DON ratings – giving good r values, when in fact the agreement is poor.

RESULTS

Of the 6,000 facilities included in the sample, 4,008 questionnaires were returned from both the NHA and DON, giving an analytic response rate of 67%. In general, most items on the questionnaire were answered. Missing data occurred in less than 5% of cases and were evenly distributed across questions. Most (71%) of the questionnaires were returned by mail within one month. Also, because we were able to link facilities with OSCAR data, we determined that no significant differences on facility characteristics (i.e., bed size, ownership, chain membership, and private-pay census) existed for respondent compared to non-respondent facilities (results not shown).

The variables describing the NHAs, DON, and nursing home sample are displayed in Table 1. The average tenure for NHAs was 33 months and the average tenure for DONs was slightly less at 31 months. The staffing levels for RNs and LPNs were also similar (21.2 RNs per 100 residents and 20.4 LPNs per 100 residents), but lower than that of NAs (31 NAs per 100 residents). The average number of beds and the occupancy rate were similar to national estimates from the 2004 National Nursing Home Survey (NNHS, 2004).

Table 2 presents the results examining the differences in PSC scores between the matched NHA and DON respondents. For the most part, the scores (using a 0–100 scale) fell into the 55–80 range. This is shown in the first two columns of results in Table 2. Thus, the distributions were slightly skewed to the higher/positive end of the scale. The highest average scores (i.e., 79) were for NHAs to the items “our procedures and systems are good at preventing errors from happening” and “when staff report something that could harm a resident, someone takes care of it.” The lowest average score (i.e., 45) was for DON to the item “it is easy for staff to speak up about problems in this nursing home.”

The third column of results in Table 2 presents the first bias measure (the absolute difference between the NHA and DON scores). Values ranged from 0 to 16. Most scores (i.e., 24 of the 38 items) indicated that NHAs viewed the items higher than DONs, as shown by positive scores in the mean directional difference column (column 4). Student’s paired sample t-tests show that systematic bias was present for 22 item scores.

The second bias measure is given in column six of the figures in Table 2 (the magnitude of any systematic bias). Following Cohen’s effect sizes, described above, we found the bias to be absent in 13 items, small in 13, moderate in 8, and large in 4 items. Thus, these findings show that NHA scores and DON scores are systematically different in some cases, and for a few items the magnitude of the difference is large. Of the 4 large differences, one NHA score is higher than the DON score and 3 DON scores are higher than the NHA scores.

The ICCs are presented in column eight (these examine the agreement between NHA and DON responses). Agreement was excellent for 10 items, good in 15 items, moderate in 4 items, and poor in 8 items.

Pearson’s correlation coefficients (examining the strength of the relationship between NHA ratings and DON ratings) are given in column ten. In 23 items NHA and DON ratings were significantly correlated.

DISCUSSION

Top managers can greatly influence the culture of an organization (Schein, 2000), and thus ultimately may impact resident safety. Research has shown that nursing home top-management teams greatly influence residents' lives (Castle, Ferguson & Hughes, 2009). Top managers typically control the budget and training; oversee care techniques; handle staff retention (Castle, Ferguson & Hughes, 2009); and ultimately are held accountable for the teamwork and safety climate and culture in their nursing homes (Rose et al., 2006). In this research, the overall perception of PSC from NHAs and DON are examined and the perception of PSC of these top managers is compared.

With respect to the overall perception of PSC from NHAs and DON, the scores from the NHSPSC generally fell in the 55 to 80 range (using a 0 to 100 scale). Higher scores represent a more favorable PSC. Interpreting these scores represents somewhat of a value judgment; nevertheless, scores in this range would appear to represent a somewhat "positive" outlook from these top managers on their institution's PSC.

Practice Implications

Some comparison data is available from the pilot testing of the NHPSC (www.ahrq.gov/qual/nhsurvey08). Comparing our findings from these 40 test sites, our scores for top managers are generally a little higher (averaging approximately 3 points higher). These differences may be due to our larger sample size, or to improvements to PSC over time. The scores for top managers are also higher than other respondents in the pilot survey (i.e., primarily nurse aides); averaging approximately 6 points higher. It may be that top managers present a more favorable picture of the PSC than caregivers in nursing homes. This perspective is confirmed by research in hospitals showing that managers consistently have a higher perception of PSC than front-line staff (Pronovost et al., 2003). This suggests that the managers may not be fully informed of the working conditions, patient safety concerns, and the true culture of the front-line staff (Pronovost et al., 2003; Singer et al., 2003). The same may be true for nursing home top management.

With respect to a comparison of the PSC from the NHAs perspective compared to the DONs perspective, we find several areas of similarity and several areas of divergence. Both NHAs and DONs viewed as less favorable "staff are afraid to report their mistakes" than other areas of PSC assessed (e.g., scores for the NHAs averaged 62 and scores for the DONs averaged 62). This may represent a particularly challenging patient safety culture domain to improve upon. When looking at the definition of a safety culture, managers must encourage a blame-free environment and encourage reporting. Medical errors are commonly not reported and those errors that are reported are often not discussed (AORN, 2006). Managers must gain the trust of the staff members and discuss errors in a positive way. Furthermore, nurses have been shown to abide by safety conditions when managers provide a compassionate environment (AORN, 2006). This clearly represents a significant challenge for many top managers; as many nursing homes are thought to have somewhat aggressive hiring and firing policies (Boyd, 2003). Gaining the trust of staff members may be challenging when they risk the threat of being fired and staff may be afraid to report their mistakes under such

conditions (Handler et al., 2007). Moreover, building trust likely takes time and may be jeopardized by the high turnover found at many nursing homes.

Both NHAs and DONs viewed as more favorable “management often walks around the nursing home to check on resident care” than other areas of PSC assessed (e.g., scores for the NHAs averaged 77 and scores for the DONs averaged 77). This management by walking around (MBWA), represents a practice that could further improve some areas of resident safety. Outcomes have been related to management styles. Managers who communicate well, involve staff in decision making, and work towards maintaining a relationship with their staff see better outcomes (Anderson, Issel & McDaniel, 2003; Feng, Bobay & Weiss, 2008). The organizations management team must also be willing to continually evaluate and educate (Mercurio, 2007). Managers must learn from each mistake and, in turn, communicate and teach staff how to better handle certain situations – they could do this as part of their MBWA activities.

Moreover, MBWA activities are part of the acute care safety literature. Safety walkarounds are believed to improve the overall safety culture (Budrevics & O’Neill, 2005; Institute for Healthcare Improvement Idealized Design Group & Frankel, 2008; Thomas et al., 2005). That is, walkarounds wherein top managers focus on safety issues can connect top managers with front-line staff. This behavior can act as a signal to front-line staff that top managers are committed to creating a culture of safety (Budrevics & O’Neill, 2005). Although clearly MBWA is not a panacea for improving all areas of the PSC, and improvement in other areas (e.g., staffing and training issues) may be beneficial.

Several areas existed where NHAs and DONs clearly had disparate views on the PSC. In general, this may present a challenge for improving PSC. If coordination in developing, implementing, and overseeing policies and procedures to improve PSC is needed, then this may be jeopardized if NHA and DON opinions vary. We question whether a facility can have a semblance of an effective PSC if the two most-senior leaders of the organization are not in alignment. The business and management literature would suggest that not having the same views may be important for facilitating top-management innovation; but, disparate views likely hinder the effective running of an organization (Goll, Brown Johnson, & Rasheed, 2008).

NHAs viewed as more favorable “staff ideas and suggestions are valued in this nursing home” than DONs (e.g., scores for the NHAs averaged 66 and scores for the DONs averaged 50). Very little research has examined staff communication in nursing homes (Colón-Emeric et al., 2006). We speculate that caregivers may provide different ideas and suggestions to NHAs and DONs (reflecting the different duties of NHAs and DONs in the facility; Castle, Ferguson, & Hughes, 2009). Suggestions made by staff to DONs may be more clinical, and may be viewed as professionally challenging, or uninformed by the DON. Or more simply, caregiver suggestions are ignored. For example, nurse aides seldom participate in resident care planning (Office of the Inspector General, 2002; despite providing 80% of resident care). Still, there are many reasons why suggestions for clinical improvements cannot be implemented, including funding concerns, corporate policies, and regulatory constraints.

Suggestions to NHAs may be more in-line with facility operations. These may also be viewed as professionally challenging, or uninformed; however, NHAs may be receptive to small operational changes. Still, these are clearly our speculations, and to improve PSC, more effort needs to be placed on incorporating staff ideas and suggestions in resident care. Top managers must be able to communicate and create a trusting environment, in order to ensure a culture of safety in their nursing home (Rose et al., 2006). It is important for managers to collaborate with other staff members to implement and improve resident safety measures (Peters, 2007); which includes incorporating staff ideas and suggestions.

DONs viewed as more favorable “staff follow standard procedures to care for residents” than NHAs (e.g., scores for the NHAs averaged 56 and scores for the DONs averaged 68). DONs, in their role of clinical oversight, often help develop and implement nursing home policies and procedures (Munroe, 1990). As such, they are most able to determine which policies and procedures are followed. NHAs are also involved in developing institutional policies and procedures, but to a lesser extent and since they have less exposure to the clinical operations, oftentimes cannot determine if these policies and procedures were followed appropriately. This may be one area in which closer coordination in developing, implementing, and overseeing policies and procedures could improve PSC.

Limitations of the Study and Suggestions for Further Research

Many nursing home top managers have limited tenure at their facilities. For example, on average NHAs turnover every 2 years (Decker et al., 2003). This could influence the PSC scores. Therefore, in sensitivity analyses top managers with less than 3 months tenure were excluded. The findings were highly similar to those presented. However, NHAs and DONs with the longest tenures (i.e., highest quartile) did have several significantly more favorable PSC domain scores than NHAs and DONs with shorter tenures. Some quality benefits have been identified for top managers with longer tenures (Decker & Castle, 2010), this finding may reflect a further benefit of longer top-management tenure and could be included in future research.

Examining PSC responses at different points in time may be useful. This is because changes in facility conditions, staffing, and patient safety initiatives may influence the degree of (dis)agreement between the respondents. This may be important for PSC items, because some may require time to adjust to circumstances. A related issue is the degree to which the PSC changes over time. That is, it would be useful to determine the variability in PSC attributable to top managers in nursing homes.

Given the large sample size, the results presented are likely representative of NHAs and DONs. In future research, it may be worth examining certain subgroups, to determine whether different relationships exist between their PSC ratings. We note that this could occur for tenure as noted above; however, other influential factors could include age, education, and gender. As a related point, we present descriptive analyses as a starting point to understanding the relationship between top management and PSC. Future research, using a multivariate framework, will likely give us a more-nuanced understanding. For example, including structures characteristics (defined as the conditions under which care is provided, such as organizational characteristics); processes characteristics (defined as activities that are

done to provide care, such as giving medications); and, outcomes (defined as results or changes that can be attributed to care, such as infections).

A further limitation of the analyses is that no definitive meaning can be attributed to “low” or “high” scores. Although we describe the findings in this way, no empirical basis exists for these attributions, and relative scoring (i.e., higher and lower) may be more precise. A related issue is the practical significance of the scores. The point at which PSC influences care in nursing homes is unknown.

The conceptual model used in this investigation proved useful. However, we acknowledge that we focused on top management, and not all of the component parts of this conceptual model were examined. Research including more components of the model would help further in building a more-sound base to ground PSC research. For example, examining the structural and process relationships identified above may be beneficial. Moreover, our findings would seem to show that some components of the conceptual model have a stronger influence on PSC than others. For further use as a conceptual model applied to nursing homes, some integration of these stronger and weaker influences would strengthen the basis of this framework. With the caveat that multivariate analyses were not conducted as part of the research presented, as an example we speculate that staffing is strongly related to PSC.

Conclusion

Overall, NHAs and DONs provide a favorable and commonly held perception of the PSC of their institutions. Nevertheless, we also find several areas of divergence between these top managers. These are discussed with a view towards directing future patient safety investigations and initiatives in nursing homes.

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Figure 1. Conceptual Model Used to Examine the Patient Safety Culture of Nursing Home Administrators (NHAs) and Directors of Nursing (DONs)

Note, the conceptual model was initially developed and presented by Stone et al. (2006).

Table 1

Characteristics of Nursing Home Administrators and Directors of Nursing Respondents and Nursing Homes

	<u>Nursing Home Administrators (NHAs)</u>		<u>Directors of Nursing (DONs)</u>	
	Mean	(SE)	Mean	(SE)
Tenure (in months) ^a	32.74	(2.34)	30.94	(1.65)
Nursing Home Administrator education ^a				
High school or associate degree	17.29	(1.10)	–	–
Baccalaureate degree	50.49	(1.52)	–	–
Master's or higher degree	32.22	(1.43)	–	–
Director of Nursing education ^a				
Diploma or associate degree	–	–	57.08	(1.50)
Baccalaureate or higher degree	–	–	42.92	(1.50)
Age (in years) ^a	54	(8)	51	(9)
Race (% Caucasian) ^a	67	–	73	–
Gender (% Male) ^a	69	–	15	–
Member of professional society ^a	83	–	96	–
For-profit ^b	61.30	(1.72)		
Chain ^b	52.11	(1.76)		
Occupancy (%) ^b	88.36	(0.44)		
Bed size (number of beds) ^b	110.95	(1.61)		
RN hours/patient day ^b	0.40	(0.01)		
LPN hours/patient day ^b	0.66	(0.01)		
Nurse Aide hours/patient day ^b	2.15	(0.03)		

^aSource = Primary data (N= 4,008 NHAs matched with 4,008 DON)^bSource = Online Survey, Certification, and Reporting system (OSCAR) data (N= 4,008)

RN = Registered Nurse; LPN = Licensed Practical Nurse

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Table 2

Comparison of Nursing Home Survey of Patient Safety Culture (NHSPSC) Instrument Domain Scores for Nursing Home Administrators (NHAs) and Directors of Nursing (DONs)

Domains and NHSPSC Questions	1. DON Mean (Standard Deviation) N=4,008	2. NHA Mean (Standard Deviation) N=4,008	3. Mean Absolute Difference	4. Mean Directional Difference	5. t-test from 0	6. Bias Index	7. A= absent; S= small; M= moderate; L= large (°)	8. Intraclass Correlation Coefficient	9. P=poor; M=moderate; G=good; E= excellent (°)	10. Pearson's Correlation Coefficient	11. t-test of correlation
<u>Teamwork</u>											
Resident safety is never sacrificed to get more work done	76 (13)	78 (13)	2	+2		0.15	A	0.88	E	0.77	*
Our procedures and systems are good at preventing errors from happening	72 (14)	79 (14)	7	+7	*	0.50	M	0.67	G	0.69	*
It is just by chance that more serious mistakes don't happen around here	70 (17)	75 (17)	5	+5	*	0.29	S	0.68	G	0.63	
When someone gets really busy in this nursing home, other staff help out	68 (15)	69 (17)	1	+1		0.06	A	0.85	E	0.80	*
<u>Staffing</u>											
We have enough staff to handle the workload	67 (10)	70 (11)	3	+3		0.27	S	0.59	G	0.58	*
Staff have to hurry because they have too much work to do (-ve)	60 (12)	62 (12)	2	+2		0.17	A	0.67	G	0.71	*
Residents' needs are met during shift changes	57 (14)	67 (13)	10	+10	*	0.77	M	0.42	M	0.45	
It is hard to keep residents safe here because so many staff quit their jobs (-ve)	53 (15)	63 (14)	10	+10	*	0.71	M	0.40	P	0.42	
<u>Compliance With Procedures</u>											
Staff follow standard procedures to care for residents	68 (13)	56 (16)	12	-12	*	0.75	M	0.37	P	0.41	
Staff use shortcuts to get their work done faster (-ve)	69 (12)	67 (14)	2	-2		0.14	A	0.81	E	0.77	*
To make work easier, staff often ignore procedures (-ve)	61 (16)	56 (15)	5	-5	*	0.33	S	0.66	G	0.72	*
<u>Training & Skills</u>											
Staff get the training they need in this nursing home	74 (15)	67 (16)	7	-7	*	0.44	S	0.69	G	0.70	*
Staff have enough training on how to handle difficult residents	58 (16)	48 (12)	10	-10	*	0.83	L	0.31	P	0.40	
Staff understand the training they get in this nursing home	68 (15)	58 (15)	10	-10	*	0.67	M	0.26	P	0.37	
<u>Nonpunitive Response to Mistakes</u>											
Staff are blamed when a resident is harmed (-ve)	66 (13)	60 (12)	6	-6	*	0.50	M	0.73	G	0.79	*
Staff are afraid to report their mistakes (-ve)	62 (13)	62 (12)	0	0		0.00	A	0.97	E	0.92	*
Staff are treated fairly when they make mistakes	67 (11)	71 (10)	4	+4	*	0.40	S	0.72	G	0.83	*
Staff feel safe reporting their mistakes	70 (14)	73 (13)	3	3		0.23	S	0.70	G	0.78	*

Domains and NHSPSC Questions		1. DON Mean (Standard Deviation) N=4,008	2. NHA Mean (Standard Deviation) N=4,008	3. Mean Absolute Difference	4. Mean Directional Difference	5. t-test from 0	6. Bias Index	7. A=absent; S=small; M= moderate; L=large ⁽¹⁾	8. Intraclass Correlation Coefficient	9. P=poor; M=moderate; G=good; E= excellent ⁽²⁾	10. Pearson's Correlation Coefficient	11. t-test of correlation
Staff are told what they need to know before taking care of a resident for the first time		67 (16)	62 (16)	5	-5	*	0.31	S	0.55	M	0.80	*
Staff are told right away when there is a change in a resident's care plan		62 (14)	63 (14)	1	1		0.07	A	0.82	E	0.91	*
We have all the information we need when residents are transferred from the hospital		60 (15)	64 (15)	4	+4	*	0.27	S	0.73	G	0.84	*
Staff are given all the information they need to care for residents		61 (15)	70 (15)	9	+9	*	0.60	M	0.55	M	0.58	
<u>Feedback & Communication About Incidents</u>												
When staff report something that could harm a resident, someone takes care of it		69 (11)	79 (12)	10	+10	*	0.83	L	0.24	P	0.42	
In this nursing home, we talk about ways to keep incidents from happening again		66 (12)	70 (13)	4	+4	*	0.31	S	0.56	M	0.58	
Staff tell someone if they see something that might harm a resident		62 (15)	71 (14)	9	+9	*	0.64	M	0.22	P	0.47	
In this nursing home, we discuss ways to keep residents safe from harm		64 (12)	66 (10)	2	+2		0.20	S	0.78	G	0.81	*
<u>Communication Openness</u>												
Staff ideas and suggestions are valued in this nursing home.		50 (14)	66 (16)	16	+16	*	1.00	L	0.16	P	0.28	
Staff opinions are ignored in this nursing home ^(-ve)		61 (15)	63 (14)	2	+2		0.14	A	0.79	G	0.91	*
It is easy for staff to speak up about problems in this nursing home		45 (15)	59 (15)	14	+14	*	0.93	L	0.18	P	0.46	
<u>Supervisor Expectations & Actions Promoting Resident Safety Overall Perceptions of Resident Safety</u>			NA									
Residents are well cared for in this nursing home		65 (15)	69 (19)	4	+4	*	0.21	S	0.79	G	0.82	*
This nursing home does a good job keeping residents safe		65 (16)	67 (13)	2	+2		0.15	A	0.81	E	0.90	*
This nursing home is a safe place for residents		62 (12)	68 (14)	6	+6	*	0.43	S	0.64	G	0.79	*
<u>Management Support for Resident Safety</u>												
Management asks staff how the nursing home can improve resident safety		72 (12)	73 (17)	1	+1		0.06	A	0.92	E	0.93	*
Management listens to staff ideas and suggestions to improve resident safety		75 (12)	76 (13)	1	+1		0.08	A	0.90	E	0.91	*
Management often walks around the nursing home to check on resident care		77 (14)	77 (15)	0	0		0.00	A	0.98	E	0.96	*
<u>Organizational Learning</u>												
This nursing home lets the same mistakes happen again and again ^(-ve)		72 (14)	67 (13)	5	-5	*	0.39	S	0.71	G	0.65	
It is easy to make changes to improve resident safety in this nursing home		65 (13)	64 (14)	1	-1		0.07	A	0.87	E	0.91	*
This nursing home is always doing things to improve resident safety		76 (13)	77 (14)	1	+1		0.07	A	0.88	E	0.93	*

⁽¹⁾ Absent, small, moderate, and large over- (under) estimates were defined as values of <0.2, 0.2–0.5, >0.5–0.8, and >0.8, respectively.

⁽²⁾ Excellent, good, moderate, and poor agreement scores are at levels of >0.80, 0.80–0.60, 0.41–0.59, and <= 0.4, respectively.

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negatively worded item was transposed to use positive responses.
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