

Chapter 21. Creating a Safe and High-Quality Health Care Environment

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Background

Maintaining a safe environment reflects a level of compassion and vigilance for patient welfare that is as important as any other aspect of competent health care. The way to improve safety is to learn about causes of error and use this knowledge to design systems of care to "... make errors less common and less harmful when they do occur"¹ (p.78). As a result, researchers, policymakers, and providers have intensified their efforts to understand and change organizational conditions, components, and processes of health care systems as they relate to patient safety.

Health care is the second-fastest growing sector of the U.S. economy, and nursing is the largest occupation within the industry, with more than 2.4 million jobs and the highest projected growth.² As noted in recent reports by the International Council of Nursing and the Institute of Medicine, one of the reasons for the current and future shortages of nurses relates to the work environment.^{3,4} Improving the environment in which nurses work may attract new students to nursing as well as engage current professionals in developing innovative models of care delivery that will help retain and nurture future generations of nurses. Most important, improving the work environment may also improve the quality and safety of patient care.

High turnover has been recognized as a problem in many service industries, including health care.⁵ In U.S. hospitals, nursing turnover has been reported to range from 15 percent to 36 percent per year.⁶ These turnover rates are much higher than those for other health care professionals, which are estimated to average 2.3 percent per year.⁷ Past estimates of the cost to replace one medical-surgical registered nurse (RN) range between \$30,000 and \$50,000; and replacement costs for critical care nurses are closer to \$65,000.⁸ More recently, Jones⁹ estimated the total turnover costs of one hospital-based RN to range from \$62,000 to \$67,000 depending on the service line. While these cost estimates rely on nurse manager reports of decreased productivity, clearly there are avoidable organizational monetary and human costs related to high turnover of desirable employees. Using multiple databases in an academic medical center, other analysts found the low-end estimate for the cost of employee turnover accounted for greater than 5 percent of the annual operating budget.¹⁰ Clearly, understanding organizational aspects that promote a stable workforce is important.

Besides the obvious harm to patients, preventable adverse health care events related to patient safety have major financial consequences for the patient, the provider, the insurer, and often the family and/or caregivers. Using Agency for Healthcare Research and Quality (AHRQ) patient safety indicators, researchers estimated the excess length of stay for postoperative sepsis to be approximately 11 days at a cost of almost \$60,000 per patient.¹¹ While in some instances there is extra payment made by insurers to hospitals for these adverse events, it has been estimated to be considerably less than the total cost of the resources used.¹² Furthermore, with increased discussions about pay-for-performance and mandatory reporting of certain adverse patient safety events, providers may have increased financial as well as other incentives to

improve patient safety.¹³ Therefore, understanding organizational aspects that promote patient safety is also very important.

Throughout the body of patient safety and occupational health literature, authors refer to concepts of organizational climate and culture as well as safety climate and culture. Culture broadly relates to the norms, values, beliefs, and assumptions shared by members of an organization or a distinctive subculture within an organization.^{14, 15} Organizational culture is typically thought of as evolving over the course of time and difficult to change. Organizational climate refers to members' shared perceptions of organizational features like decisionmaking, leadership, and norms about work, including opportunities for advancement and collaboration.¹⁶ Organizational climate has been likened to a weather pattern.¹⁷ For example, Clarke¹⁸ pointed out that organizational climate refers to an atmosphere, which is a moveable set of perceptions related to working and practice conditions, many of which can be directly influenced by managers and organizational leaders. There are other microclimates; for example, safety climate is the current landscape of employees' perceptions and attitudes about safety, such as state of current safety initiatives and safety behaviors.¹⁹

Additionally, a number of safety climate scales have been developed in the fields of occupational health and patient safety. In occupational health, attributes of a safe climate in hospitals have been found to include senior management support for safety programs, absences of hindrances to safe work practices, availability of personal protective equipment, minimal conflict, cleanliness of work site, good communication, and safety-related feedback.²⁰ A positive safety climate has been significantly correlated to reduced risk of work injury and exposure.²⁰ In patient safety, attributes of a safe hospital environment have been identified as a positive work environment, supportive supervisor/manager, improved interdisciplinary communications, and increased safety event reporting.²¹ Obviously these microclimates overlap. Additionally, they should be synergistic and correlate with the overall organizational climate. Indeed, a positive organizational climate is most likely an essential antecedent to the development of a strong safety climate.

As part of AHRQ's The Effect of Health Care Working Conditions on the Quality of Care research portfolio (RFA HS-01-005), a team of interdisciplinary scholars developed a model depicting aspects of organizational climate and their relationship to worker and patient outcomes.²² These investigators tested the model in various settings (i.e., ambulatory care, home health, long-term care, Veterans Health Administration facilities, and acute care hospitals) and identified important organizational structures (leadership and infrastructure) and processes (supervision, work design, group behavior, and quality/safety emphasis). Using this model as the organizing framework, this chapter reviews the evidence examining the impact of organizational climate on patient and employee outcomes. It is important to note that we are focusing on the broad concept of organizational climate. Another chapter in this volume focuses specifically on safety culture and climate. Based on the evidence on organizational climate and the relationships with patient outcomes, job satisfaction, and turnover, we have developed a new conceptual model of organizational attributes and outcomes.

Research Evidence

Overall 14 studies were reviewed. In four of the published studies, the researchers focused only on patient outcomes,²³⁻²⁶ with one of the teams reporting the results related to worker turnover and job satisfaction in other publications.^{27, 28} Two of the research teams published

results related to patient outcomes and worker outcomes in single manuscripts.^{29,30} The majority of the manuscripts reviewed focused on worker outcomes. In the following section, the studies focusing on organizational climate and patient outcomes are synthesized, followed by a synthesis of the evidence linking organizational climate with turnover and job satisfaction.

Organizational Climate and Patient Outcomes

Table 1 describes the primary research (six studies) found investigating organizational climate and patient safety outcomes. The attributes of organizational climate measured varied. Some researchers focused on quality,²³ measures of morale, and consensus of depersonalization,^{24,29} while others used a composite organizational climate measure, which focused on nurses' perceptions of the work environment.²⁵ The patient outcomes were also varied and specific to the setting. For example, in one study the measure of patient safety was nurse-reported medication errors;²⁴ another research team measured self-report service quality.²⁹ All other research teams used some form of existing administrative data to measure patient safety outcomes, with one team using clinical and laboratory data elements collected for participation in the Centers for Disease Control and Prevention's National Healthcare Safety Network.²⁵ The National Safety Network hospitals collect standardized nosocomial infection data. The settings studied also varied across projects and were primary care sites, rural hospitals, outpatient social services, specialized hospital settings (e.g., emergency departments and intensive care units) and the Veterans Health Administration. All studies used cross-sectional designs with the exception of one group reporting on the evaluation of a quality-improvement project.²³ Despite these varying measurement issues, settings and populations, and research designs, positive organizational climates were generally found to improve patient safety.

Organizational Climate, Turnover, and Job Satisfaction

Table 2 provides the results of the current evidence found examining the relationships among organizational climate and worker outcomes (i.e., turnover and job satisfaction). Ten studies were found, half of which included both job satisfaction and turnover. Again, the organizational climate attributes varied from morale to composite measures of organizational climate.^{28,30} The study populations were mainly nurses (60 percent), but outpatient caseworkers and mental health providers were also studied. Most studies (80 percent) were conducted in the United States, but nurses employed in Australia,³¹ Belgium,³² and Hong Kong³³ were also studied. The majority of the studies were cross-sectional, with only one pre-post test intervention study.³⁴ All of the researchers reported that positive organizational climates were related to increased worker satisfaction. The results related to turnover were not quite as strong, and researchers in one study found that job satisfaction mediated the effect of organizational climate on turnover.³⁵

Evidence-Based Practice Implications

Overall, there is an emerging evidence base pointing to the need for positive organizational climate. For the most part, the research findings were consistent; patient and employee outcomes were affected by organizational climate. However, the strength of the relationship between organizational climate and job satisfaction was stronger than the relationship between organizational climate and turnover. Furthermore, the evidence base regarding organizational

climate and patient safety outcomes was scant, with only six studies found, and only three of those studies focused on patients in acute care settings. Despite these limitations, the consistency of the findings point to the importance of organizational climate on patient and employee outcomes.

Based on this review and our previous work,²² we developed the conceptual model displayed in Figure 1. The structural characteristics of the setting may serve as enabling factors for outcomes. These first and foremost include senior leadership. Other important enabling factors are related to the infrastructure (such as technology available) and communication systems. We call these enabling factors structural characteristics because they are not easily changed. These enabling factors influence the settings' microclimates, which may be grouped into three main foci: employee/staff, patient, and organizational. It is important to understand these microclimates are not conceptualized as mutually exclusive or independent. We believe these microclimates interact with each other and are synergistic. For example, a setting that focuses on occupational safety may also focus on evidence-based, patient-centered care; additionally, collaboration and communication among providers and patients may be important shared components of each microclimate. The microclimates influence the actions of the staff, patient, and often the family and/or caregivers, which in turn have an impact on the outcomes. Again, the outcomes are conceptualized at three different levels: the employee, the patient, and the organization. The list of specific outcomes under each category is representative of the category, but it is not exhaustive. For more complete lists of patient safety outcomes, the reader should refer to AHRQ's Patient Safety Indicators and the National Quality Forum's consensus standards for nursing-sensitive care.^{36, 37}

Based on the literature reviewed and the conceptual model developed, there are a number of practice recommendations at all levels of nursing (e.g., nursing leaders, nurse managers, staff nurses, and educators). The existence of a relationship between a positive organizational climate and both worker and patient outcomes means that facilities need to be aware of the importance of assessing and periodically reassessing the climate within their organization. There are published reviews of instruments used to assess organizational climate.³⁸ Additionally, data regarding the climate should be correlated with outcomes along all three of the foci (employee, patient, and organizational).³⁹ The recommended frequency of conducting these analyses is not clear, but such assessment and reassessment should be part of a continuous quality-improvement process, and it seems reasonable that employee surveys should be conducted at least annually. Nurse educators need to develop and evaluate safety and leadership curriculum.^{40, 41} Additionally, as we rapidly increase the information technology available in health care, we must ensure that this infrastructure promotes patient safety, increases efficiency, and contributes to nursing knowledge.⁴²

Nursing leaders and managers need to be cognizant of the job satisfaction of all employees on an ongoing basis, specifically as low satisfaction can be linked to burnout, intention to leave, and even higher rates of job turnover or loss to the nursing profession (i.e., early retirement or transfer to another career). With the high costs of nursing turnover, efforts to increase job retention levels are likely to be financially beneficial.^{9, 10}

Despite the scant evidence linking organizational climate—broadly defined—and patient safety, the evidence supporting the significant relationship between a climate of safety—a specific component of organizational climate—and patient safety is growing, given increased utilization of safety climate surveys. (This is discussed further in the next chapter.) It is likely then that development and utilization of readily available tools to assess organizational climate

will expand the evidence base and provide key information to leaders and managers to improve job satisfaction, interdisciplinary teamwork, and retention, ultimately improving the quality of health care delivery. Indeed, the usefulness of this information would likely be considerably improved if it were linked with ongoing patient-safety monitoring and quality-improvement activities within the organization. Organizational climate is more malleable and open to change than the more-entrenched aspects of culture. Thus, data-driven leaders can be proactive by assessing both worker perceptions and outcomes to ensure safety processes are adhered to more consistently (i.e., less violations or work-arounds); this should improve all outcomes. For staff and future staff, nurses' job satisfaction is key to not only providing quality care, but to having lower levels of occupational stress and higher levels of occupational safety, both of which are discussed in other chapters within this book.

Research Implications

This review identified a number of gaps in the research evidence. First and foremost, as interventions are developed to improve the organizational climate, rigorous research and evaluation studies need to be conducted. It is important to note, however, that this type of research will not often lend itself to randomized controlled trials. Other epidemiological designs that control for confounding variables and ensure comparability between groups will most likely be needed. Second, future research aimed at understanding the impact of human capital variables (i.e., stability of the workforce, education, etc.) on patient outcomes and system efficiencies is warranted. Furthermore, consistency in measurement tools would help advance the field and assure that study results are more consistent and comparable.

Lastly, more cost analyses need to be conducted to make the business case for improving the organizational climate in nurses' work environment and improving patient, employee, and organizational outcomes. The model provided presents various aspects of organizational climate that may be measured in different research projects, across a research portfolio, and in various settings. It is doubtful that any one study would include all aspects presented in this model. Rather, the researcher may use this model to select the organizational aspects and outcomes most appropriate to their research aims.

Organizational climate is one of the overarching aspects found in the work environment. However, it is not the only aspect related to patient safety and worker satisfaction and turnover. Other environmental aspects include actual workload, such as nurse-to-patient ratios in acute and long-term care and caseloads in outpatient settings; scheduled work hours (e.g., shift length, nights versus days); mandatory overtime; information systems for decision support to prevent errors of commission and omission; and human factor engineering solutions. The impact of these other aspects of the work environment is discussed elsewhere in this volume.

There are both strengths and limitations to this review. In our search for evidence we attempted to be comprehensive. However, we may have missed some studies. Additionally, only primary studies published in English after the year 2000 were audited.

Conclusion

Gradually, evidence is accumulating that links work environments to behavior, attitudes, and motivations among clinicians. These behaviors and orientations can, in turn, affect quality processes and outcomes. A growing number of studies in health care show that members of

organizations are more satisfied when they work in climates that have more supportive and empowering leadership and organizational arrangements, along with more positive group environments (often reflecting elements of group support and collaboration). Moreover, although the research base is not as strong, there is emerging evidence that these same organizational attributes impact employee turnover and, most important, patient safety. Improving the organizational climate is likely to improve patient safety and decrease overall health care costs. However, future research studying specific interventions and their cost effectiveness is needed.

Search Strategy

A systematic review of the literature was conducted focusing on relationships among organizational climate and three outcomes: patient safety, nurse turnover, and job satisfaction. Medline and AHRQ's Patient Safety Network (PSNET: www.psnet.ahrq.gov) searches were conducted using the key word "organizational climate," then cross-referenced with "patient safety" and "patient outcomes," "satisfaction," as well as "turnover" and "intention to leave." More than 200 titles were examined. Abstracts were examined by two nurse researchers if the article was published in 2000 or after, written in English, and pertained to health care organizations. Manuscripts were obtained and reviewed if they were primary reports of research findings. Editorials were excluded. Reference lists were also reviewed for key articles.

Publications that presented primary research findings and had sample sizes of greater than 30 respondents were organized into two tables presenting evidence on the relationships between organizational climate and (1) patient outcomes, and (2) worker satisfaction and retention of workers. Each study was audited for the following elements: the organizational climate attributes studied, the design type, the outcome measures (patient or worker), study setting and population, study intervention, and key findings. All studies were reviewed by two authors. Following the guidelines put forth by AHRQ, the study design types were categorized using the "type of evidence" criteria.

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Evidence Table 1. Organizational Climate and Patient Outcomes

Source	Organizational Climate Attributes	Design Type	Patient Safety Outcome Measure(s)	Study Setting & Study Population	Study Intervention	Key Finding(s)
Cretin 2001 ²³	Importance of improving quality of care, current status in quality improvement, climate for guideline implementation, attitude toward practice guidelines, and motivation for guideline implementation	Quality improvement projects/research	Primary care followup, physical therapy or chiropractic care, specialist care	U.S. Army Medical Department: 4 facilities in the Great Plains Region served as demonstration sites, and there were 5 comparison facilities. 31,273 new low-back pain patients	Integrated model guideline implementation system: Evidence-based practice guidelines, education/training, toolkit, and interdisciplinary team approach	Significant downward trend in the percentage of the patients referred to physical therapy/chiropractic care (10.7%–7.2%) at demonstration sites as compared to comparison sites. No discernable reduction in specialty care referrals or primary care followup visits at the demonstration sites as compared to comparison sites.
Fogarty & McKeon 2006 ²⁴	Workplace morale, supervisor leadership, participative decisionmaking, role clarity, professional interaction, appraisal and recognition, professional growth, goal congruence, workplace distress, and excessive work demands	Cross-sectional study	Medication error index	11 rural hospitals in Australia 176 nurses	Not applicable	Self-report medication errors positively correlated to composite measure of organizational climate ($r = 0.75, P \leq 0.01$). However, this relationship was mediated by health care worker psychological well-being, and distressed employees were more likely to report medication errors.
Glisson & James 2002 ²⁹	Employee consensus of depersonalization, emotional exhaustion, and role conflict	Cross-sectional study	Service quality measured by perceptions of case managers	33 child welfare and juvenile case management teams in 30 counties (4 urban and 26 rural) in 1 southeastern State in the U.S.	Not applicable	Case managers and teams with more constructive cultures reported a higher service quality ($P \leq 0.05$); organizational climate was not significantly related to service quality.

Source	Organizational Climate Attributes	Design Type	Patient Safety Outcome Measure(s)	Study Setting & Study Population	Study Intervention	Key Finding(s)
Stone 2007 ²⁵	Composite measure of organizational climate	Cross-sectional study	Central line bloodstream infections (CLBI), ventilator-associated pneumonia (VAP), catheter-associated urinary tract infections (CAUTI), 30-day mortality and decubiti (pressure ulcers)	51 adult intensive care units in 31 U.S. hospitals 15,902 patients 1,095 nurses	Not applicable	Results were inconsistent. Organizational climate was significantly positively related to CLBI and significantly negatively related to CAUTI ($P \leq 0.05$).
Warren 2007 ³⁰	Organizational climate as measured by 4 metafactors: employee focus, support, professional demands, and pay satisfaction	Cross-sectional study	1. Management of 2 chronic diseases (diabetes and chronic obstructive pulmonary disease [COPD]) 2. Prevention Index (PI): Summary of prevention care delivery (vaccination, tobacco prevention, disease, and risk factors screening) 3. Surgical outcomes using the National Surgical Quality Improvement Program (NSQIP) measures postsurgical morbidity and mortality	74,662 employees from the U.S. Veterans Health Administration	Not applicable	Positive associations between employee focus and COPD, diabetes, and prevention index ($P \leq 0.05$).

Source	Organizational Climate Attributes	Design Type	Patient Safety Outcome Measure(s)	Study Setting & Study Population	Study Intervention	Key Finding(s)
Wright 2003 ⁴³	Fairness and equity, role ambiguity, role overload, role conflict, workgroup cooperation and facilitation, growth and advancement, job satisfaction, emotional exhaustion, personal accomplishment, and depersonalization	Cross-sectional study	Frequency of staff members' clinical work with patients with psychiatric problems	1 general hospital emergency department (ED) in a U.S. urban Midwest location 131 ED staff (medial, nursing, and psychiatric workers)	Not applicable	Workgroup cooperation and facilitation is positively associated ($P \leq 0.05$) with frequency of clinical work with patients.

Evidence Table 2. Organizational Climate and Worker Outcomes

Source	Organizational Climate Attributes	Design Type	Worker Outcome Measure(s)	Study Setting & Study Population	Study Intervention	Key Finding(s)
Aarons & Sawitzky 2006 ³⁵	Demoralizing climate	8	Job satisfaction, 1-year turnover	322 pediatric, adolescent, and family mental health providers in 49 public sector programs in California	Not applicable	The effect of organizational culture on job satisfaction and other work attitudes was partially mediated by the organizational climate in structural equation modeling. Worker attitudes significantly predicted turnover 1 year later.
Albion 2003 ⁴⁴	Workplace morale, supervisor leadership, participative decisionmaking, role clarity, professional interaction, appraisal and recognition, professional growth, goal congruence, workplace distress, and excessive work demands	4	Job satisfaction, intention to leave	1,097 regional Health Service District employees in Australia	Not applicable	Nurses reported lower organizational climates on all scales except professional interaction ($P < 0.05$). Nurses reported significantly lower job satisfaction than administrators, medical professionals, or operational staff. Nurses working in large hospital reported significantly lower job satisfaction and higher intention to leave ($P < 0.05$).
Dunham-Taylor 2000 ⁴⁵	Transactional leadership, laissez-faire leadership	4	Staff satisfaction	396 nurse executives and 1,115 staff who report to them	Not applicable	Staff satisfaction in the workplace was correlated with transformational leadership ($r = 0.79$, $P < 0.0001$). Staff satisfaction decreased as staff rated the leader as being more transactional ($r = 0.37$, $P < 0.0001$) or using a more laissez-faire leadership style ($r = 0.71$, $P < 0.0001$).
Glisson 2006 ³⁴	Depersonalization, emotional exhaustion, role conflict, and role overload	6	Turnover	235 caseworkers and 26 case management teams that provide child welfare and juvenile justice services	Availability, responsiveness, and continuity (ARC) intervention	In hierarchical linear models analyses, it was found that the ARC intervention reduced turnover by 2/3 and improved organizational climate.

Source	Organizational Climate Attributes	Design Type	Worker Outcome Measure(s)	Study Setting & Study Population	Study Intervention	Key Finding(s)
Glisson & James 2002 ²⁹	Employee consensus of depersonalization, emotional exhaustion, and role conflict	4	Job satisfaction, 1 year turnover	33 child welfare and juvenile case management teams in 30 counties (4 urban and 26 rural) in 1 southeastern State in the U.S.	Not applicable	Case managers and teams with more constructive cultures experienced lower turnover rates ($P \leq 0.05$); organizational climate was not significantly related to turnover. Organizational climate was significantly positively related to job satisfaction.
Siu 2002 ³³	Organization, immediate upper level, coworkers, involvement, flexibility, work environment, and well-being	4	Job satisfaction	Two separate samples of Hong Kong nurses sample 1: 144 nurses sample 2: 114 nurses	Not applicable	Findings were not consistent across samples. In sample 1, environment was significantly correlated with satisfaction. In sample 2, well-being was a significant predictor of job satisfaction.
Stone 2006 ²⁷	Professional practice, staffing/resource adequacy, nurse management, nursing process, nurse/physician collaboration, nurse competence, and positive scheduling climate	4	Intention to leave	2,323 registered nurses from 66 hospitals and 110 critical care units	Not applicable	Organizational climate factors that had an independent effect on ICU nurse intention to leave due to working conditions were professional practice, nurse competence, and tenure ($P < 0.05$).
Stone 2007 ²⁸	Composite measure	4	Intention to leave	837 nurses employed in 39 adult critical care units from 23 hospitals		Organizational climate is an important determinant of intention to leave. Higher wages did not reduce these intentions; therefore, it was concluded that increased pay alone without attention to organizational climate is likely insufficient to reduce nurse turnover.

Source	Organizational Climate Attributes	Design Type	Worker Outcome Measure(s)	Study Setting & Study Population	Study Intervention	Key Finding(s)
Stordeur 2006 ³²	Meaning of work, relationships with nursing management, relationships with team, relationships with doctors, relationships with administration, quality of leadership, social support from superior, social support from colleagues, days dedicated for professional development, satisfaction with handover shifts	4	Intention to leave, job satisfaction	2,065 registered nurses in 12 Belgian hospitals	Hospitals with high and low turnover were compared	Relationships with nursing management; work ability; and satisfaction with working time, handover shifts, and schedules were also better in attractive hospitals ($P < 0.001$). Job satisfaction and commitment were higher in attractive hospitals, whereas intention to leave was lower ($P < 0.001$).
Warren 2007 ³⁰	Organizational climate as measured by 4 metafactors: employee focus, support, professional demands, and pay satisfaction	4	Intention to leave, job satisfaction	74,662 employees from the Veterans Health Administration	Not applicable	Employee focus was most strongly associated with job satisfaction, and support was negatively associated with turnover intention ($P < 0.05$).

Figure 1. Conceptual Model of Organizational Attributes and Outcomes



