FACTORS ASSOCIATED WITH NURSES' PERCEPTIONS
OF PATIENT SAFETY CULTURE IN ONE
UNIVERSITY HOSPITAL IN CHINA

by

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DEDICATION

Xianqiong Feng, M.S.N.

This work is dedicated to my deceased father who gave me his great support, encouragement, and deep love. I hope that I have made you proud and that you are smiling in Heaven.
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CHAPTER 1

INTRODUCTION

Background and Significance of the Study

Patient safety is an important issue in healthcare organizations. The impact of medical errors has been widely reported and discussed. In the United States, the report of the Institute of Medicine (IOM, 1999) "To Err Is Human" heightened public concerns about medical errors. Medical errors during the course of patient care are estimated to have caused approximately 238,337 potentially preventable deaths among Medicare patients between 2004 and 2006 in the USA (Health Grades, 2008) and up to 24,000 deaths yearly in Canada (Canadian Institute for Health Information, 2004). The most common cause of adverse patient events in health care is medication errors (Leape et al., 2000), and the total cost to the US Medicare program as a result of patient injury from errors has been estimated at roughly 8.8 billion dollars between 2004 and 2006 (Health Grades, 2008).

Culture

Culture is a complex concept derived originally from the discipline of anthropology (Hewison, 1996; Schein, 1985; Smircich, 1983). Based on Wright (1994), culture is generally used in four ways when it is applied to an organization: (1) to refer to the problems of managing companies with production processes or service outlets in different countries, and each with a different national culture; (2) by management to integrate people with different ethnicities into a workforce; (3) to identity informal concepts, attitudes, and values of a workforce; and (4) to refer to the formal
organizational values and practices imposed by management as a "glue" to hold the workforce together and to make it capable of responding to changes (Wright, 1994, p.2). Applications of (3) and (4) are those most commonly used in the context of health care (Hewison, 1996). Schein (1985) defined culture as:

A pattern of basic assumptions- invented, discovered, or developed by a given group as it learns to cope with its problems of external adaptation and internal integration-that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems (p.9).

He proposed a three level model of culture: artifacts, values, and basic underlying assumptions (Schein, 1985). Artifacts are the surface level of culture and the most visible. Values are the middle level of culture. The basic underlying assumptions are the most inner level of culture and least visible. Because the basic assumptions have worked repeatedly, they are likely to be taken for granted and they represent the essence of culture (Schein, 1985).

**Safety Culture**

Safety culture first appeared in a report on the Chernobyl nuclear power station disaster in the USSR by the International Nuclear Safety Advisory Group (1988). The concept has since gained worldwide recognition in several industries, especially high-risk industries such as nuclear power and aviation. The key feature of the safety culture is "shared perceptions among managers and staff concerning the importance of safety" (Health and Safety Commission [HSC], 1993, p.23). Developing a positive safety culture has been suggested as a means of reducing the potential for large-scale disasters and accidents associated with routine tasks (Cooper, 2000).
Patient Safety and Patient Safety Culture

Patient safety has been defined by the Agency for Healthcare Research and Quality (AHRQ, 2008) as freedom from accidental or preventable injuries produced by medical care. IOM has also defined the patient safety as freedom from accidental injury (IOM, 1999). When safety culture is applied to health care it has even more importance, as safety applies not only to the workforce but also to the patients who may be injured by the actions of staff (Flin & Yule, 2004). Contemporary writings in nursing and other disciplines indicate that the term patient safety culture is a relatively new concept. In nursing, patient safety culture has been viewed as the product of nurses’ shared values and beliefs about patient safety. It is a set of common understandings of the group members in viewing patient safety, and emerges from the dynamic reciprocal interaction among people, task and system (Feng, Bobay, & Weiss, 2008). The traditional blame and shame patient safety culture in healthcare organizations has been criticized as obstructing the possibility of learning from the errors and being responsible largely for causing medical errors. There is a growing recognition of the necessity to transform healthcare organizational culture (Berwick & Leape, 1999; IOM, 1999, 2001, 2004).

Many safety experts believe that there is an association between culture factors and safety outcomes, and that changing to a culture of patient safety should improve patient outcomes (Clarke, 2006; IOM, 1999). The creation and maintenance of a culture of safety has been identified as one of the four major recommendations of the IOM’s panel on transforming nursing work environments to promote safety (IOM, 1999). However, in China, there have been no official reports concerning the medical error rates. The condition could be even worse in a developing country, as reported by the World
Health Organization (WHO, 2005). Little is known about employees’ perceptions of patient safety culture in Chinese healthcare organizations in general and the nurses’ perceptions in particular. The purposes of this proposed study aim to understand nurses’ perceptions of patient safety culture in one Chinese university hospital and to explore the factors that are associated with these perceptions. The findings of this study will be used as the baseline data for future intervention studies and will add to the knowledge of patient safety culture nationally and internationally.

**Research Questions**

The specific research questions are:

1. What are the nurses’ perceptions of hospital patient safety culture in a university hospital in China?

2. What factors are associated with those perceptions?

3. Are there any differences in the nurses’ perceived patient safety culture between intensive care unit and general medical surgical unit nurses in a university hospital in China?

4. Are there any differences in the perceived patient safety culture between nursing managers and registered nurses in a university hospital in China?

**Hypotheses for the Study**

The following hypothetical relational statements are posed for this study:

1. There will be a relationship between nurses’ characteristics including age, years of experience, levels of education, permanent vs. contract position, as well as professional titles and their perceptions of hospital patient safety culture.
2. There will be a relationship between nursing management factors including managers’ safety commitment, leader-member exchange, and nurse perceived trustworthiness of managers and the nurses’ perceptions of hospital safety culture.

3. There will be a relationship between the organizational factors including organizational staffing, organizational safety training, hospital patient safety policies, and organizational prioritization of patient safety with the nurses’ perceptions of hospital patient safety culture.

4. There will be differences in the perceived hospital patient safety culture between intensive care unit and general medical surgical unit nurses in one hospital in China.

5. There will be differences in the perceived hospital patient safety culture between nurse managers and registered nurses in one hospital in China.

**Definitions**

*Patient safety* is defined as the freedom from accidental or preventable injuries produced by medical care (AHRQ, 2008).

*Safety culture* is defined as “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” (HSC, 1993, p.23). It is a set of common understandings of the group members in viewing patient safety. Patient safety culture in this study was operationalized and measured by the Hospital Survey on Patient Safety Culture (HSPSC) which was developed under the sponsorship of the U.S. Agency for Healthcare Research and Quality (AHRQ). It has not been tested in China.
Managers' safety commitment refers to managers' personal involvement in decisions about patient safety and the efforts in which they engaged to maintain patient safety. The commitment can manifest itself through job training programs, participation of management in safety committees, and taking safety into consideration in job design. The commitment was measured by the Managers' Safety Commitment Visual Analog Scale developed by the researcher in this study.

Leader-member exchange (LMX) focuses on the "quality of relationships between managers and subordinates" (Dansereau, Garen, & Haga, 1975, p.49). The relationships between manager and subordinates range from those that are based strictly on employment contracts (i.e., low LMX, or out-group) to those that are characterized by mutual trust, respect, liking, and reciprocal influence (i.e., High LMX or in-group). The 12-item Leader-Member Exchange Instrument was used to measure this concept (Liden & Maslyn, 1998).

Trustworthiness of the leaders is related to the "willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party" (Mayer, Davis, & Schoorman, 1995, p.712). The concept was measured by the Perceived Trustworthiness Survey which was adapted by the researcher from the Alaska Managerial Trust Survey (Smith, 2005).

Organizational staffing level relates to the adequacy of staffing on units with respect to workload, patient safety, and quality care. Organizational staffing level is operationalized as the unit nurse/patient ratio and the skill mix of the unit permanent RNs and contract RNs in this study.
Organizational safety training is the nurse’s perceptions of organizational efforts in providing training for patient safety. This dimension is operationalized by two items in the Demographic Data Form: 1) Do you have safety training (e.g., How to avoid and prevent patient injuries or adverse events resulting from the processes of health care delivery) in your orientation program at your organization?; and 2) Does your organization have an annual patient safety training program?

Organizational safety policy is the nurse’s perceptions of organizational efforts in designing and constructing safety policies, standards, protocols, and procedures in safeguarding risks. This dimension is operationalized by three items in the Demographic Data Form: 1) Does your organization have a clear and explicit policy regarding hospital patient safety?; 2) Does your organization have a clear and explicit policy regarding errors and incidents reporting?; and 3) Does your organization have a clear and explicit policy regarding occupational safety practices?

Prioritization of hospital patient safety is the nurse’s perceptions of organizational efforts in prioritizing hospital patient safety as opposed to making profits. This dimension is operationalized by three items in the Demographic Data Form: 1) Does your organization have clear and explicit patient safety goals and objectives?; 2) Does your organization have strategic plans and initiatives from top management which support patient safety?; and 3) Does your organization provide you with resources to support the practice of patient safety?

The current healthcare system has an increasing emphasis on patient safety. A patient safety culture is important for quality care and to reduce unintentional iatrogenic deaths. It becomes paramount for nurse leaders to improve workplace safety culture and
to explore factors that are related to patient safety culture. This proposed study will add to
the body of knowledge on patient safety and has the potential to change the safety culture
among health care organizations. An improved safety culture will hopefully lead to an
improvement of patient outcomes. In the following chapter, a comprehensive literature
review and the conceptual framework on factors associated with patient safety culture
will be presented.
CHAPTER 2

REVIEW OF THE LITERATURE

The purposes of this proposed study are to understand nurses’ perceptions of patient safety culture in one Chinese university hospital and to explore the factors that associated with these perceptions. One way to study the safety culture is to understand the group members’ opinions and perceptions about the value systems, norms, and behavior patterns of the organization (Clarke, 1999), the study will target nurses’ perceptions of the patient safety culture. Understanding patient safety culture can help develop or build a positive unit or organizational safety culture, and hence, improve patient outcomes (Moody, 2006).

This literature review begins with a discussion of organizational culture and safety culture, followed by a description of the state of science of patient safety and patient safety culture. The factors which are associated with patient safety culture will be explored, and, lastly, the conceptual framework of this study will be presented.

Organizational Culture and Safety Culture

Organizational Culture

Definitions of organizational culture are abundant in the literature (Deal & Kennedy, 1982; Johnson, 1992; Schein, 1985). A common theme of definitions emphasizes the shared, taken-for-granted, often invisible or unspoken ideas, values, and beliefs held by the members of the group or organization. The phrase “the way we do things around here” arises frequently within organizational culture (Deal & Kennedy, 1982, p.4).
Schein (1985) has defined organizational culture as:

A pattern of basic assumptions—invented, discovered, or developed by a given group as it learns to cope with its problems of external adaptation and internal integration—that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems (p.9).

Based on Schein (1985, 1995), many elements may reflect the organization’s culture, such as the observed behavioral regularities when people interact, the norms that evolve in working groups, the dominant values espoused by an organization, the formal philosophy of an organization, the rules of the game for getting along in the organization, the feeling or climate that is conveyed by the physical layout, and the shared meanings that are created by group members as they interact with each other. But they are not the essence of the organizational culture. The essence of an organization’s culture is those taken-for-granted, often invisible basic assumptions and beliefs that are shared by members of an organization.

Schein (1985) proposes a three-level model of organizational culture. These levels include: artifacts, values, and basic underlying assumptions. Artifacts are the surface level of culture, values are the middle level of culture, and the basic underlying assumptions are the most inner level of culture. He believes that the relationship of each level to the others is both linear and causal. Corporate policies, management structures, and control systems represent the underlying assumptions or purpose of an organization. An organization’s purpose, in turn, conditions the publicly-declared values and beliefs of employees (level 1 causes or conditions level 2). Employees realize these corporate values and beliefs via particular attitudes. Employee attitudes, in turn, condition specific behaviors and artifacts (level 2 causes or conditions level 3). Since level 2 conditions
level 3, and level 1 conditions level 2, the core underlying assumptions or purposes of an organization ultimately determine employee behaviors and cultural artifacts.

Schein (1985) also claimed that within a given organization may also exists various subcultures in addition to a single dominant culture. These subcultures, also referred to as work group cultures, are developed based on the shared experiences in solving internal and external problems and the shared views of world around the group. These work group subcultures can also shape the perceptions, attitudes, and beliefs of individuals in specific departments or specialized groups.

Gerry Johnson (1992) tried to reveal the dynamic nature of organizational culture. He offers a “culture web” model of organizational culture. The model of a culture web also consists of a triad: a dominant paradigm, control systems, and structure (underlying assumptions or purpose); values and beliefs; and power relationship, stories, symbols, rituals, and routines (behaviors and artifacts). Johnson claims that organizational culture is not simply a result of core purpose or underlying assumptions, but an emergent property of the values and beliefs of a variety of group members. In another word, organizational values and beliefs are both created by, and revealed to organization members. Thus, organizational culture is composed of reciprocal relationships among group members’ perceptions of, and attitudes toward, an organization’s core purpose; group members’ day-to-day behavior; and the presence and quality of control systems to support group members’ attitudes and behaviors (Johnson, 1992).

Safety Culture

Reason and Hobbs (2003) pointed out that a safety culture forms a subset of organizational culture. It relates specifically to the values and beliefs concerning health
and safety within an organization. A safety culture reflects the ability of individuals or organizations to deal with risks and hazards so as to avoid damage or losses and achieve their goals (Reason & Hobbs, 2003).

The most commonly used and widely influential definition of safety culture is comes from an industrial model proposed by the HSC (1993) as:

The product of individual and group values, attitude, competencies, and patterns of behavior that determine the commitment to, and the style and proficiency of, an organization’s health and safety programs. 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 measure (p.23).

This definition reflects the prevailing view of safety culture as a “product” of organizational members’ values and beliefs. This can help to clarify what a safety culture might look like in an organization and to determine the strategies to develop such a “product,” as well as provide outcome measures to assess the degree to which organizations might or might not possess a “good” safety culture.

The concept of safety culture has been utilized in health care systems. Based on the Agency for Healthcare Research and Quality (AHRQ, 2008), safety culture is related to the employees’ commitment to safety in an organization. Several key features of the safety culture, which were identified based on the studies of high reliability organizations such as nuclear power industry, naval aviation, and traffic control, are applicable to health care systems (Harmon, 2006; Pizzi, Goldfarb, & Nash, 2001). These key features include:

- A system view: management recognizes that risk is inherent in organization’s activities, and analyzes and deals with risks and errors systematically;
• A blame-free and forgiveness environment: individuals report errors or near misses without a fear of punishment;

• A collaborative environment: individuals and work groups or units collaborate effectively to accomplish goals of an organization;

• Adequate safety resources: organizations are willing to appropriate adequate resources for addressing safety concerns (Pizzi, Goldfarb, & Nash, 2001).

Healthcare organizations in the US and China, although they have many differences in terms of the political environments, medical systems, and ethical standards, seem to share some similarities in terms of the safety culture. The traditional safety culture in US and Chinese hospitals is predominantly a blame and shame culture (Cai, Li, & Li, 2006; Liu, Kunaviktikul, & Tonmukayakal, 2007; Sokol, 2004). Individuals are mainly responsible for their own errors and punishment is generally used in dealing with the individuals who have committed to errors. In order to avoid being punished by management and being jeered by peers, individuals tend to not report the errors (Cai, Li, & Li, 2006; Chiang & Pepper, 2006; Liu, Kunaviktikul, & Tonmukayakal, 2007). This is especially true in Chinese culture where collectivism is emphasized. One error made by individual may affect the reputation of the whole group (Chiang & Pepper, 2006). In addition, saving face is important in Chinese culture. The person who commits an error may seriously “lose face” (Chiang & Pepper, 2006). This traditional “blame and shame” culture leads to the concealment of errors, obstructing the organization to learn from the errors, hence, creating an unsafe environment.
Patient Safety

**Definition of Patient Safety**

The National Patient Safety Foundation has defined patient safety as the avoidance, prevention and amelioration of adverse outcomes or injuries stemming from the processes of health care (National Patient Safety Foundation, 1999, as cited in IOM, 1999, p.57). IOM has defined the patient safety as freedom from accidental injury (IOM, 1999, p.58). AHRQ (2008) has also defined the patient safety as the freedom from accidental or preventable injuries produced by medical care. Estimating injury is more feasible and productive than measuring medical error as many errors have simply not been reported by health care professionals (Leape, 2008).

**History of Patient Safety**

**History of Patient Safety in the US**

In the US, the modern patient safety movement began with the New England Journal of Medicine’s first publication of the Harvard Medical Practice Study (MPS) in 1991 (Leape, 2008). The study examined 30,000 inpatient medical records in acute care hospitals in New York State in 1984. The results showed that 3.7% of hospitalized patients suffered an adverse event. Of these injuries, 14% were serious, and 69% events were preventable. However, the findings of this study were largely ignored both by the public and health professionals. This situation did not change much in the subsequent years and adverse events continued to occur. In 1995, the situation became even worse: amputation of the wrong leg, removal of the wrong breast, operation on the wrong side of the brain, and the overdose of chemotherapy leading to patient death. It was not until that time that health care personnel and some professional organizations realized the
seriousness of the patient safety issue and started to search for strategies to fix the problems." The American Medical Association (AMA), inspired by its legal counsel, Martin Hatlie, decided to establish a foundation of stakeholders to promote patient safety, while the new head of the Veteran’s Health Administration (VA), Ken Kizer, decided to make safety a system priority" (Leape, 2008, p.4). Under the leadership of Donald Berwick, the Institute for Healthcare Improvement (IHI) began to “train multidisciplinary hospital teams how to change systems and implement new safe practices in a series of collaborations” (Leape, 2008, p.4). In 1996, the National Patient Safety Foundation was established.

The release of the IOM report in 1999 “To Err is Human” was a milestone of the modern patient safety movement. The IOM report had three important effects (Leape, 2008). First, it raised the awareness of the patient safety issue both for the public and for health care professionals. Second, it urged a number of stakeholders into action, particularly, Congress. In 2001, Congress appropriated $50 million annually to the AHRQ for patient safety research. Congress also authorized AHRQ to lead national patient safety research and education. Third, it impelled hospitals to make the changes necessary for patient safety (Leape, 2008).

Since the IOM report, a tremendous effort has been made by health care professionals, administrators, managers, and government officers in different types of organizations. The Veteran’s Health Administration (VA) has established the VA National Center for Patient Safety and four patient safety research centers. It has also “implemented nonpunitive reporting, use of computerized order entry systems, bar coding, and other initiatives” (Leape, 2008, p.5). The National Quality Forum (NQF) has
focused on developing a consensus process that has generated standards for evidence-based safe practices as well as standards for nursing care (NQF, 2003; 2004). The Joint Commission (JC) has committed major resources to patient safety. It has adopted the methods of unannounced accreditation audits and required hospitals to implement new safe practices known as National Patient Safety Goals (JC, 2002). The IHI “has been the most powerful force behind changes for safety” (Leape, 2008, p.6). Over the decades, IHI has helped many hospitals redesign their systems for safety with focuses on medication safety, intensive care, cardiac care, and other treatments. It has also helped train the safe practices for thousands of doctors, nurses, pharmacists, and administrators (IHI, 2003). In 2005, IHI initiated a national effort named, “100, 000 Lives Campaign,” requiring the hospital in the US to band together to save 100,000 lives in 18 months by adopting a few simple changes in their care to reduce needless deaths in hospital. Over 3100 hospitals joined, and the results were extremely inspiring: a reduction in mortality of 122,000 patients was reported despite some controversies with the calculation of the figure (Berwick, 2007). The American Nurses Association (ANA) has also launched many quality and safety initiatives. The development of nursing-sensitive quality indicators to empirically evaluate the safety and quality of patient care was one example (ANA, 1999).

Now, every US hospital has some sort of a safety program as required by JC, and many are trying to build the blameless and forgiveness cultures that encourage staff to report errors and allow systems to identify and analyze the system as well as personal failures. More importantly, thousands of nurses, doctors, therapists, and pharmacists have become much more alert to safety. They are making many changes, aiming to create a safer health care system and to avoid needless deaths or injuries to patients.
History of Patient Safety in China

In China, patient safety is not a new topic. It has long been recognized conceptually by healthcare administrators or managers as it closely relates to quality of the health services (Huang, 2007; Tan, et al., 2006; Wang, 2008). However, the problem has largely been ignored in practice. It has never been systematically studied. There have been no official reports about medical error rates so far. However patient safety problems do exist, medical errors do happen, and these errors are being reported by the public media only occasionally.

Patient safety issues came to the public focus in China only in recent years. Several factors have contributed to this process. First, public health awareness and health needs have greatly increased with the rapid growth of the economy. People are much more conscious about their own health conditions and the quality of healthcare services they receive. They are more alert to an actual error event or near occurrence of an error event. Second, the development of modern technology, such as the internet, makes an error event readily visible to the public, and expands public reaction. Third, the influence of the international patient safety movement and the WHO report (2005) made Chinese health care professionals, administrators, and government officers realize the seriousness of the problem. Fourth, with updated knowledge on patient safety, a majority of health care professionals and administrators feel obligated to address the safety problems in order to create a safer health care system and to prevent needless deaths, pain, or injuries to patients (Han & Chen, 2007; Mao, Wu, & Li, 2007; Wang, 2008).

In 2006, the Chinese Hospital Association convened an annual conference. Patient safety was listed as the major topic and 2007 Patient Safety Goals were proposed. Seven
goal statements were proposed, including increasing the adequacy of identifying the right patients, increasing the safe use of medications, building proper communication channels in case of emergency, and others (Huang, 2007). The proposed 2007 Patient Safety Goals in China were similar to the Joint Commission's National Patient Safety Goals because Chinese experts believed that there exist similar system defects in the flow of services and organizational management under both modern Western and Eastern hospital systems (Huang, 2007).

During 2007, China hosted an International Hospital Communication and Collaboration Symposium and patient safety was a major theme. Hospital safety experts and health care professionals discussed extensively the current safety issues and problems in China, and proposed ten important strategies to ensure quality and safety (Wang, 2008). Later that year, the Ministry of Health initiated a National Patient Safety Management and Training Project, which aimed to provide training on patient safety knowledge for health care professionals from various organizations (Liu, et al., 2007).

**Patient Safety Culture**

Patient safety is a critical component of health care quality. As health care organizations continually strive to improve, there is a growing recognition of the importance of establishing a patient safety culture.

**Definition of Patient Safety Culture**

Definitions of patient safety culture vary in literature. Mustard (2002) defined the patient safety culture as "a product of social learning; ways of thinking and behaving that are shared and that work to meet the primary objective of patient safety (p.112)". Other scholars refer to patient safety culture as an environment that encourages data collection
and reporting, reducing blame, and getting leadership involved or focusing on system (Krumberger, 2001; Piotrowski & Hinshaw, 2002; Wong, Helsinger, & Petry, 2002). The American Operative Nursing Guidance Statement identifies five subcultures within patient-centered safety culture: “reporting, flexible, just, learning, and wary” (Association of Operating Room Nurses (AORN), 2006, p.936). Despite variances in definitions, there is consensus that patient safety culture is a subset of organizational culture relating specifically to the values and beliefs concerning patient safety.

Feng, Bobay, and Weiss (2008) conducted a dimensional concept analysis on patient safety culture in nursing. They found that the overarching dimension of the patient safety culture is nurses’ shared values, beliefs, and behavioral norms towards patient safety. Safety norms, values, and beliefs form the foundation of the patient safety culture. They also proposed a reciprocal interactive model which integrated four sub-dimensions to illustrate the concept of patient safety culture. Four sub-dimensions identified were the system sub-dimension, the personal sub-dimension, the task-associated sub-dimension, and the interactive sub-dimension. The authors also specified those necessary and collectively sufficient attributes under each sub-dimension of patient safety culture. System integrity and management support were identified as the two major components in system sub-dimension. Personal competence and personal commitment were considered the attributes of patient safety culture at the personal level. The nature of the task, task complexity, work environment characteristics, and feasibility of implementation were identified as the major components in task associated sub-dimension. Communication and partnership were considered the prevailing attributes in interactive sub-dimension (Feng, Bobay, & Weiss, 2008).
The theoretical definition of patient safety culture in this study is directly quoted from the HSC (1993) as mentioned previously. The definition has served as the basis for the development of Hospital Survey on Patient Safety Culture Instrument (AHRQ, 2004). It is worth to notice here that HSC is not defining patient safety culture, but rather safety culture and AHRQ is using that definition to then define patient safety culture.

The definition of patient safety culture in this study was operationalized using the Hospital Survey on Patient Safety Culture Instrument (HSPSC), measuring nurses’ perceptions of safety culture across 12 dimensions of organizational safety at the individual, unit and hospital levels (AHRQ, 2004). Twelve dimensions consist of ten safety culture and two outcome dimensions (and another two independent questions). Ten safety culture dimensions include: (1) supervisor/manager expectations and actions promoting safety; (2) organizational learning; (3) teamwork within hospital units; (4) communication openness; (5) feedback and communication about errors; (6) nonpunitive response to errors; (7) staffing; (8) hospital management support for patient safety; (9) teamwork across hospital units; and (10) hospital handoffs and transitions. Two outcome dimensions include: frequency of event reporting, overall perceptions of safety. Another tow independent questions address patient safety grade and number of events reported. The descriptions of each dimension are presented in the following table (AHRQ, 2008).

Table 1.

*Dimensions of the HSPSC*

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Supervisor/manager expectations and actions promoting safety</td>
<td>Relates to the perceptions of nursing unit management’s skill and consistency in promoting patient safety on the unit.</td>
</tr>
<tr>
<td>2. Organizational learning</td>
<td>Relates to the perceptions of organizational efforts to productively assess, evaluate, and implement quality and</td>
</tr>
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<table>
<thead>
<tr>
<th></th>
<th>Description</th>
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<tbody>
<tr>
<td>3. Unit teamwork</td>
<td>Relates to the perception of the capacity of healthcare staff to respectfully and collaboratively work together in accomplishing work goals on the unit.</td>
</tr>
<tr>
<td>4. Openness of communication</td>
<td>Relates to the level of comfort the nurse has in addressing issues of patient care quality and safety with individuals who are in position of higher authority within the healthcare system.</td>
</tr>
<tr>
<td>5. Feedback and communication about errors</td>
<td>Relates to the nurse’s perceptions of the amount of information that is shared in relation to error events and follow-up processes in the healthcare system.</td>
</tr>
<tr>
<td>6. Nonpunitive response to errors</td>
<td>Relates to the nurse’s perceptions of management’s response to the reporting of error events in the healthcare system.</td>
</tr>
<tr>
<td>7. Staffing</td>
<td>Relates to the nurse’s perceptions of the adequacy of staffing on units in relation to workload, patient safety, and quality care.</td>
</tr>
<tr>
<td>8. Hospital management support for patient safety</td>
<td>Relates to the nurse’s perceptions of hospital leadership in relation to creating a climate that consistently promotes patient safety within the healthcare system.</td>
</tr>
<tr>
<td>9. Teamwork across hospital units</td>
<td>Relates to the nurse’s perceptions of the capacity of hospital units to work together cooperatively in the course of delivery of patient care.</td>
</tr>
<tr>
<td>10. Hospital handoffs and transitions</td>
<td>Relates to the nurse’s perceptions of the quality and safety of exchanges of information when patients are transitioned between hospital units and departments, and when patient care is handed over to another care provider during changes of shift on a unit.</td>
</tr>
<tr>
<td>11. Frequency of event reporting</td>
<td>Relates to how often the nurse is willing to report an actual error event or the near occurrence of an error event in healthcare system.</td>
</tr>
<tr>
<td>12. Overall perception of safety</td>
<td>Addresses the nurse’s overall perceptions of safety on the hospital unit.</td>
</tr>
<tr>
<td>Patient safety grade</td>
<td>Relates to a single-letter-grade safety rating that the nurse would give to the unit and hospital in relation to patient safety within the healthcare system.</td>
</tr>
<tr>
<td>Number of events reported</td>
<td>Relates to the self-reported number of error events and forms that the nurse has filled out and submitted in the previous twelve months.</td>
</tr>
</tbody>
</table>

As one can see from the table, the HSPSC instrument focuses on the reporting culture, the learning culture, the nonpunitive and just culture, the team collaboration and communication culture, and leadership commitment and support culture. These are
believed to be the key elements of a safe healthcare environment to ensure healthcare quality and safety (AORN, 2006; IOM, 1999; 2001; 2004).

**Major Studies in Patient Safety Culture**

Within the past two decades, studies related to safety culture in healthcare settings have increased. Research in this area tends to focus on two broad categories: (1) basic survey of patient safety culture, and (2) safety culture related to outcomes (Clarke, 2006). Some of the most influential studies will be presented here.

The AHRQ-sponsored Hospital Survey on Patient Safety Culture (Nieva & Sorra, 2003; Sorra & Nieva, 2004) was developed to measure US-representative survey benchmarks and dramatically enhance the ability of hospitals and other health care facilities to compare facilities to each other. Singer and colleagues (2003) conducted a study in 15 California hospitals. A total number of 6,312 employees participated. Results revealed that overall 18% of workers surveyed gave answers suggesting safety problems existed in their organizations. Another 18.5% gave neutral responses. Managers were considerably more positive about the state of their institutions than non-managerial health care workers; clinicians in general and nurses in particular voiced greater concerns regarding safety culture than other groups of hospital workers. Clear differences were seen across the hospitals themselves, suggesting that safety culture varied across healthcare organizations (Singer et al., 2003). However, the subject response rate in this survey was only moderate (47%), hospitals surveyed in this study were members of a consortium of institutions, and generalizability was limited (Singer et al., 2003).

Flin et al. (2000) claimed that “safety climate can be regarded as the surface features of the safety culture discerned from the workforce’s attitudes and perceptions at
a given points in time. It is a snapshot of the state of safety providing an indicator of the underlying safety culture of a work group or organization” (p.178). Some experts explored the safety culture with measurement of the safety climate (Gaba et al., 2003; Hofmann & Morgeson, 2003; Pronovost, Weast, & Holzmueller, 2003).

Gaba and colleagues (2003) conducted a comparative study to examine results of safety climate survey questions from health care respondents with those from naval aviation. They used separate instruments containing a subset of 23 similar questions to survey employees from 15 hospitals and from naval aviation from 226 squadrons. The results showed that the overall response rate which indicates safety problems was 5.6% for naval aviators versus 17.5% for hospital personnel. Problematic responses among hospital workers were up to 12 times greater than that among aviator on certain questions such as “senior leaders demonstrated a commitment to safety concerns”; “attention to standard operating procedures was consistent”; “quality management was consistent and proactive”; “resources were adequate”; and “communication across the organization and about errors and problems was frequent and candid” (Gaba et al., 2003, p.175). The authors concluded that hospitals need to make substantial changes in order to create a safe environment consistent with the status of high-reliability organizations. However, the timing of the surveys in hospitals and aviations was different and the wording of questions in two similar questionnaires was not perfectly matched between the domains (Gaba et al., 2003).

Pronovost and colleagues (2003) conducted a study at Johns Hopkins Hospital using two survey instruments included the Safety Climate Scale (SCS) and the Strategies for Leadership (SLS). The SCS was administered to the physicians, nurses, pharmacists,
and other intensive care unit (ICU) staffs. The SLS was administered to clinical and administrative leaders. The authors found that staff perceived that senior leaders had less commitment to safety than supervisors. Physicians had lower scores than nurses for perceptions of safety meaning they believed their environments to be less safe. Management committees' responses were more positive than the patient safety committee, indicating that management perceived safety efforts to be further developed than patient safety experts in hospital (Pronovost, Weast, & Holzmueller, 2003). However, there was a potential for selection bias in the sampling frame as the authors did not randomly select staff in the study.

Studies from Korea were also reported in the literature. Kim and colleagues (2007) surveyed 886 nurses at eight Korean teaching hospitals with the purposes of investigating nurses' perceptions of frequency of error reporting and patient safety culture. They found that only 67% of nurses said they “always” reported the known mistakes. A significant portion of nurses voiced safety concerns in their working unit. About 83% of the respondents strongly agreed that it was by chance that more serious errors did not happen in their working unit. More than half of the nurses (52%) reported that the unit had a serious patient safety problem. About 40% of the respondents were concerned that the hospital management valued more about making profits than promoting patient safety. Less than one third (27%) of respondents agreed that hospital leadership effectively communicated safety goals with the employees. Only 30% of the respondents agreed that physicians and nurses collaborated well; about 57% said that shift changes were problematic in their hospitals. Nurses on the front line evaluated various aspects related to patient safety culture as being more problematic than nurses who were older and who
worked in management positions. The authors concluded that safety culture in Korean teaching hospitals was perceived as less than desirable. However, this study only targeted nurses working in tertiary hospitals.

One survey study was reported from China. Cai, Li, and Li (2006) surveyed 233 nurses about "wrong treatment model" in one sub-tertiary hospital in southern part of China. The survey items included how to deal with errors committed by peers, whether nurses would like to open errors to the public, and what responses are expected from peers when an error is committed. They found that 70% of nurses were unwilling to open their errors to the public as 31% (n = 50) considered that commission of error was an ungraceful event. Sixty-one percent of respondents (n=98) were afraid to lose trust of managers and peers, and 8% (n=14) were fearful of punishment or criticism from managers and peers. When faced with unsafe conditions, 51% (n=120) expected their peers to point out the situation immediately, but not to report to managers. Forty-eight percent (n=111) expected their peers to point out the situation immediately, and did not mind if it was reported to managers. The authors concluded that only 30% of nurses in their study were willing to open their errors to the public, indicating that it was imperative to provide training for hospital personnel in terms of patient safety (Cai, Li, & Li, 2006). However, the study was conducted at only one sub-tertiary hospital in China and there was no psychometric information about the measure used in this study.

Two recent relevant studies were also found in the literature. Kline, Willness and Ghali (2008) conducted a retrospective study to investigate two contributing factors, case resource intensity and patient safety culture, in predicting adverse events in hospital settings. The study was completed at three acute care settings in a large metropolitan
center in western Canada. More than 8,000 admissions within 40 different units were included. Hierarchical linear modeling was utilized to analyze the results. Results showed that the resource intensity of the presenting case was related to the severity level of negative incidents, a more positive culture of patient safety within hospital units was related to lower incident severity. The authors concluded that it was important to build a positive patient safety culture within the hospital to prevent the adverse events and to avoid the needless deaths of the patients (Kline, Wellness, & Ghali, 2008). However, the study possessed some limitations. It was a cross-sectional study, hence, the causal relationship could not be established. Moreover, the authors failed to provide the psychometric properties of the patient safety culture survey instrument.

Another recent study was conducted by Scherer and Fitzpatrick (2008) in the perioperative area of a community hospital in the US. The purpose of the study was to assess and compare physicians’ and RNs’ perceptions of the patient safety culture. The survey questionnaire used in this study was the Hospital Survey on Patient Safety Culture developed by the AHRQ. A total of 43 RNs and 40 physicians responded to the survey. The results showed that, overall, physicians and RNs had positive perceptions of the patient safety culture in the perioperative area of that community hospital. However, there was a significant difference between the physicians and the RNs in the safety culture dimensions of “supervisor/manager expectations and actions promoting safety” and “feedback and communication about error” (Scherer & Fitzpatrick, 2008, p.170). Implications for managerial strategies and for future research were proposed. The major drawback of this study was its limited generalizability due to the use of a convenience sample in a 174-bed community hospital.
Factors Associated with Patient Safety Culture

Three sets of factors have been identified to be associated with safety culture in the literature: nurses’ personal characteristics, nurse managers’ characteristics, and the organizational characteristics (Boyle, 2004; Heath, Johanson, & Blake, 2004; Hughes & Clancy, 2005; Kim, et al., 2007).

Nurses’ Characteristics

Nurses’ personal characteristics such as age, levels of experience, and levels of education are related to nurses’ perceptions of safety culture. In a recent study (Kim, et al., 2007) conducted in Korea, investigators found that nurses’ perceptions of patient safety culture were significantly associated with nurses’ demographic characteristics. Nurses in their forties evaluated their working culture more positively than did those in their twenties and thirties. Nurses who had worked from 1 to 5 years reported the worst perceptions of the safety culture. Perception of hospital safety culture was more positive among those working in Internal Medical departments than in intensive care units (ICU) (Kim, et al., 2007).

Tourangeau, Giovannetti, Tu, and Wood (2002) conducted a retrospective study to investigate the nursing-related determinants of 30-day patient mortality rates in Ontario, Canada. Using multiple data sources, the researchers analyzed 46,941 data files of patients discharged from 75 acute-care hospitals. The results showed for every 1000 discharged patients, an increase of 10% of RNs across all hospitals was associated with five fewer patient deaths. More years of RN experience was also found to be associated with fewer 30-day patient deaths (Tourangeau, Giovannetti, Tu, & Wood, 2002). A study by Aiken et al. (2003) revealed that in U.S. hospitals with higher proportions of nurses
educated at the baccalaureate level or higher, patients experienced lower mortality and
failure-to-rescue rates. In this study, additional personal characteristics such as positions
(defined as permanent vs. contract nurse) and professional titles (defined as Nurse
/Competent Nurse /Charge Nurse /Associate Professor / Professor) were added to the
investigation since these are indicators of professional competence under Chinese
healthcare system.

Managers’ Characteristics

Researchers believe managers’ characteristics are related to the safety culture
(Bolman & Deal, 1991; Boyle, 2004; Burns, Mearns, & McGeorge, 2006; Clark & Payne,
2006; Gerras, 2003; Williams, 2002; Zohar, 2002). Studies about safety culture in
industry have focused on three areas: managers’ safety commitment, leader-member
exchange, and the perceived trustworthiness of managers in their organizations.

Managers’ safety commitment in industry was found to be a significant
determinant of employees’ perceptions of safety (Flin & Yule, 2004; O’Toole, 2002;
Zohar, 1980; Zohar, 2002). As Zohar (1980) noted, management’s commitment “is a
major factor affecting the success of safety programs” (p.100), and this commitment can
manifest itself through job training programs, participation of management in safety
committees, and taking safety into consideration during job design. Based on
experiences in industries such as aviation and nuclear power, managers’ safety
commitment has both direct and indirect effects on workers’ behaviors related to safety
culture (Flin & Yule, 2004). The indirect effects relate to the establishment and
reinforcement of values and norms relating to routine safe practices and procedures, thus
creating a particular safety culture. The direct effects are the manager’s modeling of safe
and unsafe behaviors and their attitudes and strategies used in dealing with the subordinates’ unsafe behaviors. Both directly and indirectly, leaders’ actions influence subordinates’ expectations and motivations, thus influencing the likelihood of particular unsafe behaviors being repeated or suppressed.

In China, the majority of nurse managers are the members of the Communist Party. Members of the Communist Party are expected to have a high sense of occupational ethics in working with patients in healthcare organizations. Party members are also encouraged to serve as “role models” to their colleagues and subordinates (Liu, Kunaviktikul, & Tonmukayakal, 2007; Pei, Legge, & Stanton, 2002). The manager’s modeling of safe and unsafe behaviors may influence the patient safety culture of the unit or the organization.

Leader-Member Exchange (LMX) theory focuses on the “quality of relationships between managers and subordinates” (Dansereau, Garen, & Haga, 1975, p.49). The concept was developed based on social exchange and role theories (Graen, 1976; Katz & Kahn, 1978). These theories suggest that leaders’ behaviors are not necessarily consistent across all subordinates. Leaders develop different types of relationships or exchanges with each subordinate. These relationships range from those that are based strictly on employment contracts (i.e., low LMX, or out-group) to those that are characterized by mutual trust, respect, liking, and reciprocal influence (i.e., High LMX or in-group) (Liden, Sparrowe, & Wayne, 1997). Studies suggest that high quality LMX relationships are associated with the open communication of non-routine problems, strong citizenship behavior, joint decision making, strong organizational commitment, and minimal power
distance between leader and subordinates (Dansereau, Garen, & Haga, 1975; Hofmann & Morgeson, 1999).

Hofmann and Morgeson (1999) collected data from 49 supervisor-group-leader dyads in a manufacturing facility that produced commercial heating and air conditioning systems. They found that LMX was significantly related to safety communication, safety commitment, and accidents (Hofmann & Morgeson, 1999). High LMX relationships often fostered constructive safety communication. Employees who perceived high LMX relationships were more likely to raise safety concerns and suggest safety strategies. Such safety related communication facilitated the effective safety commitment both from managers and staff, which in turn, leading to the lower frequency of accidents (Hofmann & Morgeson, 1999).

Hofmann, Morgeson and Gerras (2003) conducted a study on 127 transportation team members in the U.S. Army to investigate the influence of LMX and safety climate on subordinate safety role definitions and behaviors. Using hierarchical linear modeling, they found that LMX was significantly related to safety citizenship role definitions. Safety climate acted as a moderator in relationship between LMX and safety citizenship role definitions. The authors further discussed the results based on the social exchange theory. Because the LMX relationships emphasized social exchange, there was a high obligation on subordinates to reciprocate high-quality relationships. One way that subordinates had frequently used for reciprocation was to enlarge their roles and to develop citizenship behaviors. Another way for subordinates to reciprocate the high-quality relationships was to develop behaviors valued in their work environments. Because safety was a major concern in high-risk environments, one such set of valued
behavior would be safe practice. Thus, in work environments where there was a more positive safety climate with high-quality LMX relationships, subordinates were more likely to view safety behaviors as part of their formal role responsibilities and demonstrate safety role behaviors (Hofmann, Morgeson, & Gerras, 2003).

In China, the establishment of the harmonious organizational culture has been highlighted in hospitals. Hospital administrators are encouraged to use a democratic management style in general to maintain harmony of units or organizations (Liu, Kunaviktikul, & Tonmukayakal, 2007). Guanxi is a central concept in Chinese society. Guanxi basically describes the individual’s connection and relationship and can be applied to any organization in society. In hospital settings, it can be used to reflect the depth of feeling of the interpersonal relationship between nurse managers and nurses, which is closely related to the concept of LMX. Although organizational culture is very influential to behaviors and the culture of a China hospital is different, so the LMX may or may not be related to the patient safety culture in Chinese context.

Trust is a multi-faceted concept. It is defined as the “willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party” (Mayer, Davis, & Schoorman, 1995, p. 712). High manager trustworthiness in the organization facilitates open communication and enhances the effectiveness of safety programs. With low levels of manager trustworthiness, safety communication may be hindered due to fear of being blamed for poor safety. Trust is believed to influence an organization’s safety through a process of psychological safety. The presence of trust serves to communicate to employees they can report safety
concerns without being punished by co-workers or blamed by management. The absence of trust removes this sense of security and consequently hinders open communication (Conchie, Donald, & Taylor, 2006; Cox, Jones, & Collinson, 2006).

Cox, Jones, and Collinson (2006) examined the importance of trust relations and their impact on safety culture in high-reliability organizations. They used a case study method. One case was reported from the United Kingdom nuclear industry, where the researchers designed a behavioral safety program (BSP) and tried to implement as part of a broader accident prevention program to improve workplace safety. BSP is one type of safety management approaches, in which special emphasis is placed on encouraging behaviors that are critical to health, safety, and risk management. Both the qualitative and quantitative data were collected. The qualitative data were gathered through plant “walkabout” and semi-structured interviews and the quantitative data were collected through a 28-item questionnaire survey. The results from the qualitative and quantitative analyses showed that trust played an important role in implementing and sustaining the successful BSP. Employees considered high trust a significant predictor of the long-term sustainability of the BSP (Cox, Jones, & Collinson, 2006).

Burns, Mearns, and McGeorge (2006) investigated the role of trust within safety culture using explicit and implicit measures at a United Kingdom (UK) gas plant. Explicit measures assessed trust by administering questionnaires to measure participants’ explicit trust in their workmates and supervisors. Implicit measures assessed trust in a more subtle way by using a priming task that relies on automatic attitude activation. Results showed that workers expressed explicit trust for their workmates, supervisors, and senior managers, but expressed implicit trust only for their workmates. The authors further
discussed the results and proposed a trust model within safety culture context. The model conceptualized that the explicit trust formed part of the surface layer of safety culture and the implicit trust forms part of the underlying assumptions, the deeper layer of safety culture, which are the essence of safety culture (Burns, Mearns, & McGeorge, 2006).

In Chinese society, trust is a highly acknowledged concept. It is an essential element of interpersonal relationships. Nursing managers are afraid of losing trust of their nursing subordinates and nurses are fearful of losing trust by their managers. Cai, Li and Li (2006) found that the major reason nurses were unwilling to report errors was due to concerns about losing trust of their managers and peers (61%, n =98). For nurses, it is important to perceive that their nurse managers and organizations are trustworthy in order to feel free to voice safety concerns.

**Organizational Characteristics and Patient Safety Culture**

Staffing levels have been identified as a key system factor affecting the culture of patient safety. The nurse/patient ratio and the skill mix of RN/LPN/Unlicensed Assistive Personnel (UAP) have been frequently addressed. In a cross-national study conducted by Aiken, Clarke, and Sloane (2002), nurse staffing was directly related to nurse-assessed quality of care. Clarke and his colleagues (2002) conducted a study in 22 US hospitals and found that nurse staffing was one of the key determinants of needlestick injuries and near-misses. The skill mix of RN/LPN/UAP has been identified as one of the major nurse sensitive quality indicators by several organizations such as American Nurses Association (ANA, 1999) and National Quality Forum (NQF, 2004). A retrospective, longitudinal analysis by Seago, Williamson, and Atwood (2006) revealed that there were higher levels of patient satisfaction as total hours of care per patient day increased and as
the skill mix became richer (more RN hours/total hours). Having more non-RN hours
decreased the ability to rescue from medication error, hence, was related to an increased
failure to rescue rate from medication error.

In China, the unit nursing team consists of two types of nurses: permanent RNs
and contract RNs. Permanent RNs hold permanent positions and are more competent and
senior in general, while the contract RNs generally hold the temporary or short-term
contracts and are junior in career. The skill mix of permanent RNs and contract RNs and
the nurse/patient ratio seems appropriate for exploring the associations with the unit
culture of patient safety in the proposed study. The use of UAP varies in Chinese
hospitals. In general, there are few UAPs on the units in tertiary hospitals. In West China
Hospital, typically, there are one to three UAPs in the day shift and one in the night shift
in each general nursing unit. Shi and her colleagues (2005) conducted a study in 69
Chinese hospitals in Shanghai, China. Nurse patient ratio was the independent variable.
And the dependent variables were the patient-rated quality of nursing care and the
number of patients’ complaints. They found that the nurse patient ratio was positively
related to patient-rated quality of nursing care (r=.87, p<.01) (Shi, et al., 2005).

Organizational safety training has been identified as another important factor that
is associated with safety culture (Lund & Aarro, 2004; Roughton & Mercurio, 2002).
Training is recommended during orientation programs, as well as on a regular annual
basis (Roughton & Mercurio, 2002). This allows staff to have a formal review of
knowledge concerning patient safety and review the adequacy of routine safety practices.
In China, many hospital administrators insist on the principle of “patient comes first,
safety is the priority” (Huang, 2007, p.3). China has a long history of using ideological
and political education to strengthen employees' work commitment (Liu, Kunaviktikul, & Tonmukayakal, 2007). Hospital administrators might integrate patient safety education into a political or ideological education program to raise employees' awareness of patient safety issues and to take steps to ensure patient safety.

Hospital safety policies have also been recognized as a key in affecting the organizational and unit safety culture. An explicit, clear safety policy with a blameless error reporting strategy is believed to contribute to developing a positive safety culture in literature (Krause & Weekley, 2005; Ruchlin, Dubbs, Callahan, & Fosina, 2004). In China, all hospitals are required to develop or implement certain policies in regard to healthcare quality as mandated by the national, provincial, or county levels of health care administrations (Cheng, 2006). The majority of hospitals have developed patient safety policies either independent to, or as part of, healthcare quality policies. So far, there has not been established a national-wide reporting system for communicating medical errors in China. Most hospitals have established their own error reporting policies at the organizational level. Punishment for error-making in healthcare organizations is the traditional and still common way of management (Huang, 2007).

Prioritization of hospital patient safety is also related to the safety culture. Several areas are frequently addressed in the literature including whether the organization has clear and explicit patient safety goals and objectives, top management has strategic plans and initiatives for patient safety in place, and the organization has the resources available to support patient safety (Roughton & Mercurio, 2002).

In summary, patient safety culture in this study has been defined as the nurses' shared values, beliefs, and behavioral norms towards patient safety. The concept has been
operationalized by using the Hospital Survey on Patient Safety Culture to measure Chinese nurses’ perceptions of safety culture. Nurses’ personal characteristics, managers’ characteristics, and organizational characteristics have been identified as the factors which may be associated with nurses’ perceptions of the unit or organizational patient safety culture. Nurses’ personal characteristics include age, years of experiences, levels of education, professional titles, and permanent versus contract nursing positions. Managers’ characteristics include managers’ safety commitments, leader-member exchange, and the perceived trustworthiness of managers. Organizational factors include organizational training of patient safety, organizational prioritization of patient safety, organizational patient safety policies, as well as organizational staffing levels.

Contextual Information---Similarities and Differences between the US and Chinese Health Care Systems

The literature on patient safety culture comes predominantly from the US and a few other countries, such as Korea and Canada. As this study will be conducted in a Chinese university hospital, it will be valuable to note similarities and differences between the US and Chinese health care systems. Differences will likely affect how nurses perceive the patient safety culture and answer the survey.

Based on Jonas (2004), there are five major components in any health care delivery system: the health care institutions, the personnel who work in them, the companies producing “health commodities” such as drugs and hospital equipment, the research and educational institutions that produce biomedical knowledge and health personnel, and the financing mechanisms. In addition, the organizational structure and the
lo ci of power and control stand at the middle of the system. A comparison between China and US on these main concepts will be addressed.

**Health Care Personnel**

In 2000, about 11.6 million people worked in the health care delivery system in the US (Jonas, 2004). The largest groups were nurses, physicians, pharmacists, dentists, and physical therapists. Physicians were the most powerful and dominant group in the United States (Jonas, 2004).

In China, about 5.9 million people worked in the health care system in 2007 (Chinese Ministry of Health, 2008). Physicians accounted for about 2 million, which is 34% of total health personnel. The number of nurses was slightly more than 1.5 million, which represents 26% (Chinese Ministry of Health, 2008). Physicians are the most powerful group and hold a control over the treatment regimens of the patients, as well as other health care personnel.

Similarities can be seen from the types of health care personnel and the power distribution among health care personnel. Physicians hold the dominant position under both the US and Chinese health care system. Differences are demonstrated in various aspects: (1) The total number of US nurses (2,669,603 in 2000) is greater than the total number of Chinese nurses (1,301,240 in 2003) based on the report of WHO (2008); (2) The density of nurses is different. On average, out of a population of 10,000, there are 94 nurses in the US, and there are only 10 nurses in China (WHO, 2008); (3) Nurses in China are comparatively younger than the nurses in the US. In 2007, 71% of 1.5 million Chinese nurses belonged to the age group of 25-44 (Chinese Ministry of Health, 2008). In the US, the average age of the RN workforce was 43.7 years in 2006, and a significant
portion of nurse employment was supplied by registered nurses older than 50 years (Buerhaus, Staiger, & Auerbach, 2008); (4) The educational level of Chinese nurses is comparatively lower than that of the US nurses (See table 2). Based on the Chinese Ministry of Health (2008), only 3.2% of 1.5 million Chinese nurses had obtained a bachelor degree or above, 32% had a post-registration advanced certificate, and 58% had a diploma in 2007. According to a report from the American Association of Colleges of Nursing (2008), based on the results from a national survey of registered nurses conducted by the Health Resources and Services Administration, 47.2% of the RN workforce held a baccalaureate or graduate degree, 33.7% earned an associate degree, and 17.5% a diploma in nursing. Some other differences which have been described in the previous literature review have also existed, for example the types of nurses (permanent vs. contract nurse) and the professional titles of nurses.

Table 2

<table>
<thead>
<tr>
<th>Country</th>
<th>Bachelor degree or above (%)</th>
<th>Post-registration advanced certificate or associate degree (%)</th>
<th>Diploma (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA (2004)a</td>
<td>47.2</td>
<td>33.7</td>
<td>17.5</td>
</tr>
<tr>
<td>China (2007)b</td>
<td>3.2</td>
<td>32</td>
<td>58</td>
</tr>
</tbody>
</table>


**Health Care Institution and Administrative Structure**

The institution which was involved in this study is a government-run, not-for-profit general hospital- West China Hospital, Sichuan University (WCHSU, 2007). It is a university-based medical center which is similar to US university hospitals. It was a missionary hospital when it was established a century ago. The hospital has undergone a
rapid development in recent decades, and now it has become one of biggest hospitals in China with over 4,000 in-patient beds.

The hospital administrative structure is a typical of administrative structure in Chinese general teaching hospitals. The president is at the top. Underneath are several vice presidents who are responsible for different hospital affairs such as clinical practice, teaching and medical education, and medical research. The third level belongs to the heads of hospital functional departments such as the Department of Nursing, Department of Medical Affairs, Department of Human Resources, and so on. The final level, or the basic level, of hospital administration belongs to the unit level managers. Power is distributed from the top to the bottom. Thus, similarities can be seen between this hospital and the US university hospitals with regard to hospital administrative structure.

**Health Care Commodities**

Similar to US hospitals, a variety of commodities are used in the Chinese health care delivery system in general and WCHSU in particular. With the rapid growth of the economy, the hospital has undergone a dramatic change during the past decades. Old buildings have been replaced by the new buildings including one new outpatient building, three new inpatient buildings, one new educational building, and three new research buildings as well. All new inpatient buildings have been decorated and equipped with modern hospital supply systems such as the central oxygen supply system, central suctioning system, central air transportation system, central air conditioning system, etc. Many kinds of equipment with high technology have been purchased, such as Positron Emission Tomography and Computerized Tomography (PET/CT), Magnetic Resonance Imaging (MRI), laboratory equipment, and surgical instruments. Many traditional nursing
items have been replaced by disposable supplies such as gauze pads, intravenous administration sets (IV sets), dressing supplies, and others.

**Health Care Economics and Financing**

This is the aspect which demonstrates the greatest variance between the US and Chinese health care systems. Both systems have been continuously undergoing health reformations and will continue to commit to health reforms, similarities and differences are temporal and subject to change also (Blumenthal & Hisao, 2005; Liu, 2004).

In China, the total health expenditure in 2006 reached 984 billion Chinese Yuan which accounted for 4.67% of gross domestic product (GDP, Chinese Ministry of Health, 2008). Among the total, the government funded 18.1% of the total amount of health expenditure. Social or employer-based health expenditure represented 32.6% and personal health expenditure represented 49.3% (Chinese Ministry of Health, 2008). In comparison, the total US national health expenditure was reported to reach 1.987 trillion US Dollars in 2005 (Health, United States, 2007). This represents 15.2% of GDP (WHO, 2008). The government shared nearly 40%, while businesses, households, and others in the private sector shared more than 60% of the total health care expenditure (Cowan & Hartman, 2005).

From a health insurance perspective, in China, the percentage of individuals who have health insurance varies between urban and rural. Based on Liu (2004), 49% of urban Chinese had health insurance and only 7% of rural residents had health insurance in the year of 1999. As a result, out-of-pocket expenditure in China accounted for the majority of the private health expenditure (85.3%). This percentage is much higher as compared to the percentage in the US during the same year, which was 23.9% (WHO, 2008). And
hence, health expenses have become a leading cause of poverty in rural areas in China (Blumenthal & Hisao, 2005), and many patients and their family members are anxious to know the daily health care expenses generated by every item of health services when they are hospitalized.

In summary, there are some similarities and some differences between the US and Chinese health care systems in terms of health care institutions, health care personnel, health care commodities, as well as health care financing mechanisms. These differences in institutions, personal characteristics, and facilities might affect the contextual elements of the patient safety culture. There is currently no evidence in Chinese literature that these differences will affect the foundational principles of the patient safety culture. Except that it may not be ‘safe’ to identify errors. Safety experts believe that modern hospitals share similar flow of health care services, management system, and some standardized procedures and protocols which contribute to some similar system defects that likely affect patient safety. Yet understanding the differences between the two systems provides a better lens for understanding the proposed study and analyzing the study results.

**Conceptual Framework**

The conceptual framework of this proposed study is developed by the researcher based on a review of the relevant literature. Patient safety culture is the key variable in this study. It is defined as nurses’ shared values, beliefs, and behavioral norms towards patient safety.

Three sets of factors have been identified for exploration as factors that may be associated with nurses’ perceptions of patient safety culture: nurses’ personal
characteristics, nurse managers’ characteristics, and the organizational characteristics. Nurses’ personal characteristics include age, years of experience, levels of education, positions, as well as their professional titles. Managers’ characteristics include managers’ safety commitment, leader-member exchange, and the perceived trustworthiness of managers. Organizational characteristics include the staffing levels, safety training programs, patient safety policies, as well as prioritization of patient safety. The conceptual model is presented in the following figure (see Figure 1).

**Figure 1. Conceptual model**

<table>
<thead>
<tr>
<th>Nurse/nursing related Characteristics</th>
</tr>
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<tbody>
<tr>
<td>- Age</td>
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<td>- Years of experience</td>
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<td>- Levels of education</td>
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<tr>
<td>- Positions</td>
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<tr>
<td>- Professional titles</td>
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<td>- Types of nursing unit</td>
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<table>
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<tr>
<th>Managers’ Characteristics</th>
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<tr>
<td>- Managers’ safety commitment</td>
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<tr>
<td>- Leader-member exchange</td>
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<tr>
<td>- Trustworthiness of the leaders</td>
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</table>

<table>
<thead>
<tr>
<th>Organizational characteristics</th>
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</thead>
<tbody>
<tr>
<td>- Staffing factors</td>
</tr>
<tr>
<td>- Safety training factors</td>
</tr>
<tr>
<td>- Hospital patient safety policy</td>
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<td>- Prioritization of patient safety</td>
</tr>
</tbody>
</table>
CHAPTER 3

RESEARCH DESIGN AND METHODS

Research Method

The study uses a quantitative research methodology with a cross-sectional survey design.

Sample

Settings

Convenience sampling was used in this study. Participants include nurse managers and registered nurses who were recruited from the intensive care units and general medical-surgical units in a tertiary teaching hospital in the Southwestern part of China--West China Hospital, Sichuan University (WCHSU).

WCHSU (2007) is a government-run, not-for-profit general hospital. It is a famous medical center in China. The history of the hospital can be traced back to 1892 when missions from Canada, Great Britain, and the United States set up Renji Hospital and Cunren Hospital respectively. The hospital covers an area of 21 hectares, owns 300,000 square meters of building for clinical use while its fixed assets are 1.4 billion RMB (Chinese Dollar, 1RMB = 0.14 US Dollar). The hospital has 4,000 beds, which ranks as the most hospital beds in any Chinese hospital. During 2004, the Outpatient Department treated 1.9 million patients, while the In-patient Department treated 81,000 patients, more than half of which are surgical cases. There are 50 general nursing units, 8 ICUs, and approximately 2,200 nurses employed in WCHSU. WCHSU is chosen to be
the target hospital to study since the researcher comes from this organization and she has received administrative support to conduct the study. Moreover, there is no similar research conducted in this hospital or in other Chinese hospitals. Findings from this study will provide important information for hospital management to assess the existing culture of patient safety. It also serves as the baseline for managers to take actions to improve their unit patient safety culture. Furthermore, it provides benchmarks references for other healthcare organizations in China as well.

**Sample Size Estimation and Rationale**

Registered nurses and nursing managers in all eight ICU units in WCHSU were recruited for this study. One ICU unit was used for pilot study. The remaining seven ICU units were used for the main study. The average number of nurses in each unit is about 20. The estimated sample size of ICU nurses was about 140.

Nurses and nursing managers from seven general medical-surgical units in WCHSU were randomly selected from the list of general nursing units to match the ICU units. The estimated sample size for general medical- surgical unit RNs was about 140.

The subtotal of the subjects requires equal numbers of ICU and medical surgical nurses (140+140=280). Taking into consideration the 85% anticipated survey return rate (this is the average return rate in survey studies in Chinese nursing research partly due to the strong group culture which emphasizes cooperation), an additional 15% was required. Therefore, the total subjects required in this study reached 322. The response rate for a mailed survey is generally high in Chinese nursing research as compared to the response rate of nursing surveys in western countries (about 60%) possibly because of the strong
collective culture which emphasizes collaboration and group work (Asch, Jedrzewski, & Christakis, 1997).

**Measures/Instruments**

Five instruments were used in this study. They were: Hospital Survey of Patient Safety Culture, Managers' Safety Commitment Scale, Leader-Member Exchange Instrument, Perceived Trustworthiness Survey, and Demographic Data Form.

**Hospital Survey of Patient Safety Culture**

The Hospital Survey of Patient Safety Culture was developed under the sponsorship of the U.S. Agency for Healthcare Research and Quality. It contains 12 dimensions and additional two independent items. Key dimensions include two outcome dimensions and ten safety culture dimensions. Two outcome measures include: frequency of event reporting and overall perceptions of safety. Ten safety culture dimensions include: (1) supervisor/manager expectations and actions promoting safety; (2) organizational learning; (3) teamwork within hospital units; (4) communication openness; (5) feedback and communication about errors; (6) nonpunitive response to errors; (7) staffing; (8) hospital management support for patient safety; (9) teamwork across hospital units; and (10) hospital handoffs and transitions. The instrument uses a 5-point Likert Scale, ranging from strongly disagree to strongly agree. The instrument has been pilot tested in 21 hospitals with large samples of hospital managers, physicians, and nurses. The validity of the instrument has been established with both exploratory and confirmatory factor analysis. Internal consistency reliabilities were also examined and Cronbach's alpha coefficients range from .63 to .84 for each of the 14 safety culture dimensions (AHRQ, 2004). The instrument has also been translated and used in a Korean
population. Cronbach's alpha coefficients ranged from .67 to .83 for the subscales of the Korean version instrument. Before this study, the English version of the instrument was translated into Chinese. Cronbach's alpha coefficients of the Chinese version instrument were established in the pilot study.

**Managers' Safety Commitment Scale**

A Visual Analog Scale (VAS) developed by the researcher was used to measure managers' safety commitment. A VAS is one of the most popular measurement devices in nursing research. It is typically used to measure the intensity, strength, or magnitude of an individual's sensations and subjective feelings and the relative strength of their opinions about specific stimuli (Waltz, Strickland, & Lenz, 2005). A 100-mm vertical line was drawn with the anchor of “No safety commitment” at the bottom end and “Total safety commitment” at the top. A number from 0 to 10 was placed at an equal interval near the line (numerical rating scale). Test-retest reliability of the instrument was established during the pilot study.

**Leader-Member Exchange Instrument**

The Leader-Member Exchange Instrument was developed based on social exchange and role theories (Graen, 1976; Katz & Kahn, 1978). Liden and Maslyn (1998) used item analysis to develop the draft of the instrument with 302 students. They constructed the criterion-related validation with 249 employees representing two organizations. The finalized instrument has four dimensions and 12 items. They are: mutual affections, loyalty, contribution to work activities, and professional respect. The instrument uses a 5-point Likert Scale ranging from strongly disagree to strongly agree.
The reliability coefficient alphas were .90, .78, .60, and .92 for sub-dimensions of this instrument, respectively (Liden & Maslyn, 1998).

**The Perceived Trustworthiness Survey**

The Perceived Trustworthiness Survey was used to measure nurses’ perceived trustworthiness toward their managers and organization. The survey was modified by the researcher from the Alaska Managerial Trust Survey (Smith, 2005). The Alaska Managerial Trust Survey is a tool that has been used to measure employee perceived trustworthiness toward their supervisors. The survey consists of two subscales: interpersonal trust toward the immediate supervisor and organizational trust toward the unit. The first part of the Alaska Managerial Trust Survey with an intention to measure interpersonal trust was developed based on McAllister’s trust scale (McAllister, 1995). The second part of the Alaska Managerial Trust Survey with an intention to measure organizational trust was adapted from the works of Albrecht and Travaglione (2003), and Costigan, Ilter, and Berman (1998). McAllister’s trust scale has been translated into Chinese and tested among architects in Mainland China (Ding & Ng, 2007). Reliability was relatively high (> .8 for Cronbach alpha) and validity was supported through the confirmatory factor analysis.

The Alaska Managerial Trust Survey has been used in the government settings and proven to be valid but there was no psychometric information available in the literature. As the tool has not been used in healthcare organizations, the reliability of the instrument was assessed before its actual use.
Demographic Data Form (Nurse Form and Nurse Manager Form)

A Demographic Data Form developed by the researcher was used to collect the data including nurses' and managers' characteristics such as age, years of experience, levels of education, position (defined as Permanent RNs and Contract RNs), as well as their professional titles (defined as Nurse /Competent Nurse /Charge Nurse /Associate Professor / Professor). It was also used to collect organizational data such as safety training information, patient safety policy information, and views regarding prioritization of patient safety.

Study Procedure

Preparing the Instruments

(1) Translation of the instruments used in this study. Before submitting materials for Institutional Review Board (IRB) review, the researcher was responsible for the translation of the English version of instruments into Chinese.

(2) Back translation of the instruments. A nursing expert who is familiar with the issue of patient safety and has proficiency in English was invited to back translate the Chinese version of instruments into English. Two versions of English instruments (the original one and the translated one) were compared and the items with variations were examined. Further translation efforts were demonstrated until the two versions of the instruments share similar meanings and wordings.

(3) Appropriate modification of the survey items. During translation, the Chinese version of the survey items were modified properly and translated meaningfully within the context of Chinese culture and the Chinese healthcare system.
(4) Focus group interview. A focus group cognitive interview was conducted to confirm a concept match. Three ICU nurses and three general medical surgical nurses were invited to participate. Instruments were reviewed item by item to see whether there was misconception or misunderstanding of the items within the context of Chinese culture, and to make sure the instruments measure what they intend to measure. Three items were reworded and modified based on the comments of the focus group interview.

Preparing the Survey Materials

(1) Preparation of survey materials. Each packet of survey materials included the relevant survey instruments (the nurse manager forms or the registered nurse forms), an invitation letter to the participants, and a return envelope. The completion and return of questionnaires indicated consent for the study.

Conducting Pilot Study

(1) Selecting nursing units for pilot. The researcher worked with the secretary of the Department of Nursing, WCHSU to code the unit name of all general medical-surgical nursing units as well as ICU in the computer. The researcher randomly selected one ICU and one medical-surgical unit from the computer generated unit lists for pilot testing of the instruments.

(2) Distributing the survey materials. The survey materials were distributed to the workplace address of the potential participants in the selected units. In order to increase the response rates, the following strategies were implemented during pilot study: (a) posted notices of the study in the public place of WCHSU; (b) designed an attractive cover page that highlights the importance of the study, the benefits of voluntary participation, information that ensured responses will be confidential, the time frame for
completion, and the location of the mailbox for returning the completed surveys; (c) distributed a thank-you card as a reminder to the potential participants one week after mailing the survey materials; and (d) set up the returned survey mailbox at a location convenient to study participants.

(3) Preliminary analysis of data and validation of instruments. Results from the pilot study were analyzed in terms of instrument validity and reliability. Cronbach’s alpha were calculated to determine the internal consistency of the instruments. A minimal of 0.7 of Cronbach’s alpha value was considered acceptable for the use of the instruments (Shadish, Cook, & Campbell, 2002).

Conducting the Main Study

(1) Selection of units and participants. All ICU managers and ICU RNs in seven units were recruited in the study. The researcher randomly selected seven out of the 35 general medical-surgical units of the hospitals using computer generated random tables; then enrolled all nurse managers and RNs of the selected medical-surgical units.

(2) Distribution of survey materials. Survey materials were distributed to the workplace address of the potential participants by the researcher. Dillman’s (2005) Total Design Method (TDM) was used to ensure the response rates. Prior to the study, a pre-notice posting of the study was placed in public places of WCHSU. The posting addressed the significance of the study, possible sponsorship, and support from the organization. Survey questionnaires and materials were designed with care to stimulate interest of the potential participants, as well as to ease the burden of reading and answering questions. The significance of the study and the ways that confidentiality will be maintained were adequately addressed in a cover letter. A return envelope was
included with the survey to facilitate ease of return. A large mailbox was set up securely in a public place at the administrative building of WCHSU to facilitate the return of the surveys. A thank-you card was distributed for follow-up to the potential participants one week after the original distribution.

**Plan for Data Analysis**

SPSS for Windows was used to analyze the data in this study. Outliers were checked for abnormal values. Subjects for whom 10% or more data is missing were not included in the analysis. For those participants with less than 10% missing data, mean substitution for each survey item was used to estimate the value of missing data. Although this method may mildly increase the likelihood of type I error (McLaughlin & Marascuilo, 1990), excluding subjects with small amounts of missing data may actually result in a bias of type II error. An alpha of .05 was used to test for significance.

For the question "what are the nurses' perceptions of hospital patient safety culture?" means, standard deviation, and a percentage were used for analysis. The rationale to choose these descriptive statistics is that the nurses’ perceived patient safety culture is considered the continuous variable in this study; means and standard deviation can best describe its central tendency and the degree of dispersal (Thompson, 2006).

For the research question "What are the factors associated with the nurses' perceptions of the hospital patient safety culture?" Pearson’s r and multiple regression analysis were used. Pearson’s r method is best used to examine the association between two variables. Multiple regression analysis helps to determine how much of the variation of an outcome variable is due to the predictor variables (Thompson, 2006).
Independent samples t-tests were utilized to answer the question "are there any differences in nurses’ perceived patient safety culture between ICU and general medical surgical units.” Paired samples t-tests were used to answer the question “are there any differences in nurses’ perceived patient safety culture between nurse managers and registered nurses” (See table 3).

Table 3

*Data Analysis Plan*

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Test</th>
<th>Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3</td>
<td>Pearson’s r &amp; multiple regression analysis</td>
<td>Age, years of experience, levels of education, permanent vs. contract position, professional titles</td>
</tr>
<tr>
<td>4</td>
<td>Independent samples t-tests</td>
<td>PSC differences between ICU and general units</td>
</tr>
<tr>
<td>5</td>
<td>Paired samples t-tests</td>
<td>PSC differences between managers and RNs</td>
</tr>
</tbody>
</table>

*Human Subjects Protection*

*IRB Approval.*

Prior to the study, the researcher obtained approval from the Marquette University Institutional Review Board. At the same time, the researcher obtained written permission from the administrative personnel of the target hospital.

*Risks and Benefits*

Risks associated with this study include the possibility that participants may be uncomfortable answering certain questions that pertain to the hospital where they are employed or to their supervisor. If participants are uncomfortable answering any questions, they could skip those questions. Participants were assured that their responses
were anonymous and that their individual answers could not be linked to their name. Data will be presented in aggregate form; individual responses are not reported. The hospital where the research is being conducted supported the project.

Although there was no direct benefit to the research subjects for involvement in this project, it is however, hoped the study will not only benefit the nurses and patients of the study hospital, but future nursing care in China because the information collected from the participants are of great value in helping understanding the existing Chinese hospitals’ patient safety culture. Most importantly, the information contributes to developing strategies to change organizational patient safety culture in Chinese hospitals.

*Voluntary Participation*

Participation in this study is completely voluntary, and participants could choose to withdraw by not returning the survey materials. There was no penalty for refusing to complete the surveys.

*Confidentiality*

Strict confidentiality was maintained through the following methods: surveys were coded by study number; only the principal investigator was able to access the questionnaires; a password was used to access the electronic survey data; questionnaires were locked in a secured drawer. Final results are reported as aggregate data rather than individual data.

*Consent*

Participants were informed in cover letter about the purpose, method, potential risks and benefits of this study. Participants’ completion of and return of the surveys to the mailbox was indicative of consent.
Limitations

(1) The proposed study was a cross-sectional design. It is not possible to establish a causal relationship between the independent variables and hospital patient safety culture based on the observational data collected at one point in time.

(2) The proposed study was conducted in one tertiary teaching hospital. Results may not be generalizable to other Chinese healthcare organizations.

(3) The unit or organizational patient safety culture may be the result of multidisciplinary efforts. The study is limited to the nurse population and may not adequately reflect the entire picture of patient safety culture in an organization.

(4) Instrument issues: Some of the instruments used in this study including the Hospital Survey on Patient Safety Culture and Leader Member Exchange Survey do not possess the desired reliability coefficient alpha value in selected subscales (e.g., less than .70); the lack of internal consistency may cause a measurement error. Moreover, errors may occur because the majority of the instruments in this study are self-administered questionnaires.

(5) Potential translation problems: The English versions of the instruments in this study were translated into Chinese. There may be problems with misunderstanding or misinterpretation.

(6) Cultural differences: The overall culture in China may affect results of the study. Nurses in China may respond to the survey differently compared to the nurses in the US or other countries.

(7) Diffusion: The unit used for the pilot study was in close proximity to other units so diffusion may have occurred.
To summarize, the study aimed to understand factors that are associated with nurses' perceptions of patient safety culture in one Chinese university hospital. Three sets of factors were identified which may be possibly related to the patient safety culture based on the literature review: nurses' characteristics, managers' characteristics, and organizational characteristics. A cross-sectional survey study was designed to collect data from nursing managers and RNs in ICU and general medical-surgical units of the university hospital. Five instruments were used: Hospital Survey of Patient Safety Culture, Managers' Safety Commitment Scale, Leader-Member Exchange Instrument, Perceived Trustworthiness Survey, and Demographic Data Form. Findings in this study would not only contribute to understanding the nurses' perceptions of patient safety culture, but also provide useful information regarding the health care environment in protecting patient safety in a Chinese university hospital setting.
REFERENCES


MANUSCRIPT ONE

FACTORS ASSOCIATED WITH NURSES' PERCEPTIONS
OF PATIENT SAFETY CULTURE IN ONE
UNIVERSITY HOSPITAL IN CHINA

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ABSTRACT
FACTORS ASSOCIATED WITH NURSES' PERCEPTIONS
OF PATIENT SAFETY CULTURE IN ONE
UNIVERSITY HOSPITAL IN CHINA

Xianqiong Feng, M.S.N.
Marquette University, 2009

Title: Factors associated with nurses' perceptions of patient safety culture in one university hospital in China

Aim: To describe nurses' perceptions of patient safety culture and associated factors in one Chinese university hospital.

Background: Patient safety has become an important issue in healthcare organizations. The impact of medical errors has been widely reported. The traditional blame and shame culture in healthcare organizations has been criticized for being largely responsible for causing medical errors and obstructing the possibility of learning from those errors. However, little is known about the Chinese nurses' perceptions of patient safety culture.

Design: The study used a quantitative research methodology with a cross-sectional survey design. A total of 248 nursing managers and registered nurses from seven intensive care units and seven medical-surgical units of a Chinese university hospital participated in this study. The data were collected in September and October of 2008.

Findings: Most (61.3%) nurses positively perceived the patient safety culture. Nurses responded most positively to two cultural dimensions: teamwork within units and organizational learning. Nurses responded most negatively to another two cultural dimensions: staffing and nonpunitive response to errors. Four factors that found to be associated with patient safety culture: nurses’ perceived trustworthiness of managers,
organizational safety prioritization, managers’ safety commitments, and nurses’ unit nursing experiences. There was a statistically significant difference between nursing managers and registered nurses in perceptions of patient safety culture.

**Conclusion:** Overall, most nurses had positive perceptions of the patient safety culture. Managers perceived patient safety culture more positively than staff nurses. Several factors were found to be closely associated with the patient safety culture, which has important management implications.

**Clinical Relevance:** In order to improve the patient safety culture, nurse managers should adopt multiple strategies and focus on factors associated with patient safety culture. Specifically, nurse managers should try to build trust with nurses, demonstrate safety commitment, and provide adequate resources necessary for patient safety.

**Keywords:** patient safety culture, nurses, perception, China
Introduction

Patient safety is an important concept in global health care. It is a core component of healthcare quality. Patient safety has been defined by several organizations as the freedom from accidental or preventable injuries produced by medical care (Agency for Healthcare Research and Quality [AHRQ], 2008; Institute of Medicine [IOM], 1999). According to a World Health Organization (WHO) report, one out of every 10 hospital patients in many developed countries experiences an adverse event which can lead to serious injury and death. The situation in developing countries is even worse (WHO, 2005). Medical errors have posed a great challenge to patient safety. The traditional blame and shame culture in healthcare organizations has been criticized for obstructing the possibility of learning from errors and hence being largely responsible for causing medical errors. Transformation of healthcare culture has been suggested as a necessary strategy in order to build a safer healthcare environment (IOM, 1999).

In China, there is scant nursing literature systematically studying and analyzing medical errors, and less is known about the Chinese nurses’ perceptions of patient safety culture. The purposes of this study were to understand those perceptions and to explore the factors associated with them.

Background

Patient Safety Culture

Patient safety culture is a relatively new concept in healthcare organizations. Several key features of safety cultures have been identified as applicable to health care organizations based on the studies of high reliability organizations such as nuclear power
industry and naval aviation (AHRQ, 2008). These key features include: (1) a system view: management recognizes risk is inherent in an organization's activities, and analyzes and deals with risks and errors systematically; (2) a blame-free and forgiveness environment: individuals are willing to report errors or near misses without a fear of punishment; (3) a collaborative environment: individuals and work groups or units collaborate effectively to accomplish goals of an organization; (4) adequate safety resources: organizations are willing to provide adequate resources for addressing safety concerns (Pizzi, Goldfarb, & Nash, 2001).

**Factors associated with patient safety culture**

Three sets of factors have been identified as being associated with perceptions of safety culture in the literature: nurses' personal characteristics, nursing managers' characteristics, and the organizational characteristics (Boyle, 2004; Hughes & Clancy, 2005; Kim, et al., 2007). It is assumed that the measurement of perceptions of safety culture would reveal the actual safety culture (Clarke, 1999).

Nurses' personal characteristics such as age, levels of experience, and levels of education are related to their perceptions of safety culture. This has been supported by Kim and colleagues (2007), who found that nurses in their forties evaluated their working culture more positively than did those in their twenties and thirties. Nurses who had worked for 1 to 5 years reported the worst perception of the safety culture (Kim, et al., 2007).

Evidence has also shown that managers' characteristics such as managers' safety commitment, leader-member exchange, and the perceived trustworthiness of the leaders are related to the safety culture (Boyle, 2004; Burns, Mearns, & McGeorge, 2006; Gerras,
Managers' safety commitment was found to be a significant determinant of employees' perceptions of safety (Flin & Yule, 2004; O'Toole, 2002; Zohar, 2002). Experts believe managers' safety commitment has both direct and indirect effects on workers' behaviors related to safety culture (Flin & Yule, 2004). The indirect effects relate to the establishment and reinforcement of values and norms relating to routine safe practices and procedures, thus creating a particular safety culture. The direct effects are the manager's modeling of safe and unsafe behaviors and their attitudes and strategies used in dealing with the unsafe behaviors. Leader-Member Exchange (LMX) focuses on the "quality of relationships between managers and subordinates" (Dansereau, Garen, & Haga, 1975, p.49). Studies suggest that high quality LMX relationships are associated with the open communication of non-routine problems, strong citizenship behavior, joint decision making, strong organizational commitment, and minimal power distance between leader and subordinates (Liden, Sparrowe, & Wayne, 1997; Hofmann & Morgeson, 1999). Trust has also been proven to be associated with perception of safety culture. Studies have revealed that high manager trustworthiness in the organization facilitates open communication of safety concerns (Conchie, Donald, & Taylor, 2006). Trust is believed to influence an organization's safety through a process of psychological safety. The presence of trust serves to communicate to employees they can report safety concerns without being punished by management and co-workers. The absence of trust removes this sense of security and consequently hinders open communication (Conchie, Donald, & Taylor, 2006; Cox, Jones, & Collinson, 2006).

Organizational characteristics have also been shown to be related to safety culture. One important factor is the staffing levels which have been frequently defined as
the nurse/patient ratio and the skill mix of RN/LPN/Unlicensed Assistive Personnel (UAP). In a cross-national study conducted by Aiken, Clarke, and Sloane (2002), nurse staffing was directly related to nurse-assessed quality of care. In China, the unit nursing team consists of two types of nurses: permanent RNs and contract RNs. Permanent RNs hold permanent positions, while the contract RNs generally hold the temporary or short-term contracts. The skill mix of permanent RNs and contract RNs and the nurse/patient ratio were used as the index of staffing level to explore the associations with the patient safety culture.

Organizational safety training has been identified as another important factor that is associated with safety culture (Lund & Aaro, 2004; Roughton & Mercurio, 2002). Safety training is recommended during orientation programs, as well as on a regular annual basis (Roughton & Mercurio, 2002). This allows staff to learn proper safety techniques and have a formal review of knowledge concerning patient safety, as well as review the adequacy of routine safety practices.

Hospital safety policies have also been recognized as a key in affecting the organizational and unit patient safety culture. An explicit, clear safety policy with a blameless error reporting strategy contributes to developing a positive safety culture (Krause & Weekley, 2005).

Prioritization of hospital patient safety is also related to the safety culture. Several areas frequently addressed in studies include whether the organization has clear and explicit patient safety goals and objectives, whether top management has strategic plans and initiatives for patient safety in place, and if the organization has the resources available to support patient safety (Roughton & Mercurio, 2002).
The literature on patient safety culture comes from predominantly the western countries. Evidence from China is severely limited. Moreover, patient safety in China concentrates more on medical errors related to lawsuits, neglecting the broad meaning of the concept which is associated with avoiding needless patient deaths. Identifying factors associated with the patient safety culture in China will add to the body of knowledge on patient safety and has the potential to change the culture of safety among health care organizations.

The study

Aims

The aims of the study were to examine nurses' perceptions of patient safety culture in one Chinese university hospital and to explore the factors that are associated with perceptions. The research questions of the current study are:

1. What are the nurses’ perceptions of hospital patient safety culture in a university hospital in China?

2. What factors are associated with those perceptions?

3. Are there any differences in the nurses’ perceived patient safety culture between intensive care unit and general medical surgical unit nurses in a university hospital in China?

4. Are there any differences in the perceived patient safety culture between nursing managers and registered nurses in a university hospital in China?

Design

The study used a quantitative research methodology with a cross-sectional survey design.
Study setting

The study was conducted in a university tertiary teaching hospital in the
Southwestern part of China. The hospital is a government-run, not-for-profit general
hospital. The hospital has over 4,000 in-patient beds, more than 50 nursing units, and
over 2,300 nurses.

Participants

Convenience sampling was used in this study. Participants included nursing
managers and RNs from ICUs and general medical-surgical nursing units. First, all
nursing managers and RNs in seven ICU units were recruited because there are less ICU
units than general medical surgical nursing units. Then, a random selection of seven
general medical-surgical nursing units was conducted to match with seven ICUs. All
nurse mangers and RNs in those selected seven general units were recruited. The
recruitment criterion was that managers and RNs had been working at the current nursing
unit and position for at least 12 months. Survey distribution and response rates are
presented in Table 1. Among the valid 248 participants, 20 were nursing managers and
228 were registered nurses; 102 came from ICUs and 146 from general nursing units. The
high response rate in this study might be due to the strong collective culture in Chinese
society. It might be the result that the respondents had interests in this study because this
is the first study in safety culture in the study organization. Apart from these, the power
of the principal investigator (PI) might exert certain influences on the respondents
because PI was a nursing administrator of the study organization.
Table 1

Survey Distribution and Response Rates

|                | Participants | | Units | | Total |
|----------------|--------------|------------------|-------------------|-------|
|                | Managers     | Nurses           | ICU unit          | Med-Surgical unit |      |
| Survey distributed | 20           | 280              | 124               | 176              | 300   |
| Survey returned  | 20           | 232              | 105               | 147              | 252   |
| Survey excluded  | 0            | 4                | 3                 | 1                | 4     |
| Valid survey    | 20           | 228              | 102               | 146              | 248   |
| Response rate   | 100%         | 81.4%            | 82.2%             | 82.9%            | 82.7% |

Data collection

Data were collected in September and October 2008. Five instruments were used: Hospital Survey of Patient Safety Culture (AHRQ, 2004), Managers’ Safety Commitment Scale, Leader-Member Exchange Instrument (Liden & Maslyn, 1998), Perceived Trustworthiness Survey (adapted from Smith, 2005), and Demographic Data Form.

The Hospital Survey of Patient Safety Culture (HSPSC) was employed to measure nurses’ perceived patient safety culture in this study. HSPSC was developed under the sponsorship of the U.S. Agency for Healthcare Research and Quality (AHRQ). It contains 12 dimensions and 42 items (plus two independent questions on patient safety grade and number of events reported). Of 12 dimensions, 10 are safety culture dimensions, and two are outcome dimensions. The instrument uses a five-point Likert scale, ranging from strongly disagree to strongly agree (or always to never). The instrument has been pilot tested in 21 hospitals with large samples of hospital managers, physicians, and nurses. The validity of the instrument has been established with both exploratory and confirmatory factor analysis. Internal consistency reliabilities were also examined and Cronbach’s alpha coefficients ranged from .63 to .84 for each of the 10 safety culture dimensions (AHRQ, 2004). This instrument has also been translated and
used in Korea, and Cronbach's alpha coefficients ranged from .67 to .83 for the subscales (Kim, et al., 2007). The HSPSC has not been translated into Chinese previously.

The Managers’ Safety Commitment Scale developed by the researcher was used to measure managers’ safety commitment in this study. The instrument adopted a visual analog scale, in which a 100-mm vertical line was drawn with the numerical value from 0 to 10 placing at equal intervals near the line. Zero was placed at the bottom, meaning “no safety commitment” and 10 at the top, meaning “total safety commitment.”

The Leader-Member Exchange Instrument developed by Liden & Maslyn (1998) was employed to measure the quality of leader-member exchange in this study. The instrument contains four dimensions and 12 items. It used a five-point Likert scale ranging from strongly disagree to strongly agree. The reliability coefficient alphas were .90, .78, .60, and .92 for four sub-dimensions of the instrument (Liden & Maslyn, 1998).

The Perceived Trustworthiness Survey was used to measure nurses’ perceived trustworthiness toward their managers and organizations in this study. The survey was modified by the researcher from the Alaska Managerial Trust Survey (Smith, 2005), a tool that has been used to measure employee perceived trustworthiness toward their supervisors. Reliability data was not available for this scale but was measured in the current study.

The Demographic Data Form developed by the researcher was used to collect the data including nurses’ and managers’ characteristics such as age, years of experience, levels of education, position (defined as permanent RNs and contract RNs), as well as their professional titles (defined as Nurse /Competent Nurse /Charge Nurse /Associate
Professor / Professor). It was also used to collect organizational data such as safety training information, safety policy information, and views regarding prioritization of patient safety.

Before the study, the researcher translated all English version instruments into Chinese. The surveys were then translated back into English to ensure congruence with the original surveys by inviting a nursing expert who was familiar with the issues of patient safety and was proficient in English. Two versions of English instruments (the original and translated) were compared and the items with variations were examined. Further translation was done until the two versions of the instruments shared similar meanings and wording.

A focus group interview was conducted for the pilot study to confirm a conceptual match. Two ICU nurses and two general medical surgical nurses participated and reviewed the survey instruments item by item to see whether there were misconceptions or misunderstandings within the context of Chinese culture. Three items were modified based on their comments. The instruments were then pilot tested on one ICU and medical-surgical unit, respectively.

**Ethical considerations**

The study was approved initially by the Administrative Committee of the university hospital and was reviewed and approved by the Marquette University Institutional Review Board (IRB). The purpose and method of the study were explained in the cover letter of the survey packet. Participants’ completion of and return of the surveys was indicative of consent.
Data analysis

Data were analyzed using Statistical Package for the Social Sciences (SPSS) 16.0 for Windows (Norusis, 2008). Subjects for whom 10% or more data was missing were excluded from the analysis. For those participants with less than 10% missing data, mean substitution for each item were used to estimate the value of missing data.

Descriptive statistics were used to summarize the characteristics of the participants and the variable of patient safety culture. Pearson’s r and multiple regression analysis were conducted to explore the potential relationships between predictor variables with the nurses’ perceptions of patient safety culture. Independent sample t-tests were employed to examine the differences in nurses’ perceived patient safety culture between ICU and general medical surgical units. Paired sample t-tests were conducted to examine the differences in nurses’ perceived patient safety culture between managers and RNs.

Results

Reliability of the instruments

Reliability coefficients are summarized in Table 2.

Table 2

<table>
<thead>
<tr>
<th>Instruments</th>
<th>Reliability Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reliability Coefficients</td>
</tr>
<tr>
<td></td>
<td>Pilot study</td>
</tr>
<tr>
<td>Hospital Survey of Patient Safety Culture</td>
<td>.71</td>
</tr>
<tr>
<td>Managers’ Safety Commitment Scale</td>
<td>.88 (test-retest)</td>
</tr>
<tr>
<td>Leader-Member Exchange Instrument</td>
<td>.83</td>
</tr>
<tr>
<td>Perceived Trustworthiness Survey</td>
<td>.93</td>
</tr>
</tbody>
</table>
**Characteristics of the subjects**

The characteristics of the subjects are summarized in Table 3. The majority of the nurses in this study were between 20 and 30 years old (n= 182, 73.4%), with associate degrees/advanced certificates (n= 171, 69.0%), and with less than ten years nursing experience (n=185, 74.6%). Most were staff nurses (n=159, 64.0%) and contract nurses (n=177, 71.4%). Managers in this study were either nursing managers (n=9, 45.0%) or vice nursing managers (n=10, 50.0%), with management experience averaging between one and five years (n=11, 55.0%).

Table 3

**Characteristics of the Subjects**

<table>
<thead>
<tr>
<th>Variables</th>
<th>RN (N=228)</th>
<th>Manager (N=20)</th>
<th>Total (N=248)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
<td>P</td>
<td>f</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 20</td>
<td>2</td>
<td>.9</td>
<td>0</td>
</tr>
<tr>
<td>21-30</td>
<td>179</td>
<td>78.5</td>
<td>3</td>
</tr>
<tr>
<td>31-40</td>
<td>33</td>
<td>14.5</td>
<td>10</td>
</tr>
<tr>
<td>41-50</td>
<td>12</td>
<td>5.3</td>
<td>7</td>
</tr>
<tr>
<td>51-60</td>
<td>2</td>
<td>.9</td>
<td>0</td>
</tr>
<tr>
<td><strong>Level of Education</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diploma/certificate</td>
<td>15</td>
<td>6.6</td>
<td>0</td>
</tr>
<tr>
<td>Associate degree</td>
<td>166</td>
<td>72.8</td>
<td>5</td>
</tr>
<tr>
<td>BSN</td>
<td>45</td>
<td>19.7</td>
<td>14</td>
</tr>
<tr>
<td>MSN</td>
<td>2</td>
<td>.9</td>
<td>1</td>
</tr>
<tr>
<td><strong>Professional Title</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nurse</td>
<td>159</td>
<td>69.6</td>
<td>0</td>
</tr>
<tr>
<td>Competent Nurse</td>
<td>41</td>
<td>18.1</td>
<td>4</td>
</tr>
<tr>
<td>Charge Nurse</td>
<td>28</td>
<td>12.3</td>
<td>13</td>
</tr>
<tr>
<td>Associate Professor</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td><strong>Position</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permanent RNs</td>
<td>51</td>
<td>22.4</td>
<td>20</td>
</tr>
<tr>
<td>Contract RNs</td>
<td>177</td>
<td>77.6</td>
<td>0</td>
</tr>
<tr>
<td><strong>Year of experience in nursing</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-5</td>
<td>114</td>
<td>50.0</td>
<td>1</td>
</tr>
<tr>
<td>6-10</td>
<td>68</td>
<td>29.8</td>
<td>2</td>
</tr>
<tr>
<td>11-15</td>
<td>18</td>
<td>7.9</td>
<td>5</td>
</tr>
<tr>
<td>16-20</td>
<td>14</td>
<td>6.1</td>
<td>4</td>
</tr>
<tr>
<td>21-25</td>
<td>7</td>
<td>3.1</td>
<td>6</td>
</tr>
<tr>
<td>26-30</td>
<td>6</td>
<td>2.6</td>
<td>2</td>
</tr>
<tr>
<td>&gt;31</td>
<td>1</td>
<td>.4</td>
<td>0</td>
</tr>
<tr>
<td><strong>Year of nursing unit experience</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-5</td>
<td>133</td>
<td>58.3</td>
<td>4</td>
</tr>
<tr>
<td>6-10</td>
<td>58</td>
<td>25.4</td>
<td>4</td>
</tr>
<tr>
<td>11-15</td>
<td>16</td>
<td>7.0</td>
<td>4</td>
</tr>
<tr>
<td>16-20</td>
<td>13</td>
<td>5.7</td>
<td>3</td>
</tr>
<tr>
<td>21-25</td>
<td>4</td>
<td>1.8</td>
<td>5</td>
</tr>
<tr>
<td>26-30</td>
<td>4</td>
<td>1.8</td>
<td>0</td>
</tr>
<tr>
<td>Working Units</td>
<td>NonICU nurse</td>
<td>ICU nurse</td>
<td>134</td>
</tr>
<tr>
<td>---------------</td>
<td>--------------</td>
<td>-----------</td>
<td>-----</td>
</tr>
<tr>
<td>Contact patient</td>
<td>Yes</td>
<td>216</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>7</td>
<td>96.9</td>
</tr>
<tr>
<td>Management position</td>
<td>Vice manager</td>
<td>10</td>
<td>50.0</td>
</tr>
<tr>
<td></td>
<td>Manager</td>
<td>9</td>
<td>45.0</td>
</tr>
<tr>
<td></td>
<td>Supervisor</td>
<td>1</td>
<td>5.0</td>
</tr>
<tr>
<td>Year of management experience</td>
<td>1-5</td>
<td>11</td>
<td>55.0</td>
</tr>
<tr>
<td></td>
<td>6-10</td>
<td>3</td>
<td>15.0</td>
</tr>
<tr>
<td></td>
<td>11-15</td>
<td>6</td>
<td>30.0</td>
</tr>
<tr>
<td>Year of unit management experience</td>
<td>1-5</td>
<td>12</td>
<td>60.0</td>
</tr>
<tr>
<td></td>
<td>6-10</td>
<td>4</td>
<td>20.0</td>
</tr>
<tr>
<td></td>
<td>11-15</td>
<td>4</td>
<td>20.0</td>
</tr>
</tbody>
</table>

*Note:* f=Frequency; P=Percentage.

**Nurses’ perceived patient safety culture in China**

The percent positive and negative scores of nurses’ perceived patient safety culture were calculated. The percent positive response is the combined percentage of respondents who answered “Strongly Agree” or “Agree,” or “Always” or “Most of the Time” (negative items were reversely coded before the actual calculation). Accordingly, the percent negative response is the combined percentage of respondents who answered “Strongly Disagree” or “Disagree,” or “Never” or “Rarely.” The average percent positive response score for each cultural dimension was obtained by averaging the percent positive response on the items within that dimension.

A summary of the average percent positive and negative response for each cultural dimension of the HSPSC is presented in Table 4. Most (61.3%) nurses positively perceived patient safety culture in their organization. Nurses responded most positively to two dimensions. They were “teamwork within hospital units” and “organizational learning.” Nurses responded most negatively to another two dimensions. They were “staffing” (56.0%) and “nonpunitive response to error” (51.3%).
The majority of the respondents gave their work area or unit a safety grade of A- Excellent (n=7, 2.8%), half gave a grade of B-Very Good (n=137, 55.2%), and more than one-third gave the grade of C-Acceptable (n=96, 38.7%).

Most of the respondents (n=180, 72.6%) had reported no safety events over the past 12 months. Few (n=45, 18.2%) had reported one to two events. Only a few (n=23, 9.3%) had reported more than three events.

Table 4

Percent Positive and Negative Responses for Cultural Dimensions of HSPSC (N=248)

<table>
<thead>
<tr>
<th>Type of Response</th>
<th>Positive response</th>
<th>Negative response</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of item</td>
<td>%</td>
</tr>
<tr>
<td>Supervisor/manager expectations &amp; actions promoting safety</td>
<td>958</td>
<td>77.3</td>
</tr>
<tr>
<td>Organizational Learning</td>
<td>613</td>
<td>82.4</td>
</tr>
<tr>
<td>Teamwork within hospital units</td>
<td>881</td>
<td>88.8</td>
</tr>
<tr>
<td>Communication openness</td>
<td>291</td>
<td>39.1</td>
</tr>
<tr>
<td>Feedback and communication about error</td>
<td>354</td>
<td>47.6</td>
</tr>
<tr>
<td>Nonpunitive response to error</td>
<td>302</td>
<td>40.6</td>
</tr>
<tr>
<td>Staffing</td>
<td>357</td>
<td>36.0</td>
</tr>
<tr>
<td>Hospital management support for patient safety</td>
<td>537</td>
<td>72.2</td>
</tr>
<tr>
<td>Teamwork across hospital units</td>
<td>617</td>
<td>62.2</td>
</tr>
<tr>
<td>Hospital handoffs and transitions</td>
<td>661</td>
<td>66.6</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td>61.3</td>
</tr>
</tbody>
</table>

*Note.* The scale was a 5-point Likert scale. Neutral responses were not calculated.

**Factors associated with nurses’ perceived patient safety culture**

Three sets of factors were used to examine their relationships with nurses’ perceived patient safety culture including nurses’ characteristics, managers’ characteristics, and organizational characteristics. Stepwise multiple regression analysis was conducted. All potential predictor variables were applied to regress on the dependent variable—nurse perceived patient safety culture. Four factors were found to be
significantly related to patient safety culture: the perceived trustworthiness of managers, organizational safety prioritization, nurses’ unit experiences, and managers’ safety commitment. The four factors accounted for 61% of variance of the nurse perceived patient safety culture (see Table 5).

Table 5

Regression Analysis Result of Patient Safety Culture

<table>
<thead>
<tr>
<th>Variables</th>
<th>n</th>
<th>R</th>
<th>R square</th>
<th>Adjusted R square</th>
<th>Beta</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>14.03</td>
</tr>
<tr>
<td>Perceived trustworthiness</td>
<td>228</td>
<td>.75</td>
<td>.56</td>
<td>.56</td>
<td>.63</td>
<td>12.80</td>
<td>.000</td>
</tr>
<tr>
<td>Safety priority</td>
<td>248</td>
<td>.77</td>
<td>.60</td>
<td>.59</td>
<td>.18</td>
<td>4.02</td>
<td>.000</td>
</tr>
<tr>
<td>Unit experience</td>
<td>248</td>
<td>.78</td>
<td>.61</td>
<td>.60</td>
<td>-.12</td>
<td>-2.89</td>
<td>.004</td>
</tr>
<tr>
<td>Managers’ safety commitment</td>
<td>248</td>
<td>.79</td>
<td>.62</td>
<td>.61</td>
<td>.11</td>
<td>2.29</td>
<td>.023</td>
</tr>
</tbody>
</table>

Comparison of patient safety culture scores between ICU and med-surgical nurses

Independent samples t-tests were conducted to examine the differences between perceived patient safety culture scores of ICU and medical-surgical nurses. The result showed that there was no statistically significant differences between the two groups (t = -.98, p > .05).

Comparison of patient safety culture scores between nursing managers and RNs

Paired samples t-tests were used to examine the differences between perceived patient safety culture scores of nurse managers and RNs. There was a statistically significant difference between the two groups. Nurses scored lower than managers on the patient safety culture (t = -4.29, p < .001, see Table 6).
Table 6

Comparison of HSPSC Scores between Nursing Managers and RNs

<table>
<thead>
<tr>
<th>Paired variables</th>
<th>Mean difference</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurses’ score on HSPSC</td>
<td>-.295</td>
<td>.26</td>
<td>-4.29</td>
<td>13</td>
<td>.001</td>
</tr>
<tr>
<td>Managers’ score on HSPSC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Discussion

*Nurses’ perceived patient safety culture in China*

Study findings revealed that 61.3% of nurses perceived patient safety culture positively in their organization. This result is comparable to the findings of Singer and her colleagues at 15 California hospitals. They found that the overall percentage of positive response of patient safety culture was 64% (Singer, et al., 2003). The result might have indicated that hospital management values the patient safety problems at certain degree. It might have reflected that nursing managers and frontline nurses in the study organization recognize the importance of patient safety and have taken some steps to ensure the patient safety. However, managers may not be highly satisfied with this result since they might have higher expectations for the patient safety on their unit.

**Areas of strength:** Two cultural dimensions—teamwork within hospital units and organizational learning—received high positive responses suggesting that these are the areas of strength. High scores in nurses’ perception of teamwork within units might have reflected the evidence of effective team collaboration in the study organization. It might also be the result of the collective culture influence in China. High scores in organizational learning might have been the result of the university environment
providing organizational learning skills. Another explanation might be hospital management highly valuing the nurses’ continued education. The highest positive response rate of teamwork within units is congruent with the AHRQ (2008) database report. AHRQ established the Hospital Survey on Patient Safety Culture Comparative Database to address the needs of many hospitals interested in comparing their results to other hospitals. The first database report was released in 2007. The 2008 database report includes data from 519 US hospitals and 160,176 respondents (AHRQ, 2008).

**Areas for improvement:** Two cultural dimensions—nonpunitive response to error and staffing—garnered high negative responses which indicate that these are areas for improvement. These results suggest that a nonpunitive environment has not yet been established in the study hospital. Nurses are afraid to report errors and fear punishments for making errors. These results are consistent with the AHRQ (2008) report which showed the cultural dimension of nonpunitive response to error received the highest percent negative response.

Findings reveal that nurse staffing is a problem in the study organization. This may be caused by several factors. First, the hospital has experienced a nursing shortage. In China, the numbers of nurses required in hospitals are calculated primarily based on nurse-patient ratio. The ratio of 1:4 (1 nurse: 4 patient beds) in general medical-surgical nursing unit is a gold standard mandated by the Chinese Ministry of Health (Cheng, 2006). However, this standard was established 30 years ago based on nursing management experience (Cheng, 2006). Obviously, this single nurse staffing principle makes it difficult to adequately calculate and predict the number of nurses needed.
Second, the rapid expansion of hospital in-patient beds has aggravated the nursing shortage and changed some of the characteristics of nursing team such as the seniority of the team. The organization has undergone a remarkable expansion during the past decade. Hospital in-patient beds have expanded from 1,200 to 4,000. The rapid expansion created many positions for RNs, however most were new graduate nurses. This has lead to the relatively young and less experienced nursing team for the entire organization. In the current study, most nurses (73.4%) were between 20 and 30 years old and most had less than ten years of nursing experience (74.6%).

Third, the increased use of contract RNs versus permanent RNs has further changed some characteristics of the nursing team. In China, the unit nursing team consists of two types of nurses: permanent RNs and contract RNs. Permanent RNs hold permanent positions and are more competent and senior in general, while the contract RNs generally hold the temporary or short-term contracts and are junior in career. In this study, the contract RNs accounted for more than 70% of the total respondents. The increased proportion of contract RNs further reduces the seniority of the nursing team. Although there is no empirical evidence to support that the increased proportion of contract RNs would compromise nursing quality, it is not irrational to hypothesize that the increased proportion of contract RNs are associated with the decreased loyalty and organizational ownership behaviors, which could potentially affect the quality of nursing care and patient outcomes.

In this study, few nurses (27.5%) reported safety events over the past 12 months. It is likely that this percentage represents under-reporting of safety events and is identified as another area for future improvement. In the similar studies as reported by
AHRQ (2008), an average of 48% respondents reported the safety events in their hospitals over the past 12 months. Two possible reasons might contribute to this low safety events reporting rate in the study organization. First, saving face is important in Chinese culture. The person who commits an error may seriously "lose face" (Chiang & Pepper, 2006). Second, there is a possible influence of the traditional blame and shame culture in the study organization. Nurses choose not to report in order to avoid being punished by management and being jeered by peers.

The current study revealed that managers perceive a more positive patient safety culture than staff nurses. This result is congruent with several previous studies (Kim, et al., 2007; Singer, et al., 2008; Singer, et al., 2003). Possible reasons for this phenomenon have been explained by Singer and colleagues (2008) as: (1) managers have less opportunity to witness the safety hazards which is commonly existed in frontline situations; and (2) managers fail to communicate the organizational safety initiatives, policies, and expectations to the frontline staff. One other plausible explanation would be the lack of a reporting culture or the mechanism to encourage reporting (safety hazards and medical errors).

Factors associated with nurses' perceived patient safety culture

This study revealed four factors that were significantly associated with nurses' perception of positive patient safety culture: the perceived trustworthiness of managers, organizational safety prioritization, nurse's unit experience, and manager's safety commitment.

The perceived trustworthiness of managers and organizations was found to be related with patient safety culture. This finding is understandable because trust is a highly
acknowledged concept in Chinese society. In a study conducted by Cai, Li, and Li (2006) with Chinese nurses, researchers found that nursing managers were afraid of losing trust of their subordinates and nurses were fearful of losing trust of their managers. The major reason nurses were unwilling to report errors were concerns about losing trust of their managers and peers (Cai, Li, & Li, 2006). The finding is also consistent with some studies in Western societies, where researchers found that high manager trustworthiness facilitates open safety communication (Conchie, Donald, & Taylor, 2006; Cox, Jones, & Collinson, 2006).

Organizational safety prioritization was another factor found to be positively associated with patient safety culture. The concept measured nurses’ perceptions about the organizational safety goals, objectives, safety strategies, initiatives, as well as safety resources. The presence of hospital safety goals and objectives would communicate to staff that the top management values the patient safety and has set the targets for hospital patient safety. Implementation of initiatives put patient safety strategies into action. The presence of adequate safety resources also signals nurses that the hospital management is willing to provide tangible support necessary for patient safety (Roughton & Mercurio, 2002).

Nurses’ unit experience was found to be negatively related to patient safety culture. The longer the nurse’s unit experience, the lower the perception of patient safety culture. This may be explained because the more experienced nurses are more likely to find safety hazards in their work situations (Bobay, 2004). It is also possible that the more experienced nurses feel more comfortable in more accurately reflecting their true perceptions because they may feel more protected in their positions.
Managers’ safety commitment was also found to be positively related to patient safety culture. There are at least two possible explanations for this result. First, nursing manager’ safety commitment signals the staff that he or she values the patient safety which further encourage employees’ safety commitments. Second, nursing managers consciously establish and reinforce the norms and attitudes relating to safety practices which could engender a positive perception of patient safety culture.

**Study limitations**

The study used a cross-sectional design, so it is not possible to establish causal relationships between the independent variables and hospital patient safety culture based on observational data collected at one point in time. In addition, the unit or organizational patient safety culture may be the result of multidisciplinary efforts. This study was limited to the nurse population and may not adequately reflect the entire picture of patient safety culture in an organization. Furthermore, the current study was conducted in one Chinese university teaching hospital, study findings may not be generalizable to other Chinese hospitals or nurses. Lastly, the instruments used in this study were self-administered questionnaires, which may be influenced by a number of factors such as defensiveness, personal emotions, self-selection bias, and individual attitudes.

**Implications**

Findings from this study have significant implications for the future nursing research, education, and practice.

**Nursing Research**

Although organizational culture factors have become the research focuses in the last one or two decades in western society, the study of patient safety culture has just
begun in Chinese hospital settings. The findings in the current study have many research implications. First, four factors have been shown to be significantly associated with patient safety culture. This finding has not been established in other studies in the nursing literature. Thus, future nursing research should further explore these specific results with a larger sample of nurses in both Eastern and Western societies.

Second, the proportion of nurses who have reported error events in the past 12 months in the current study is lower as compared to the findings in the US as reported by AHRQ (2008). This result needs to be further explored in other Chinese hospitals before any tentative conclusion can be drawn in order to avoid measurement biases.

Third, the managers in this study have perceived a more positive patient safety culture than the RNs. This variation may have practical implications because managers are in the positions to make most of the decisions. The decisions may not be appropriate if managers have false positive perceptions about patient safety culture. So, it is necessary for nursing researchers to further examine this discrepancy and to explore the ways that contribute to the discrepancy in Chinese hospital settings.

Lastly, the study findings also offer possible interventions for future research on patient safety culture. Possible interventions derived from the current study include the enhanced manager’s safety commitment and enhanced leader-member trust. Implementing these strategies as interventions to change patient safety culture might be a future direction for nursing research.

**Nursing Education**

The study provides important information both for primary nursing education as well as nurses’ continuing education. Information can be incorporated in undergraduate
and graduate education with related topics such as quality improvement, patient safety, and organizational culture. Content should address the impacts of medical errors, the importance of establishing organizational or unit safety culture, and the strategies to build safety culture.

Based on the findings that there is a comparably low error reporting in the study hospital, it is necessary to establish an appropriate organizational error reporting policy. More importantly, it is imperative to educate nurses that reporting errors is not shameful, organizations need to learn from the errors to build a safer health care system.

As the findings show that managers perceive a more positive patient safety culture in the study hospital, it is also necessary to provide training for nursing managers. Possible suggestions should be given to managers. For example, managers should be advised to spend time visiting the front line situations, to meet with staff regularly, and to create appropriate channels for staff to voice safety concerns.

*Nursing Practice*

The implications for nursing practice are of even more importance. The findings in this study provide important baseline information about Chinese nurses’ perceptions of patient safety culture. Although data were collected only in one Chinese university hospital, and the results may not adequately represent the actual situations of other Chinese hospitals, the study generated some meaningful information to understand patient safety culture under Chinese health care settings.

The findings of this study can be translated for clinical use. To build a more positive hospital patient safety culture, nursing managers might consider the following strategies: (1) create a nonpunitive environment and forgiveness culture; (2) establish a
reporting culture; (3) hire adequate staff; (4) involve senior managers in the safety culture process; and (5) build trust and high quality LMX with subordinates.

Conclusion

Patient safety is a core value of healthcare quality. A positive patient safety culture contributes to the environment necessary to maintain patient safety and avoid needless patient deaths. By understanding the factors associated with nurses’ perceptions of patient safety culture, nurse managers and nurses can work together to build a safer healthcare environment for patients.

Acknowledgements

We would like to thank all nurse managers and nurses from West China Hospital, Sichuan University of China, who participated in this study; Professor Yijuan Cheng, Hospital Chief Nursing Executive Officer, for her administrative support; and Dr. Mingan Yang, from Marquette University College of Nursing, for his statistical support.
Clinical Resources


References


MANUSCRIPT TWO: PUBLISHED ARTICLE

PATIENT SAFETY CULTURE IN NURSING: A DIMENSIONAL CONCEPT ANALYSIS

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Abstract

Aim. This paper is a report of a dimensional concept analysis of patient safety culture in nursing.

Background. Patient safety is an important issue in healthcare organizations. Since the release of Institute of Medicine reports in the United States of America, substantial interest has arisen in studying patient safety culture; however, the concept remains poorly defined.

Data Sources. Multiple databases, including CINAHL, MEDLINE, PsycINFO, and Anthropological Index Online, were searched from 1970 to 2006. A keyword search method was employed followed by a combined key word search.

Review Methods. A concept analysis based on Caron and Bowers’ method was carried out using 45 papers, 3 books, and 3 theses after examination of the abstracts to identify definitions, dimensions, perspectives, and consequences needed for content and dimensional analyses.

Findings. Nurses’ shared values, beliefs and behavioral norms towards patient safety were identified as the overarching dimensions of the patient safety culture. The four sub-dimensions of patient safety culture were synthesized as system, personal, task-associated, and interaction. Two main philosophical perspectives, functional and interpretative, were added to the analysis and further clarification was provided.

Conclusion. It is expected that understanding the nature, as well as the key elements of the concept, would assist with analyzing the existing safety culture and help to determine the strategies to build or shape the safety culture.
**Keywords:** concept analysis, culture, patient safety, dimensional analysis, values, beliefs, nursing

**SUMMARY**

**What is already known about this topic**

- Patient safety is an important issue in healthcare organizations
- Organizational culture has an important effect on patient safety
- Little is known about what factors influence the development of a patient safety culture.

**What this paper adds**

- Patient safety culture in nursing is defined as the product of nurses' shared values and beliefs toward patient safety.
- There are four sub-dimensions of patient safety culture: system, personal, task-associated, and interaction.
- A patient safety culture theory which can be used in research.
INTRODUCTION

Patient safety is an important issue in global healthcare organizations. The impact of medical errors has been widely reported and discussed. In the United States of America (USA), the report of the Institute of Medicine (IOM 2000) “To Err Is Human” has heightened public concerns about medical errors. Medical errors during the course of patient care are estimated to have caused approximately 238,337 potentially preventable deaths among Medicare patients (Medicare is a government insurance scheme for people older than 65 years of age in the USA) between 2004 and 2006 in the USA (Health Grades, 2008) and up to 24,000 deaths yearly in Canada (Canadian Institute for Health Information, 2004). The most common cause of adverse patient events in health care is medication errors (Leape et al. 2000), and the total cost to the US Medicare programme as a result of patient injury from errors has been estimated as roughly 8.8 billion dollars between 2004 and 2006 (Health Grades, 2008) (1 US$ = 0.64 Euros = £0.51 sterling).

BACKGROUND

Culture

Culture is a multi-layered concept derived originally from the anthropological context (Smircich 1983, Schein 1985, Hewison 1996). Hewison (1996) argued that culture is a term which can be used to refer to almost any situation. Wright (1994) contended that when the term culture is applied to the context of organization, it is generally used in four ways: (1) to refer to the problems of managing companies with production processes or service outlets in a number of countries each with a different national culture; (2) when management is trying to integrate people with different
ethnicities into a workforce; (3) the identity informal concepts, attitudes and values of a workforce; and (4) to refer to the formal organizational values and practices imposed by management as a “glue” to hold the workforce together and to make it responsive to change. Applications of (3) and (4) are those most commonly used in the context of health care (Hewison 1996).

**Safety culture**

Safety culture first appeared in a report on the Chernobyl nuclear power station disaster in the USSR which was prepared by the International Nuclear Safety Advisory Group (1988). The concept has since gained worldwide recognition in several industries, especially high-risk industries such as nuclear power and aviation. The key feature of the safety culture is “shared perceptions among managers and staff concerning the importance of safety” (Clarke 1999, p.185). Developing “positive safety culture” has been stated as a means of reducing the potential for larger-scale disasters, and accidents associated with routine tasks (Clarke 1999, Cooper 2000).

When safety culture is applied to health care it has even more importance, as safety applies not only to the workforce but also to the patients who may be injured by the actions of staff (Flin & Yale 2003). The traditional “blame and shame” patient safety culture in healthcare organizations has been criticized as obstructing the possibility of “learning from the errors” and being responsible largely for causing medical errors. There is a growing recognition of the necessity to transform healthcare organizational culture (Hewison 1996, IOM 2000, 2001, Hemman 2002, IOM 2004).

Many safety experts believe that there is an association between culture factors and safety outcomes, and that changing the culture of patient safety should improve patient
outcomes (Clarke, 2006; Krumberger, 2001; Mustard, 2002). The creation and maintenance of culture of safety has been identified as one of the four major recommendations of the IOM’s panel on transforming work environments for nurses to promote safety (IOM, 2000). Contemporary writing in nursing and other disciplines indicate that the term “patient safety culture” is a relatively new and potentially very valuable concept. However, its definition is not yet well-developed and thus needs further explication and clarification.

THE STUDY

Aim

The aim of the study was to carry out analysis of the concept of safety culture in nursing.

The specific questions proposed for analysis were: (1) What is the nature of the “patient safety culture” or “safety culture?” (2) What are the dimensions of the patient safety culture? (3) What is the perspective reflected in each study?

Data Sources

Multiple databases, including CINAHL, MEDLINE, PsycINFO, and Anthropological Index Online, were searched with the key words “patient safety culture” and “safety culture”. Surrogate terms including “patient safety climate,” “cultural safety care,” “safety climate,” “patient safety,” “patient and/or family-centered nursing” were also searched with the above databases. The search covered the period from 1970 to 2006.

Search results

Over 1,000 papers were identified. To limit the scope, main and surrogate terms were combined with the terms “health” and “nursing” (e.g. “patient safety culture and
health” and “patient safety culture and nursing”) to refine the search and more than 100 articles were found. After examination of abstracts to identify definitions, dimensions, perspectives, and consequences needed for content and dimensional analyses, a total of 45 papers, 3 books and 3 theses were selected. Papers were excluded if they merely addressed the safety issues, quality improvement, risk management, and patient or family-centered nursing without any linkage to safety (or organizational) culture/climate. Among those 45 journal papers, 13 described the organizational safety culture, and 32 were associated with safety issues in health or health-related settings. It was also interesting to find that the related literature was limited before 1970s, increased in 1980s, and rapidly increased since the 1990s. This may reflect the fact that patient safety culture has more value in contemporary health care.

Data analysis

The concept of patient safety culture in nursing was examined using the Caron and Bowers’ (2000) dimensional analysis approach. This is an evolitional method of concept analysis which emphasizes the temporal and interactive nature of concepts. It focuses on the illustration of how a concept comprises varying perspectives and social constructs. Caron and Bowers (2000) suggest that dimensional analysis is to be used when the goal is to “understand the conceptual nature and evolution of concepts, and the fluidity of concepts across perspectives and contexts” (p.291).

FINDINGS

Nature of the patient safety culture

There were 14 articles about the concept of safety culture (Deal & Kennedy 1982, Locke & Latham 1990, Hewison 1996, Cooper 2000, Glendon & Stanton 2000, Hemman

Based on Reason and Hobbs (2003), safety culture forms a subset of organizational culture relating specifically to the values and beliefs concerning health and safety within an organization. It reflects the ability of individuals or organizations to deal with risks and hazards so as to avoid damage or losses and achieve their goals (Reason & Hobbs 2003). The most commonly used and widely influential definition of safety culture is proposed by the British Health and Safety Commission (HSC) as: “the product of individual and group values, attitude, competencies, and patterns of behavior that determine the commitment to, and the style and proficiency of, an organization’s health and safety programs. 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 measure” (HSC 1993, p.23). This definition reflects the prevailing view of safety culture as a “product” of organizational members’ values and beliefs. This can help to clarify what a safety culture might look like in an organization and to determine the strategies to develop such “product,” as well as provide outcome measures to assess the degree to which organizations might or might not possess a “good” safety culture. Safety culture belongs to a group of people. It is “the way we do things around here” (Deal & Kennedy 1982, p.4). As Locke and Latham
(1990) claim, it is the observable degree of effort with which all members in the organization direct their attention and actions towards improving safety on a daily basis. Here “effort” refers to the interaction between intensity and persistence of energy expenditure; that is, how much energy a person expends to improve safety, and for how long this is done in the face of obstacles. It is evident that what constitutes measures of “effort” could differ across organizations and across individual units. Nonetheless, the degree to which members consistently confront others about their unsafe acts, and the degree to which members report unsafe conditions, the speed with which members implement safety actions, and the degree to which members give priority to safety are all observable examples of members directing their efforts to improve safety.

There is a consensus that patient safety culture is a subset of organizational culture relating specifically to the values and beliefs concerning patient safety, despite great differences in definitions in nursing literature. Mustard (2002) defined the patient safety culture as “a product of social learning; ways of thinking and behaving that are shared and that work to meet the primary objective of patient safety (p.112)”. Other scholars refer to patient safety culture as an environment that encourages data collection and reporting, reducing blame, and getting leadership involved or focusing on system (Krumberger 2001, Piotrowski & Hinshaw 2002, Wong et al. 2002). The American Operative Nursing Guidance Statement identifies five subcultures within patient-centered safety culture: “reporting, flexible, just, learning, and wary” (Association of Operating Room Nurses (AORN) 2006, p.936).
Dimensions of patient safety culture

Of 12 papers discussing the dimension of safety culture, eight addressed dimensions of the patient safety culture (Jones & Redman 2000, Hemman 2002, Mustard 2002, Dennison 2005, Milstead 2005, AORN 2006, Kalisch & Aebersold 2006, Scott-Cawiezell et al. 2006). The overarching dimension of the patient safety culture in nursing literature is nurses’ shared values, beliefs, and behavioral norms towards patient safety (Jones & Redman 2000, Hemman 2002, Mustard 2002, Kalisch & Aebersold 2006). As in organizational culture, safety norms, values, and beliefs form the foundation of the patient safety culture (Clarke 1999, Cooper 2000, Glendon & Stanton 2000, Parker et al. 2006). Linkow (1989) differentiates beliefs from values in that beliefs are assumptions about what is true, whereas values are assumptions about what is worthwhile or desirable. Safety values comprise the things that are most important to us and thus affect the safety behavior of nurses. Safety norms as the expression of values and beliefs focus on those unwritten rules that guide nurses’ safety behaviors, and they convey a sense of identity to the nurses: this is who we are and this is how we do things. These safety behaviors become unique to each unit or group and form the group’s cultural pattern, which may differ from each department or nursing unit to the medical organization as a whole. These safety behaviors or norms then become integrated into the overall culture as change occurs via the organization or nursing unit or individual, such as with the introduction of new staff.

Sub-dimensions of patient safety culture

Although patient safety culture is based on safety values, it manifests itself in the behavior of both nurse managers and nurses and is determined by multiple sub-
Dimensions (Schein 1985, Hewison 1996, Reason 1997, Callahan & Ruchlin 2003, Reason & Hobbs 2003, Kruger et al. 2006). In the present study, four sub-dimensions were synthesized in order to illustrate their relationships better. They were identified as the system sub-dimension, the personal sub-dimension, the task-associated sub-dimension, and the interactive sub-dimension. These sub-dimensions are reciprocally interactive and form the key to patient safety culture (see Figure 1).

Figure 1. Diagram of the patient safety culture.
**System Sub-dimension**

**System integrity and management support** are two major components in system sub-dimension of patient safety culture. **System integrity** refers to the deliberativeness of the system in safeguarding risks. It relates to the safety policies, standards and procedures, budgeting, staffing and scheduling, and tools and equipment of a healthcare organization or unit. Reason and Hobbs (2003) provide a model to analyze organizational accidents. They point out that “bad events do not usually start at the ‘sharp end’. Rather, they involve an interaction between long-standing system weakness, termed latent conditions, and local triggering events” (Reason & Hobbs 2003, p.77). Kruger et al (2006) recently proposed a Safety Platform Model to study patient safety. The system factor named as physical environment is identified as one of the major elements that influences patient safety. Physical environment consists of tangibles, such as materials, the physical plant, supplies, and equipment, electrical aids to patient care and additional components. Several healthcare safety reference sources, including the IOM report (2000), show that the overwhelming majority of medical errors can be traced to system failures rather than personal factors alone (Dennison 2005, Milstead 2005, Kalisch & Aebersold 2006). Seago and colleagues (2006) used secondary analysis to estimate the relationships between nursing staffing and patient outcomes, and found an increase in failure to rescue from medication errors as non-RN hours of care per patient day increased and that there was an increase in failure to rescue from pressure ulcers as patient acuity increased.

**Management support** from the leader is another important aspect of creating and shaping patient safety culture in work environment. Safety values can be conveyed to group members by communicating that patient safety is the first priority. Group
members’ safety behaviors can be reinforced through rewarding them. A non-blame and forgiveness environment can be encouraged through open communication of errors and fair analyses of causes. A number of studies included in the present analysis showed that support from management is the critical element of creating a culture of patient safety (Callahan & Ruchlin 2003, Hughes & Clancy 2005, Thompson et al. 2005, Grant et al. 2006, Scott-Cawiezell et al. 2006).

**Personal Sub-dimension**

**Personal competence and personal commitment** are two attributes of patient safety culture at the personal level. **Personal competence** refers to the assurance that nurses have adequate professional and/or technical knowledge, skills, and information to provide patient care while maintaining patient safety. Personal competence also involves the professional characteristics of nurses in relation to patients, such as being flexible and being vigilant. In Kruger’s (2006) Safety Platform Model, caregiver competence is a critical determinant of patient safety. Aiken et al. (2003) studied the relationship between hospital nurses’ educational levels and surgical patient mortality. They found that, in hospitals with higher proportions of nurses educated at the baccalaureate level or higher, surgical patients experienced lower mortality and failure to rescue rates.

**Personal commitment** to safety practice refers to nurses’ personal involvement in decisions about patient safety and the efforts in which they engaged to maintain this. Reason (1997) claimed that personal commitment involves motivation. Nurses’ personal commitment and motivation to safety practice are components of a patient safety culture.
**Task-Associated Sub-dimension**

The task-associated dimension related to nurses’ values and beliefs is directly linked with observable *task-related safety behaviors*. The nature of the task, the complexity and frequency of the safety behavior, the characteristics of working environment in supporting safety behavior, and the feasibility in implementing safety behaviors will all influence the culture of patient safety (Cooper 2000, Kalisch & Aebersold 2006). The nature of the task fundamentally influences nurse’s’ safety values and practice. If a task is associated with high probability of risk in one’s life or health, compliance with safety behavior would be expected to be high, as in the case of Severe Acute Respiratory Syndrome (SARS). In industry, the relationship between the complexity of the task and individual performance has well been established through task analysis (Locke & Latham 1990). In nursing, safety analysis of technical systems including nursing procedures has just begun (Luczak 1997). The general consensus is that with increases in complexity and/or frequency of the safety-related tasks, the more efforts are demanded and nurses’ performances on safety behaviors may be altered. Moreover, studies have shown that nurses tend to comply with safety requirements in a supportive environment (Singer et al. 2003).

**Interactive Sub-dimension**

A patient safety culture is the product of nurses’ shared values and attitudes. It derives from the interactions among nurses, patients and the healthcare system. The prevailing attributes with this sub-dimension are *communication and partnership*.

*Communication* about safety issues emphasizes aspects including timely reporting and open discussion of medical errors; no personal blame if an error is unintentionally
committed; learning from experiences especially incidents and near misses; and building a collaborative, supportive and high-performing team. Effective communication is both an antecedent and attribute of a patient safety culture; it is crucial in ensuring patient safety. Studies show that communication in organizations with positive a patient safety culture tends to be more open, less blameful, and more supportive (Mansdorf 1999, Milstead 2005, Hoban 2006, Kalisch & Aebersold 2006). Murphy (2006) demonstrated that many errors in organizations were unreported simply because of fear of blame or punishment by the manager as well as by peers. This would clearly lead to potential injury to patients and influence learning from experience by the team.

Maintaining partnerships with patients and their families is essential to nurses’ safety practices. Traditionally, care has been organized around the needs and desires of healthcare professionals and patients have been the objects of the treatments. Nowadays, patients and families are considered at the center of care. This paradigm shift has an important impact on healthcare organizations. It has prompted them to look deeply into their philosophies, systems and structures which guide the way they provide care (Ponte et al. 2003, Ponte et al. 2004). The core theme in patient- and family-centered care is maintaining partnership and sharing complete and unbiased information with patients and families, respecting patient and family perspectives and choices, and encouraging participation and collaboration of the patient and family. Studies have shown that patient- and family-centered care can be linked to effective team performance and positive outcomes of quality of care in diverse healthcare settings (Redman & Jones 1998, Ponte et al. 2004). Maintaining a partnership with physicians, pharmacists, physical therapists, and others within the organization helps to build consensus among the multidisciplinary
team, which will improve safety practices. In addition, building partnerships with government at all levels are is necessary to further the patient safety agenda.

Thus, patient safety culture in nursing is defined as the product of nurses’ shared values and beliefs about patient safety. It is a set of common understandings of the group members in viewing patient safety, and emerges from the dynamic reciprocal interaction among people, task and system.

**Philosophical perspectives on patient safety culture**

Two perspectives can be found in the literature which can help to clarify the concept of patient safety culture: functionalist and interpretive (Smircich 1983, Cooper 2000, Glendon & Stanton 2000, Meaney 2005).

**Functionalist view on patient safety culture**

In this perspective, patient safety culture is a result of the underlying assumptions or the core purpose of a healthcare organization or unit (Meaney 2005). Schein (1985) proposed a functionalist view to explain organizational culture. He analyzed organizational culture as the relationships among three layers or levels: core underlying assumptions or purpose, beliefs and values, and behaviors and artifacts. The relationship of each level to the others is both linear and causal (see Figure 2). Corporate policies, management structures and control systems express the underlying assumptions or purpose of an organization. An organization’s purpose, in turn, predetermines or conditions the publicly-declared values and beliefs of managers and staff (level 1 causes or conditions level 2). Managers and staff realize these corporate values and beliefs via particular attitudes. Employee attitudes, in turn, determine or condition specific behaviors and artifacts (level 2 causes or conditions level 3). Since level 2 conditions level th3ree,
and level 1 conditions level 2, the core underlying assumptions or purposes of an organization ultimately determine employee behaviors and the cultural artifacts. Applying the functionalist view to patient safety culture, “patient safety as the first priority”, for example, is an underlying assumption or purpose of the healthcare organization. Corporate policies, management structures and control systems express the underlying purpose, which in turn determines nurses’ values and beliefs about importance of safety. Nurses realize these corporate values and beliefs as particular attitudes to patient safety, and begin to determine or condition specific safety behaviors and artifacts. The observed nurses’ safety behaviors include compliance to safety procedures, timely reporting of medical errors, careful surveillance of patients’ condition, timely identification of complications, quickly initiating appropriate interventions, and expressing the importance of patient safety. Thus, the underlying assumption of “patient safety first” ultimately determines or conditions nurses’ behaviors and cultural artifacts.

The functionalist approach tends to analyze the patient safety culture in a linear relationship and is viewed as a “top-down” perspective. This perspective emphasizes more of system- and task-associated sub-dimensions of patient safety culture and focuses on construction of safety system policies, structures, protocols and procedures in building a culture of patient safety. The perspective is especially important in those clinical environments, such as acute care settings, operating rooms and intensive care units, where less provider – patient communication may occur.
Figure 2. Functional perspectives on patient safety culture (adapted from Schein’s model of organizational culture).

Levels of Organizational Culture

<table>
<thead>
<tr>
<th>Underlying Assumptions or purposes</th>
<th>Patient Safety Culture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient safety as the first priority</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Beliefs and values</th>
<th>Values &amp; beliefs about importance of safety</th>
</tr>
</thead>
</table>

| Behaviors and artifacts | Nurses’ safety behaviors and artifacts |

Interpretive view of patient safety culture

The interpretive perspective tends to reveal the dynamic nature of patient safety culture (Meaney 2005). Johnson (1992) offers a “culture web” model from an interpretive perspective. Although he agrees with Schein’s three-layered model analysis, he believes that it fails to account for the dynamic nature of organizational culture. The model of culture web also consists of a triad: a dominant paradigm, control systems and structure (underlying assumptions or purpose); values and beliefs (personal); and power relationship, stories, symbols, rituals and routines (behaviors and artifacts). Johnson claims that organizational culture is not simply a result of core purpose, but is an emergent property of the values and beliefs of a variety of group members. Normative values and beliefs are both created by, and revealed to, organization members within dynamic reciprocal relationships. Thus, organizational culture consists of reciprocal relationships among: group members’ perceptions of, and attitudes toward, an
organization's core purpose; group members' day-to-day behavior within power relationships; and the presence and quality of control systems to support group members' attitudes and behaviors. Transforming Johnson's interpretive view to the topic of patient safety culture, "patient safety first" in healthcare settings is less a result of the purposes or goals of managerial strategies than an emergent property of the nurses' value, attitudes and beliefs. It is an emergent property that consists of reciprocal relationships among nurses' perceptions of, and attitudes toward, the feasibility of "patient safety first"; nurses’ day-to-day behaviors toward this goal within power relationships; and the presence and quality of control systems to support nurses’ attitudes and behaviors toward patient safety. Therefore, the interpretive view tends to reveal the meaning and dynamic interactive nature of patent safety culture and is viewed as a "bottom-up" perspective, reflecting a created or emergent view with the worker layer of the organization.

In the interpretive perspective, personal and interactive sub-dimensions of patient safety culture are highlighted. To create a culture of patient safety, nurse managers should not only attend to written organizational safety rules, policies and procedures, but also to unwritten rules and their associated meanings. The interpretive perspective tends to be suitable for most healthcare organizational settings, especially less acute environments where communications among managers, nurses, other healthcare professionals and patients are frequently involved.

Thus, both functional and interpretive perspectives address the patient safety culture with a three-layer model: core underlying assumptions layer, the middle purpose, beliefs and values layer, and the surface behaviors and artifacts layer. What differentiates the two perspectives is the root or the focus of the patient safety culture. The functional
perspective focuses on the underlying assumptions or the core purpose of the organization or unit, and hence highlights the system and task-associated sub-dimensions of the patient safety culture. The interpretive perspective focuses on the emergent property of values and beliefs from the group members, and thus emphasizes the personal and interactive sub-dimensions of patient safety culture. The reciprocal interactive view of patient safety culture proposed above incorporates both functional and interpretive perspectives.

Factors contributing to patient safety culture and consequences

Several factors have been identified as supporting the development of patient safety culture. Key amongst these are managers, immediate supervisors, individual behavioral factors, reporting systems, rules and procedures, and healthcare organizational subcultures (Clarke 1999, Cooper 2000, Glendon & Stanton 2000, Cohen et al. 2003). A breakdown of the components of these factors is shown in Table 1.

The relationship between a positive patient safety culture and positive health outcomes is unequivocal. Consequences can be demonstrated in three broad categories with extensive support from results of research studies. Positive patient outcomes include lower mortality rates, lower rates of failure to rescue, decreased chances of medical errors, and increases in patient’s satisfaction (Havens & Aiken 1999, Boyle 2004, Sokol 2004, Seago et al. 2006). In terms of healthcare professionals, positive outcomes associated with patient safety culture include increased safety of medical procedures and decreased medical errors; increased quality of care and diminished nurse job dissatisfaction and burnout; increased incident reports and strengthening of the collaborative work environment (Havens & Aiken 1999, Aiken et al. 2002, Boyle 2004). At the healthcare
organizational level, organizations with "patient safety as first priority" have good reputations in their communities and so are highly acknowledged by the society (Jones & Redman 2000, Fontaine & Gerardi 2005).

Table 1

<table>
<thead>
<tr>
<th>Items</th>
<th>Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management</td>
<td>Management commitment; Ability; Leadership; Coordination; Flexibility</td>
</tr>
<tr>
<td>Immediate supervisors</td>
<td>Participation; Open door policy; Support correct behavior</td>
</tr>
<tr>
<td>Individual and behavioral</td>
<td>Training; Attitude; Behavior; Involvement</td>
</tr>
<tr>
<td>Rules and procedures</td>
<td>Clear; Practical</td>
</tr>
<tr>
<td>Reporting system</td>
<td>Reporting near-miss; Open-door policy; No blame culture; Analysis of errors; confidentiality; Feedback</td>
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**DISCUSSION**

A limitation of this study is that the included literature mainly focused on nursing, which might not adequately capture the complex multidisciplinary nature of the patient safety culture in healthcare settings. Furthermore, the proposed reciprocal interactive theory of patient safety culture might not be comparable with healthcare systems in countries other than the USA since the included literature was mainly from here.

The analysis revealed that nurses' shared values and beliefs toward patient safety is the overriding dimension of a patient safety culture, despite great variations in the definitions of the concept. There is some consensus among nursing professionals about the definition of culture, which is related to their underlying assumptions, values, and belief systems (Hewison 1996, Gardner 1999, Clarke 2006). However, it is difficult to
change the culture of a unit or organization since values and beliefs are relatively stable
and not easily changed.

As a result of the dimensional concept analysis, a reciprocal interactive theory of
the patient safety culture is proposed. The proposed theory suggests that patient safety
culture is the product of nurses’ shared values and beliefs toward patient safety. It is a set
of common understandings of nurses in viewing patient safety, and it emerges from the
dynamic reciprocal interaction among people, tasks and systems. Several important
points have been addressed in this analysis. First, it led to an integrative view
incorporating both functionalist and interpretative perspectives. The formation of the
culture of patient safety is not only the effect of “top-down”, but also the effect of
“bottom-up” communication. Second, the theory emphasizes patient safety culture as the
product of nurses’ belief systems. In order to change the culture, one should start from
values and beliefs and associated norms and behavioral patterns. Third, the theory
specifies those necessary and collectively sufficient attributes of patient safety culture
and integrates as four sub-dimensions: The system sub-dimension includes system
integrity and management support; the personal sub-dimension includes personal
competence and personal commitment; The task associated sub-dimension includes the
nature of the task, task complexity, work environment characteristics, and feasibility of
implementation; and the interactive sub-dimension includes communication and
partnership. The proposed theory is a new middle-range theory about patient safety
culture in nursing and it extends nursing knowledge. Nurses have consistently identified
patient safety as their primary job concern (Staff 2000). The key dimensions and sub-
dimensions of the theory provide specific guidance for healthcare managers, as well as
other healthcare professionals, in assessing and shaping their unit or organizational patient safety culture.

Although the analysis was chiefly based on data from the USA healthcare system, it contributes to the development of new knowledge and an understanding of the concept of patient safety culture. Further empirical validation is needed, and revision may be necessary in future. The theory may be considered an evolving situation-specific theory if testing supports the relationships among the variables (Im & Meleis, 1999). It remains to be determined how the theory may need to be modified to be relevant in other countries than the USA.

CONCLUSION

Culture is to an organization as personality is to an individual. With the increasing emphasis of the safety issue in healthcare organizations, creating a culture of patient safety becomes extremely important. The proposed theory could serve as a key method for analyzing the culture of patient safety of current healthcare systems, nationally and internationally, from a micro-unit organization to a macro-healthcare system as a whole.

The proposed reciprocal interactive view of the concept has implications for nursing. The theory could serve as a framework for nurse educators to develop appropriate curriculum regarding patient safety and organizational culture. It could help nurse researchers generate hypotheses to test variables in empirical settings. The reciprocal interactive theory also offers nurse managers and professionals an effective tool with a multi-dimensional, multi-perspective lens to analyze the safety culture in their organizations and formulate strategies to help build a culture of patient safety.
References


BIBLIOGRAPHY AND REFERENCES FOR THE DISSERTATION


APPENDIX A
APPENDIX A. IRB APPROVAL LETTER

OFFICE OF RESEARCH COMPLIANCE

MARQUETTE UNIVERSITY

September 5, 2008

Ms. Xiangqiong Feng
Nursing

Dear Ms. Feng:

Thank you for submitting your protocol titled, “Factors Influencing Nurses’ Perceptions of Patient Safety Culture in Medical-surgical Units and Intensive Care Units in one Hospital in South-western China,” protocol number HR-1669. On September 5, 2008, the Marquette University Institutional Review Board granted exempt status for this protocol under Exemption Category #2: Anonymous Educational Tests, Surveys, Interviews, or Observations.

You may proceed with your research. Your protocol has been granted exempt status as submitted. Any changes to your protocol affecting participant risk must be requested in writing by submitting an IRB Protocol Amendment Form (http://www.marquette.edu/researchcompliance/research/irbforms.shtml). These changes must receive IRB review before being initiated, except when necessary to eliminate apparent immediate hazards to the human subjects. If there are any adverse events, please notify the Marquette University IRB immediately.

If you have any questions or concerns, please do not hesitate to contact me. Thank you for your time and cooperation.

Director of Research Compliance

cc: Dr. Rebecca Bardwell, IRB Chair
Dr. Kathleen Bubay, Nursing
Ms. Erin Fox, Graduate School
APPENDIX B
APPENDIX B. ADMINISTRATIVE SUPPORT LETTER

Institutional Review Board
Marquette University
Milwaukee, WI

June 2nd, 2008

Ms. Xianqiong Feng is an associate professor of Department of Nursing, West China Hospital. She has informed me that she would like to collect data for her dissertation project on factors influencing nurses’ perceptions of patient safety culture in China at West China Hospital, Sichuan University. I would like to express my administrative support for her project on behalf of the Department of Nursing, as well as the Hospital. We will provide her accessibility to the Nursing Staff Directory, the necessary locked drawers or boxes, as well as other items which are necessary for the research study. The study will benefit not only the nurses and patients of West China Hospital, Sichuan University, but also future nursing and other healthcare organizations in China as well. Thank you for your consideration.

Sincerely,

Vijuan Cheng

CNE, Department of Nursing, West China Hospital, Sichuan University
Dean, School of Nursing, Sichuan University
Chengdu, Sichuan 610041
美国马凯大学研究伦理委员会：

冯光亮系四川大学华西华西医院护理部副教授，现在马凯大学护理学院攻读护理管理博士。她返院进行《影响护理人员对病人安全文化感知的预测因素》研究的资料收集工作。我仅代表医院护理部表示将支持其工作，我们将提供必要的科室护理人员名单、资料及其它相关研究设施器材。因为该研究不仅有助于华西护理和华西医院的病人，也相信对中国今后的护理以及中国的其它医疗机构产生一定的影响。

此致

真诚的谢意！

成翼娟

四川大学华西医院护理部主任/华西护理学院院长，教授

2008年6月2日
APPENDIX C
APPENDIX C. ADVERTISEMENT NOTICE

ADVERTISEMENT NOTICE

In order to understand nurses’ perceptions of patient safety culture and to explore the factors influence perceptions, the Associate Professor of the Department of Nursing Ms Xianqiong Feng will conduct a questionnaire survey in the West China Hospital of Sichuan University.

The study will be conducted anonymously; your name will not be collected. All your data will be assigned an arbitrary code number rather than using your name or other information that could identify you as an individual. When the results of the study are published, only aggregated data will be reported.

You are welcome to participate in this interesting study!

PI: Xianqiong Feng MS, Associate Professor

Tel: [Redacted]
研究信息

(ADVERTISEMENT NOTICE)

为了清楚地了解医院护士对病人安全文化的感知并探索其相关的影响因素，护理部副主任护师冯先琼将于近期在全院范围内开展问卷调查，以期能为护理管理者提供必要信息，帮助各护理单元构建良好的病人安全文化。

本研究注重保密性，将以完全匿名的方式进行。所有问卷将不收集研究者的姓名，回收的问卷将陈放在安全处并加锁管理，研究结果将以护理单元为单位来报告。

期待着你的参与！

主研：冯先琼

电话：

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APPENDIX D. INVITATION LETTER

INVITATION LETTER

Dear Participants,

You have been invited to participate in this research study. Before you agree to participate, it is important that you read and understand the following information. Participation is completely voluntary. Please ask questions about anything you do not understand before deciding whether or not to participate.

PURPOSE: The purpose of this research study is to understand Chinese nurses’ perceptions of patient safety culture and to explore the factors influence perceptions. You will be one of approximately 300 participants in this research study.

PROCEDURES: The principal investigator will place a packet of survey questionnaires in your work address mailbox. The completing of the questionnaires requires about 30 minutes of time. Your completion and return of the survey questionnaires to the mailbox will be the indicative of consent.

RISKS AND BENEFITS: This study poses no more than minimal risk to the study subjects. There is a small risk that you or your responses could be identified; however, precautions are being taken to minimize the risk such as placing the collected data in a secured-locked box and allowing only the researcher access to the data. There will be no direct benefit to the research subjects for involvement in this project. However, the study may benefit the nurses and patients of West China Hospital and future nursing care as well in China.

CONFIDENTIALITY: Strict confidentiality will be maintained in this study. All your data will be assigned an arbitrary code number rather than using your name or other information that could identify you as an individual. When the results of the study are published, you will not be identified by name, only aggregated data will be reported. The collected questionnaires will be locked in a secured place. Only the researcher will have access the questionnaires. A password will be used to access the electronic survey data. The data will be destroyed by shredding paper documents and deleting electronic files three years after the completion of the study.

VOLUNTARY NATURE OF PARTICIPATION: Participation in this study is completely voluntary, and participants may choose to withdraw at any time by contacting the researcher. There are no penalties for choosing not to complete the surveys.

CONTACT INFORMATION: If you have any questions or concerns regarding this study, you may call the Principal Investigator, Xianqiong Feng, MSN, RN, at [Redacted]. You may also ask questions, state concerns regarding your rights as a research subject, or express any feelings of pressure to participate to Professor Yijuan Cheng, the Chief Nursing Executive (CNE), Department of Nursing, West China Hospital, at [Redacted]
邀请信
(Invitation Letter)

尊敬的各位护理同仁，大家好！

我是四川大学华西医院护理部的冯先琼，目前在美国MARQUETTE大学攻读护理管理博士学位。现进行《四川大学华西医院普通病房和监护病房护士对病人安全文化感知的预测因素》研究。你被邀请参与本研究。本人对你的参与表示真诚的谢意！以下是本研究的一些具体说明：

研究目的：本研究的目的是了解四川大学华西医院普通病房和监护病房护士对病人安全文化感知的一些影响和预测因素，以便为护理管理者提供必要信息，帮助管理者构建良好的病人安全文化。

研究方法与过程：本研究将以横断面研究，问卷调查的方式进行。研究主研将把调查问卷发放给你。填写问卷大约需要30分钟。你完成问卷的填写并将问卷交回主研处表示你同意参与该研究。

研究风险与益处：本研究采用问卷调查，不存在研究风险。然而你的参与能帮助研究者完成本研究，更有助于护理管理者了解构建医院或科室病人安全文化的因素，从而推进医院病人安全文化的建设工作。

研究的保密性：本研究注重研究的保密性。所有的问卷将不收集研究者的真名。回收的问卷将陈放在安全处并加锁管理。唯有主研能接触到收回的问卷。研究结果将以护理单元为单位来报告。

研究参与的自愿性：你的参与完全出于自愿。若你选择不参与本研究，也没有任何的惩罚。

研究的联系信息：若你对本研究还有任何的疑问，请与主研联系。主研的联系方式为：冯先琼，**********。你也可以与护理部主任成翼娟教授联系，联系电话**********。

谢谢你的参与！
APPENDIX E
APPENDIX E. INSTRUMENTS IN ENGLISH

STUDY ID#_____

DEMOGRAPHIC DATA FORM
(For Nurse Use Only)

Instruction: Please make a mark that best matches your position on the following boxes:

Department/Unit
I. ICU
☐ Surgical General ICU
☐ PACU
☐ SICU
☐ CCU
☐ Thoraces ICU
☐ Liver transplant ICU
☐ Emergency ICU
II. Medical and Surgical
☐ General Medical Unit
☐ General Surgical Unit
☐ General Medical and Surgical Unit
III. Others (Specify): _______________________

1. Your age:
☐ ≤ 20 ☐ 21-30 ☐ 31-40 ☐ 41-50 ☐ 51-60 ☐ >60

2. Highest nursing education received
☐ Diploma or certificate ☐ Associate degree ☐ BSN ☐ MSN ☐ PhD/DNP or above

3. Professional titles
☐ Nurse ☐ Competent Nurse ☐ Charge Nurse ☐ Associate Professor ☐ Professor

4. Positions
☐ Permanent Nurse ☐ Contract Nurse

5. Years of experience in nursing
☐ < 1 ☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ 21-25 ☐ 26-30 ☐ >31

6. Years of experience in current Department/Unit
☐ < 1 ☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ 21-25 ☐ 26-30 ☐ >31
Your organization:

About Safety Training
A. Do you have safety training (e.g. How to report medical errors, how to reduce negative patient outcomes) in your orientation program at your organization?
   □ Yes □ No □ Unknown

B. Does your organization have an annual safety training program?
   □ Yes □ No □ Unknown

About Hospital Patient Safety Policy
C. Does your organization have a clear and explicit policy regarding Hospital Patient Safety?
   □ Yes □ No □ Unknown

D. Does your organization have a clear and explicit policy regarding errors and incidents reporting?
   □ Yes □ No □ Unknown

E. Does your organization have a clear and explicit policy regarding occupational safety practices?
   □ Yes □ No □ Unknown

About Prioritization of Hospital Patient Safety
F. Does your organization have clear and explicit patient safety goals and objectives?
   □ Yes □ No □ Unknown

G. Does your organization have strategic plans and initiatives from top management which support patient safety?
   □ Yes □ No □ Unknown

H. Does your organization provide you resources to support the practice of patient safety?
   □ Yes □ No □ Unknown
**DEMOGRAPHIC DATA FORM**  
(For Nurse Manager Use Only)

**Instruction:** Please make a mark that best matches your position on the following boxes:

**Department/Unit**
1. ICU  
   - Surgical General ICU  
   - PACU  
   - SICU  
   - CCU  
   - Thoraces ICU  
   - Liver transplant ICU  
   - Emergency ICU  
2. Medical and Surgical  
   - General Medical Unit  
   - General Surgical Unit  
   - General Medical and Surgical Unit  
3. Others (Specify): __________________________

1. **Your age:**
   - □ < 20  
   - □ 21-30  
   - □ 31-40  
   - □ 41-50  
   - □ 51-60  
   - □ >60  

2. **Highest nursing education received**
   - □ Diploma or certificate  
   - □ Associate degree  
   - □ BSN  
   - □ MSN  
   - □ PhD/DNP or above  

3. **Professional titles**
   - □ Nurse  
   - □ Competent Nurse  
   - □ Charge Nurse  
   - □ Associate Professor  
   - □ Professor  

4. **Positions**
   - □ Permanent Nurse  
   - □ Contract Nurse  

5. **Years of experience in nursing**
   - □ < 1  
   - □ 1-5  
   - □ 6-10  
   - □ 11-15  
   - □ 16-20  
   - □ 21-25  
   - □ 26-30  
   - □ >31  

6. **Years of experience in current Department/Unit**
   - □ < 1  
   - □ 1-5  
   - □ 6-10  
   - □ 11-15  
   - □ 16-20  
   - □ 21-25  
   - □ 26-30  
   - □ >31  

7. **Management Positions**
   - □ Vice-Nurse Manager  
   - □ Nurse Manager  
   - □ Nurse Supervisor  
   - □ Vice-Chief Nursing Executives  
   - □ Chief Nursing Executives  

8. **Years of experience in management**
   - □ < 1  
   - □ 1-5  
   - □ 6-10  
   - □ 11-15  
   - □ 16-20  
   - □ 21-25  
   - □ 26-30  
   - □ >31
9. Years of experience in current management position

☐ < 1  ☐ 1-5  ☐ 6-10  ☐ 11-15  ☐ 16-20  ☐ 21-25  ☐ 26-30  ☐ > 31

Your organization:

_About Safety Training_
A. Do you have safety training (e.g. How to report medical errors, how to reduce negative patient outcomes) in your orientation program at your organization?

☐ Yes  ☐ No  ☐ Unknown

B. Does your organization have an annual safety training program?

☐ Yes  ☐ No  ☐ Unknown

_About Hospital Patient Safety Policy_
C. Does your organization have a clear and explicit policy regarding Hospital Patient Safety?

☐ Yes  ☐ No  ☐ Unknown

D. Does your organization have a clear and explicit policy regarding errors and incidents reporting?

☐ Yes  ☐ No  ☐ Unknown

E. Does your organization have a clear and explicit policy regarding occupational safety practices?

☐ Yes  ☐ No  ☐ Unknown

_About Prioritization of Hospital Patient Safety_
F. Does your organization have clear and explicit patient safety goals and objectives?

☐ Yes  ☐ No  ☐ Unknown

G. Does your organization have strategic plans and initiatives from top management which support patient safety?

☐ Yes  ☐ No  ☐ Unknown

H. Does your organization provide you resources to support the practice of patient safety?

☐ Yes  ☐ No  ☐ Unknown
HOSPITAL SURVEY ON PATIENT SAFETY CULTURE

Instructions: This survey asks for your opinions about patient safety issues, medical error, and event reporting in your hospital and will take about 10 to 15 minutes to complete.

If you do not wish to answer a question, or if a question does not apply to you, you may leave your answer blank.

- An “event” is defined as any type of error, mistake, incident, accident, or deviation, regardless of whether or not it results in patient harm.
- “Patient safety” is defined as the avoidance and prevention of patient injuries or adverse events resulting from the processes of health care delivery.

SECTION A: Your Work Area/Unit
Please indicate your agreement or disagreement with the following statements about your work area/unit. Mark your answer by filling in the circle.

Think about your hospital work area/unit...

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>People support one another in this unit</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2.</td>
<td>We have enough staff to handle the workload</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3.</td>
<td>When a lot of work needs to be done quickly, we work together as a team to get the work done</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4.</td>
<td>In this unit, people treat each other with respect</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5.</td>
<td>Staff in this unit work longer hours than is best for patient care</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6.</td>
<td>We are actively doing things to improve patient safety</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7.</td>
<td>We use more agency/temporary staff than is best for patient care</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8.</td>
<td>Staff feel like their mistakes are held against them</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9.</td>
<td>Mistakes have led to positive changes here</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10.</td>
<td>It is just by chance that more serious mistakes don’t happen around here</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11.</td>
<td>When one area in this unit gets really busy, others help out</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>12.</td>
<td>When an event is reported, it feels like the person is being written up, not the problem</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
SECTION A: Your Work Area/Unit (continued)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Think about your hospital work area/unit…</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. After we make changes to improve patient safety, we evaluate their</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>effectiveness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. We work in &quot;crisis mode&quot; trying to do too much, too quickly</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15. Patient safety is never sacrificed to get more work done</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16. Staff worry that mistakes they make are kept in their personnel file</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>17. We have patient safety problems in this unit</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18. Our procedures and systems are good at preventing errors from</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>happening</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SECTION B: Your Supervisor/Manager

Please indicate your agreement or disagreement with the following statements about your immediate supervisor/manager or person to whom you directly report. Mark your answer by filling in the circle.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>19. My supervisor/manager says a good word when he/she sees a job</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>done according to established patient safety procedures</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. My supervisor/manager seriously considers staff suggestions for</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>improving patient safety</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. Whenever pressure builds up, my supervisor/manager wants us to work</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>faster, even if it means taking shortcuts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. My supervisor/manager overlooks patient safety problems that</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>happen over and over</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SECTION C: Communications

How often do the following things happen in your work area/unit? Mark your answer by filling in the circle.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Most of the time</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Think about your hospital work area/unit…</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>23. We are given feedback about changes put into place based on event</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>reports</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
24. Staff will freely speak up if they see something that may negatively affect patient care.

25. We are informed about errors that happen in this unit.

26. Staff feel free to question the decisions or actions of those with more authority.

27. In this unit, we discuss ways to prevent errors from happening again.

28. Staff are afraid to ask questions when something does not seem right.

SECTION D: Frequency of Events Reported
In your hospital work area/unit, when the following mistakes happen, how often are they reported? Mark your answer by filling in the circle.

29. When a mistake is made, but is caught and corrected before affecting the patient, how often is this reported?

30. When a mistake is made, but has no potential to harm the patient, how often is this reported?

31. When a mistake is made that could harm the patient, but does not, how often is this reported?

SECTION E: Patient Safety Grade
Please give your work area/unit in this hospital an overall grade on patient safety. Mark ONE answer.

A Excellent
B Very Good
C Acceptable
D Poor
E Failing

SECTION F: Your Hospital
Please indicate your agreement or disagreement with the following statements about your hospital. Mark your answer by filling in the circle.

Think about your hospital...

33. Hospital management provides a work climate that promotes patient safety.
34. Hospital units do not coordinate well with each other ....................................................... ① ② ③ ④ ⑤
35. Things “fall between the cracks” when transferring patients from one unit to another ...... ① ② ③ ④ ⑤
36. There is good cooperation among hospital units that need to work together ....................... ① ② ③ ④ ⑤
37. Important patient care information is often lost during shift changes ................................. ① ② ③ ④ ⑤
38. It is often unpleasant to work with staff from other hospital units ...................................... ① ② ③ ④ ⑤
39. Problems often occur in the exchange of information across hospital units ....................... ① ② ③ ④ ⑤
40. The actions of hospital management show that patient safety is a top priority ....................... ① ② ③ ④ ⑤
41. Hospital management seems interested in patient safety only after an adverse event happens ........................................................................................................ ① ② ③ ④ ⑤
42. Hospital units work well together to provide the best care for patients .......................... ① ② ③ ④ ⑤
43. Shift changes are problematic for patients in this hospital .................................................. ① ② ③ ④ ⑤

44. SECTION G: Number of Events Reported
In the past 12 months, how many event reports have you filled out and submitted? Mark ONE answer.

○ a. No event reports ○ d. 6 to 10 event reports
○ b. 1 to 2 event reports ○ e. 11 to 20 event reports
○ c. 3 to 5 event reports ○ f. 21 event reports or more
MANAGERS’ COMMITMENT TO SAFETY SCALE

**Instruction:** The following is a line which uses to describe the manager’s safety commitment. A score of 0 indicates no safety commitment, and 10 indicate total safety commitment.

Please make a mark in the scale which can best represent the manager’s commitment to safety in your unit.

Total Safety Commitment

0
1
2
3
4
5
6
7
8
9
10

No Safety Commitment
**LEADER-MEMBER EXCHANGE SURVEY**

**Instructions:** For each of the items shown below, use the following scale to circle the answer that best represents how you feel about the relationship between you and your current nursing manager. Remember, there are no right or wrong answers.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I like my manager very much as a person</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>2. My manager is the kind of person one would like to have as a friend</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>3. My manager is a lot of fun to work with</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>4. My manager defends my work actions to superior, even without complete knowledge of the issue in question</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>5. My manager would come to my defense if I were attacked by others</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>6. My manager would defend me to others in the organization if I made an honest mistake</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>7. I do work for my manager that goes beyond what is specified in my job description</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>8. I am willing to apply extra efforts beyond those normally required, to meet my manager’s work goals</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>9. I do not mind working my hardest for my manager</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>10. I am impressed with my manager’s knowledge of his/her job</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>11. I respect my manager’s knowledge of and competence on the jobs</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>12. I admire my manager’s professional skills</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
</tbody>
</table>
PERCEIVED TRUSTWORTHINESS SURVEY

**Instruction:** Mark the number that best matches your position on the following statements:

**Section I. Interpersonal Trust**

<table>
<thead>
<tr>
<th>Think about your immediate nursing manager</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. This person approaches his/her job with professionalism and dedication.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. Given this person's track record, I see no reason to doubt his/her competence and preparation for the job.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. I can rely on this person not to make my job more difficult by careless work.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. Most people, even those who aren't close friends of this individual, trust and respect him/her as a coworker.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. Other work associates of mine who must interact with this individual consider him/her to be trustworthy.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. We have a sharing relationship. We can both freely share our ideas, feelings, and hopes.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. I can talk freely to this individual about difficulties I am having at work and know that (s) he will want to listen.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. We would both feel a sense of loss if one of us was transferred and we could no longer work together.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. If I shared problems with this person, I know (s) he would respond constructively and caringly.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. I would have to say that we have both made considerable emotional investments in our working relationship.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
## Section II. Organizational Trust

<table>
<thead>
<tr>
<th>Think about your unit</th>
<th>Strongly Disagree ▼</th>
<th>Disagree ▼</th>
<th>Neither ▼</th>
<th>Agree ▼</th>
<th>Strongly Agree ▼</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. The quantity of communication exchanges within the department is adequate for me to do my job effectively.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. I have found that information is accurately communicated within the department.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13. Communication within the department is sufficiently open for me to feel informed and part of events.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14. I receive timely feedback or answers to my questions when I request it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15. I often feel that I have been left “out of the loop” on information and decisions important to my responsibilities.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16. Overall, I think people are treated fairly and equally within the department.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>17. All applicable policies, laws, and agreements governing employee relations are faithfully followed within the department.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18. Whenever I have had to deal with my personal employment issues within the department, I have had to fight to get justice.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19. The department’s performance appraisal system is fair and reliable, accurately assessing employees’ performance.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20. To my knowledge, discipline is applied fairly and equally across all work groups of the department.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>21. The department has always done right by me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>22. The department has developed me and prepared me to succeed in my current job duties and future career goals.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>23. The support I have received during my career has been communicated in ways beyond the wage and benefit package.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>24. Typically, when given a new task, I have been left to “sink or swim” on my own abilities with little help or guidance.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Item</td>
<td>Question</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>------</td>
<td>--------------------------------------------------------------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>25.</td>
<td>If I had to leave the department for personal reasons, I would miss the</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>sense of family or belonging I feel here.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26.</td>
<td>I can be sure of keeping my job and position, as long as I do good work.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>27.</td>
<td>If I do my part, I think I will be able to achieve my long-term career</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>goals at the department.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28.</td>
<td>The situation at the department is volatile enough that I never feel</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>settled and at ease.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29.</td>
<td>I can make decisions and “do the right thing” in my day-to-day work</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>without fear that I will lose my job over it.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30.</td>
<td>Despite what may happen, I believe there will always be a position for</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>me at the department.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* The Perceived Trustworthiness Survey is adapted from Alaska Managerial Trust Survey.
一般资料调查表
(供护理人员使用)
编号：

说明：请在以下你认为是合适的“□”之处打勾，谢谢！

你所在科室/护理单元(Department/Unit)
I. 监护室性质
□ 外科综合 ICU  
□ PACU  
□ SICU  
□ CCU  
□ 胸外 ICU  
□ 肝移植 ICU  
□ 急诊 ICU
II. 内外科性质病房
□ 内科性质病房：请注明：__________________________
□ 外科性质病房：请注明：__________________________
□ 内外科综合病房：请注明：__________________________
III. 其它，请注明：__________________________

1. 你的年龄：
□ ≤20 □ 21-30 □ 31-40 □ 41-50 □ 51-60 □ >60

2. 你的最高学历：
□ 中专或以下  □ 大专  □ 本科  □ 硕士  □ 博士

3. 你的职称：
□ 护士 □ 护师 □ 主管护师 □ 副主任护师 □ 主任护师

4. 你的聘用性质：
□ 在职在编 □ 合同

5. 你的护理工作经验（总的护龄：年）
□ <1 □ 1-5 □ 6-10 □ 11-15 □ 16-20 □ 21-25 □ 26-30 □ >31

6. 你在现在所在科室的护龄（年）
□ <1 □ 1-5 □ 6-10 □ 11-15 □ 16-20 □ 21-25 □ 26-30 □ >31
7. 在你日常的工作中，你是否和病人有直接的接触？
  □ a. 是，我的日常工作需要我直接接触病人
  □ b. 否，我的日常工作没有直接接触病人

**有关病人安全方面的培训：**
A. 在你进院时，医院提供的岗前培训中是否有病人安全方面的培训（如：如何报告医疗护理差错，如何防范医疗差错）？
  □有 □没有 □不知道

B. 医院是否每年对你都进行了病人安全方面的培训？
  □是 □否 □不知道

**有关病人安全方面的政策：**
C. 医院就病人安全方面的政策是否清楚明了？
  □是 □否 □不知道

D. 医院就差错意外事件报告的政策是否清楚明了？
  □是 □否 □不知道

E. 医院就员工职业安全的政策是否清楚明了？
  □是 □否 □不知道

**有关病人安全的优先次序**
F. 医院在病人安全方面是否有明确的目标？
  □有 □没有 □不知道

G. 医院在病人安全方面是否有具体的措施？
  □有 □没有 □不知道

H. 医院在病人安全方面是否为你提供了足够可用的资源和支持？
  □是 □否 □不知道
一般资料调查表
（供护理管理人员使用）

说明：请在以下你认为是合适的“□”处打勾，谢谢！

你所在科室/护理单元（Department/Unit）
I. 病护室性质
   □ 外科综合 ICU  □ PACU  □ SICU  □ CCU
   □ 胸外 ICU  □ 肝移植 ICU  □ 急诊 ICU

II. 内内外科性质病房
   □ 内科性质病房：请注明：
   □ 外科性质病房：请注明：
   □ 内内外科综合病房：请注明：

III. 其他，请注明：

1. 你的年龄：
   □ ≤20  □ 21-30  □ 31-40  □ 41-50  □ 51-60  □ >60

2. 你的最高学历：
   □ 中专或以下  □ 大专  □ 本科  □ 硕士  □ 博士

3. 你的职称：
   □ 护士  □ 护师  □ 主管护师  □ 副主任护师  □ 主任护师

4. 你的聘用性质：
   □ 在职在编  □ 合同

5. 你的护理工作经验（总的护龄：年）
   □ <1  □ 1-5  □ 6-10  □ 11-15  □ 16-20  □ 21-25  □ 26-30  □ >31

6. 你在现所在科室的护龄（年）
   □ <1  □ 1-5  □ 6-10  □ 11-15  □ 16-20  □ 21-25  □ 26-30  □ >31

7. 你的管理职位
   □ 副护士长  □ 护士长  □ 科护士长  □ 护理部副主任  □ 护理部主任
8. 你在护理管理经验的总年限（年）
 □ <1  □ 1-5  □ 6-10  □ 11-15  □ 16-20  □ 21-25  □ 26-30  □ >31

9. 你在现在护理管理岗位的年限（年）
 □ <1  □ 1-5  □ 6-10  □ 11-15  □ 16-20  □ 21-25  □ 26-30  □ >31

10. 在你日常的工作中，你是否和病人有直接的接触？
 □ a. 是，我的日常工作需要我直接接触病人
 □ b. 否，我的日常工作没有直接接触病人

有关病人安全方面的培训：
A. 在你进院时，医院提供的岗前培训中是否有病人安全方面的培训（如：如何报告医疗护理差错，如何防范医疗差错）?
 □ 有  □ 没有  □ 不知道

B. 医院是否每年对你都进行了病人安全方面的培训?
 □ 是  □ 否  □ 不知道

有关病人安全方面的政策：
C. 医院就病人安全方面的政策是否清楚明了?
 □ 是  □ 否  □ 不知道

D. 医院就差错意外事件报告的政策是否清楚明了?
 □ 是  □ 否  □ 不知道

E. 医院就员工职业安全的政策是否清楚明了?
 □ 是  □ 否  □ 不知道

有关病人安全的优先次序
F. 医院在病人安全方面是否有明确的目标?
 □ 有  □ 没有  □ 不知道

G. 医院在病人安全方面是否有具体的措施?
 □ 有  □ 没有  □ 不知道

H. 医院在病人安全方面是否提供有足够可用的资源和支持?
 □ 是  □ 否  □ 不知道
病人安全文化调查表
（供护理管理人员和护理人员使用）

说明：该量表旨在收集你对医院在病人安全问题、差错意外事件及其报告等方面的信息，以期进行恰当的分析和改进。答案无对错之分，谢谢！

“事件”是指任何形式的差错、事故，意外或非正常情况，不管其是否造成病人伤害。
“病人安全”系指定义为避免在病人护理过程中对病人造成伤害或不良反应。

第一部分：你的工作科室
（你的工作科室是指你大多数时间所在的，提供绝大多数服务的工作场所）
在以下陈述的各个条目后面给出你的最接近的答案：请涂黑相应的数字圈

<table>
<thead>
<tr>
<th>想想你所在的科室……</th>
<th>完全不同意</th>
<th>不同意</th>
<th>无所谓</th>
<th>同意</th>
<th>完全同意</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 在这个科室，人们相互支持</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>2. 我们有足够的人手完成工作</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>3. 当有许多的事情需要尽快完成时，大家都齐心协力，协作完成</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>4. 在这个科室，人们能够相互尊重</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>5. 在这个科室，有时工作人员的工作时间太长，难以保证为病人提供最佳护理</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>6. 为了提高病人安全，我们主动预防</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>7. 为了确保给病人提供最佳护理，我们不得已使用了一些临时人手如工人</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>8. 在这个科室，人们可以感觉到发生了差错会让别人对自己有坏印象</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>9. 在这个科室，差错使科室产生了良性的转变</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>10. 在这个科室，更多更严重的差错没有发生完全是因为侥幸</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>11. 在这个科室，如果一个小组很忙，其他人会很快来帮忙</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
</tbody>
</table>
12. 在这个科室，报告某一差错/意外事件人们感觉
是在被警告或记过，而非仅仅是报告问题………
13. 为了进一步提高病人安全，我们在进行了一些
工作改革后，会对其进行效果评价……………
14. 我们完全是在“危机模式”下工作，只求快求多.
15. 我们的工作决不能以牺牲病人安全为代价………
16. 在这个科室，大家都担心差错会记录在个人档
案中………………………………………………
17. 在这个科室，我们真的有病人安全问题………
18. 在这个科室，我们的系统设计，我们的程序制
度等完全能帮助我们预防差错发生……………

第二部分：你的直接领导
你的直接领导是指你的直接管理者，或者是你报告的直接上司。在以下陈述的各个条
目后面给出你的最接近的答案：请涂黑相应的数字圈

想想你的直接领导……

19. 当我的领导看到我们能按照病人安全的规章制度
工作，他/她肯定会表扬我们………………
20. 我的领导非常重视员工提出的有关病人安全
方面的建议和意见…………………………
21. 一旦科室工作有压力（工作量大），我的领导只
想如何尽快完成，哪怕是工作程序和步骤不恰
当………………………………………………
22. 我的领导忽视病人安全问题，哪怕是反复发
生………………………………………………
第三部分：工作沟通
以下陈述的情况在你所在科室出现的频率如何？请涂黑相应的数字圈

<table>
<thead>
<tr>
<th>选项</th>
<th>从来没有</th>
<th>很少有</th>
<th>有时有</th>
<th>经常有</th>
<th>随时都有</th>
</tr>
</thead>
<tbody>
<tr>
<td>23.</td>
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<td>4</td>
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</tr>
<tr>
<td>24.</td>
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<td>25.</td>
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<tr>
<td>26.</td>
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<tr>
<td>27.</td>
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<td>5</td>
</tr>
<tr>
<td>28.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

第四部分：事件报告的频率
你所在的科室，当以下差错/意外事件发生时，报告的频率如何？请涂黑相应的数字圈

<table>
<thead>
<tr>
<th>选项</th>
<th>从来没有</th>
<th>很少有</th>
<th>有时有</th>
<th>经常有</th>
<th>随时都有</th>
</tr>
</thead>
<tbody>
<tr>
<td>29.</td>
<td>1</td>
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<td>4</td>
<td>5</td>
</tr>
<tr>
<td>30.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>31.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

第五部分：病人安全打分
请给你所在的科室就病人安全方面总的情况打分，涂黑相应的圈

<table>
<thead>
<tr>
<th>圈</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>意思</td>
<td>极好</td>
<td>很好</td>
<td>能接受</td>
<td>较差</td>
<td>不能接受</td>
</tr>
</tbody>
</table>
第六部分：你对医院的评价
在以下陈述的有关医院的各个条目后得出你最接近的答案，请涂黑相应的数字圈

<table>
<thead>
<tr>
<th>想想医院……</th>
<th>完全不同意</th>
<th>不同意</th>
<th>无所谓</th>
<th>同意</th>
<th>完全同意</th>
</tr>
</thead>
<tbody>
<tr>
<td>33. 医院管理层提供了一种有助于病人安全的文化氛围</td>
<td>①</td>
<td>②</td>
<td>③</td>
<td>④</td>
<td>⑤</td>
</tr>
<tr>
<td>34. 医院各部门/科室之间合作不佳</td>
<td>①</td>
<td>②</td>
<td>③</td>
<td>④</td>
<td>⑤</td>
</tr>
<tr>
<td>35. 当病人需要转科时，往往出现衔接上的困难</td>
<td>①</td>
<td>②</td>
<td>③</td>
<td>④</td>
<td>⑤</td>
</tr>
<tr>
<td>36. 当需要部门/科室间合作时，总是感觉能愉快合作</td>
<td>①</td>
<td>②</td>
<td>③</td>
<td>④</td>
<td>⑤</td>
</tr>
<tr>
<td>37. 在交接班中总是丢失一些有关病人病情的重要信息</td>
<td>①</td>
<td>②</td>
<td>③</td>
<td>④</td>
<td>⑤</td>
</tr>
<tr>
<td>38. 和医院其它部门/科室人员的合作总是不愉快</td>
<td>①</td>
<td>②</td>
<td>③</td>
<td>④</td>
<td>⑤</td>
</tr>
<tr>
<td>39. 涉及跨部门/科室的信息交流总是出问题</td>
<td>①</td>
<td>②</td>
<td>③</td>
<td>④</td>
<td>⑤</td>
</tr>
<tr>
<td>40. 医院管理部门的措施和决策表明病人安全至上</td>
<td>①</td>
<td>②</td>
<td>③</td>
<td>④</td>
<td>⑤</td>
</tr>
<tr>
<td>41. 只有当出现了不良事件时，医院管理部门/人员才对病人安全感兴趣</td>
<td>①</td>
<td>②</td>
<td>③</td>
<td>④</td>
<td>⑤</td>
</tr>
<tr>
<td>42. 医院各部门/科室通力合作，为病人提供最佳诊疗护理服务</td>
<td>①</td>
<td>②</td>
<td>③</td>
<td>④</td>
<td>⑤</td>
</tr>
<tr>
<td>43. 医院的交接班有问题</td>
<td>①</td>
<td>②</td>
<td>③</td>
<td>④</td>
<td>⑤</td>
</tr>
</tbody>
</table>

第七部分：你所报告的事件（向科室或护理部等有正式记录的报告）
在过去的12个月内，你总共报告过多少起事件？请在下面的选择中选一

○ a. 没有报告过1例
○ b. 报告了1-2例
○ c. 报告了3-5例
○ d. 报告了6-10例
○ e. 报告了11-20例
○ f. 报告了21例或以上
管理人员对病人安全所作努力调查表

（供护理管理人员和护理人员使用）

说明：以下一条竖线旨在描述你所在科室的管理人员对病人安全方面所作的努力。
“0”表示管理人员对病人安全完全不作努力和投入，”10“表示管理人员对病人安全作了最大的努力和投入。若你是护理管理人员，其给出自评分数。若你是护理人员，请给
你所在科室的护理管理人员打分。（请将分数写在以下的横线上）

管理人员对病人安全

作了最大的努力和投入

10
9
8
7
6
5
4
3
2
1
0

你认为你所在科室的护理管理人员在病人安全方面
所作努力的得分是：__________（0-10 分之间）

管理人员对病人安全

完全不作努力和投入
领导与员工的相互关系调查表
(供护理人员使用)

说明：在以下陈述的各个条目后面给出你的最接近的答案，请涂黑相应的数字圈

<table>
<thead>
<tr>
<th></th>
<th>完全不同意</th>
<th>不同意</th>
<th>无所谓</th>
<th>同意</th>
<th>完全同意</th>
</tr>
</thead>
<tbody>
<tr>
<td>想想你的直接领导……</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. 我非常喜欢我的领导</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. 我的领导是你想将她/他作为朋友的那种人</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>3. 和我的领导一起工作很开心</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. 我的领导总是替我在上级面前辩解，即便是对具体情况还不太了解的情况下</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. 当别人指责我时，我的领导总能站在我这边保护我</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. 当我犯了错误时，我的领导总能在同事面前帮我</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. 即使是超出我的工作范围，只要是我的领导需要，我也愿意为她/他去干</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. 为了实现我的领导的工作目标，我愿付出额外的努力</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. 为了我的领导，我愿意尽所能</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. 我深感我领导专业知识的渊博</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. 我敬佩我领导扎实的专业知识和极强的工作胜任力</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. 我钦佩我领导熟练的专业技能</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


### 对管理者信任度的调查表

(供护理人员使用)

说明：在以下陈述的各个条目后面给出你的最近的答案：请涂黑相应数字圈

第一部分：人际间的信任

<table>
<thead>
<tr>
<th>想想你的直接领导……</th>
<th>完全 不同意</th>
<th>不 同意</th>
<th>无 所谓</th>
<th>同 意</th>
<th>完全 同意</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 我的领导对待工作有强烈的专业和奉献精神……</td>
<td>①</td>
<td>②</td>
<td>③</td>
<td>④</td>
<td>⑤</td>
</tr>
<tr>
<td>2. 从其履历来看，我对我的领导的工作胜任力……</td>
<td>①</td>
<td>②</td>
<td>③</td>
<td>④</td>
<td>⑤</td>
</tr>
<tr>
<td>3. 三里店我的领导，他/她不会粗心大意……………</td>
<td>①</td>
<td>②</td>
<td>③</td>
<td>④</td>
<td>⑤</td>
</tr>
<tr>
<td>4. 绝大多数我的同事，即使不是领导的好朋友，都认为我的领导是好的合作伙伴………………</td>
<td>①</td>
<td>②</td>
<td>③</td>
<td>④</td>
<td>⑤</td>
</tr>
<tr>
<td>5. 我的其他同事，只要和我领导打过交道，都认为我的领导值得信赖…………………………</td>
<td>①</td>
<td>②</td>
<td>③</td>
<td>④</td>
<td>⑤</td>
</tr>
<tr>
<td>6. 我和我的领导交往甚好，我们彼此能分享不同的观点和感受…………………………………</td>
<td>①</td>
<td>②</td>
<td>③</td>
<td>④</td>
<td>⑤</td>
</tr>
<tr>
<td>7. 我可以毫无顾忌地把我工作的难处告诉我的领导，因为我相信她/他也愿意聆听…………</td>
<td>①</td>
<td>②</td>
<td>③</td>
<td>④</td>
<td>⑤</td>
</tr>
<tr>
<td>8. 如果我们中的任何一方将要离开（或调离），我相信我们彼此都不会再难过………………</td>
<td>①</td>
<td>②</td>
<td>③</td>
<td>④</td>
<td>⑤</td>
</tr>
<tr>
<td>9. 如果我把我的问题告诉她/他，我相信她/他会十分在意并给出建设性意见…………………</td>
<td>①</td>
<td>②</td>
<td>③</td>
<td>④</td>
<td>⑤</td>
</tr>
<tr>
<td>10. 认真地说，我和我的领导我们彼此都进行了大量的感情投资……………………………</td>
<td>①</td>
<td>②</td>
<td>③</td>
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</table>

第二部分：组织间的信任

<table>
<thead>
<tr>
<th>想想你的科室……</th>
<th>完全 不同意</th>
<th>不 同意</th>
<th>无 所谓</th>
<th>同 意</th>
<th>完全 同意</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. 在这个科室，我科科内有有效信息交流使我的工作能顺利开展…………………………</td>
<td>①</td>
<td>②</td>
<td>③</td>
<td>④</td>
<td>⑤</td>
</tr>
<tr>
<td>12. 我认为科室内的信息交流是准确有效的……</td>
<td>①</td>
<td>②</td>
<td>③</td>
<td>④</td>
<td>⑤</td>
</tr>
<tr>
<td>13. 我认为科室为我提供了足够的信息…………</td>
<td>①</td>
<td>②</td>
<td>③</td>
<td>④</td>
<td>⑤</td>
</tr>
</tbody>
</table>
14. 当我有求于科室时，能得到及时的信息反馈。 
15. 我常常感觉到我不了解和我工作相关的一些重要的最新信息和决策。 
16. 总的来说，我觉得在这个科室，领导能够更公正地对待每一个人。 
17. 在这个科室，领导能完全按照政策/制度办事。 
18. 在这个科室，我不得不为自己的权利和利益奋斗。 
19. 这个科室的绩效考评制度公正可靠，能准确反映员工的绩效表现。 
20. 就我所知，这个科室的惩罚也是相当公正的。 
21. 在这个科室，领导同事待我不错。 
22. 科室对我专业上的成长和职业生涯发展提供了很好的支持。 
23. 在这个科室，我在职业上得到的支持，不仅仅是工资和福利的形式。 
24. 通常当接到新任务时，感觉完全陷入了“成败全靠自己”的局面。 
25. 当我因故需要离开科室，我一定会要离开“家”的感觉。 
26. 我敢肯定只要我工作认真，在这个科室就一定会有我的位置。 
27. 只要我尽职尽责，在这个科室一定能实现我的抱负和职业发展规划。 
28. 在这个科室的各种情况变化无常，我从来没有定下心来的感觉。 
29. 在我的日常工作中，我可以自己做决策并选择做自己认为是正确的事，无须担心丢掉工作。 
30. 不管将来怎样，我相信在这个科室一定会有我的用武之地。 

谢谢您的参与！！
This is to certify that we have examined this copy of the dissertation by

Xianqiong Feng, M.S.N., Ph.D.

and have found that it is complete and satisfactory in all aspects.

The dissertation has been approved by:

Dr. Kathleen Bobay
Dissertation Director, College of Nursing

Dr. Janet Wessel Krejci, Committee Member

Dr. Barrett L. McCormick, Committee Member

Approved on

April 6, 2009