

## RESEARCH COMMUNICATION

# Survey of Factors Associated with Nurses' Perception of Patient Safety

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### Abstract

**Objective:** To describe the nurse's perception of hospital organization related to cultural issues on the safety of the patient and reporting medical errors. In addition, to identify factors associated with the safety of the patient and the nurse. **Methods:** A survey conducted during December 2008-January 2009, with 126 nurses using the Korean version of the AHRQ patient safety survey, a self-report 5-point Likert scale. Stata 10.0 was used for descriptive analysis, ANOVA (Analysis of variance) and logistic regression. **Setting:** National cancer center in Korea. **Results:** The means for a working environment related to patient safety was 3.4 ( $\pm 0.62$ ). The associated factors of duration were at a present hospital, a special area, and direct contact with patients. Among organizational culture factors related to patient safety, the means were 3.81 ( $\pm 0.54$ ) for the boss/manager's perception of patient safety and 3.37 ( $\pm 0.49$ ) for the cooperation/collaboration between units. The frequent number of errors reported by nurses were 1~2 (22.2%) times over the past 12 months. For incidence reporting, the items that the 'nurses perceived for communication among clinicians as fair' had a means of 3.23 ( $\pm 0.40$ ) and the 'overall evaluation of patient safety was a good' 3.34 ( $\pm 0.73$ ). **Conclusions:** The nurse's perception of cooperation and collaboration between units were associated with the direct contact between the patient and the nurse. The frequency of incidence reporting was associated with the duration of working hours at the present hospital and also their work experience. The nurse's perception of hospital environment, organizational culture, and incidence reporting was above average and mostly associated with organizational culture.

**Key words:** Patient safety - organizational culture - medical error reporting

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### Introduction

It is estimated that 70% of medical errors are preventable (Institute of Medicine, 1999). However, if a medical error occurs, it is considered to be the fault of the individual's healthcare professional. However, it should be blamed on the healthcare system. Punishment is not the solution for medical errors. Now, it is more focused on improving the safety environment at a hospital, creating an open organizational culture, and improving the health care delivery system (Abbott, 2003). Thus, in developed countries they are trying to improve the awareness on patient safety so that healthcare professionals, patients, the carers, and the public in turn could be more educated on patient safety. In order to create patient safety culture in the hospital, there is an important factor. For example, these factors include communication, appropriate staffing, procedure compliance, environmental safety and security, culture, leadership, orientation and training, and open communication on medical errors (Joint

Commission Resources: JCR, 2007). Many researchers thought that medical errors occurred in the incomplete system, and thus focused on preventing medical errors (Bates and Gawande: 2000, Institute of Medicine: 2001).

Medical disputes are growing in South Korea. The Korea Consumer Agency has been receiving millions of medical complaints per year. It was noted in a judicial yearbook that medical litigation cases increased 10 times during the last 10 years. 82 cases were reported in 1992 compared to 882 cases in 2002. The Citizens' Alliance for Consumer Health announced that medical disputes increased from 2,740 cases in 2003 to 2,902 cases in 2006. However, they are still blaming individual staff members for medical errors. In many hospitals, they are still focusing on counseling for individuals, discipline, threats, and retraining (JCR 2007). In recent years, since the implementation of the healthcare accreditation, the interest in patient safety increased. However, most medical professionals still simply think of patient safety as a medical error, incident, accident, and fall.

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**Table 1. Nurse's Recognition** (n=126)

		mean	SD
Hospital environment	Hospital (21)	3.4	0.62
	Overall evaluation of patient safety (1)	3.34	0.73
Organizational culture	Boss/manager (4)	3.81	0.54
	Cooperation among units(11)	3.37	0.49
Reporting system	Communication (6)	3.23	0.4
	Frequency of reporting (4)	3.44	0.12
	Number of reported events during last 12 months(1)	1~2	

International Nurses Council (ICN) emphasized the responsibilities of the nurses on patient safety. The nurses in turn evaluated on the safety and quality of care, enhanced infection control programs, risk assessment and analysis of the case. Nurses have an important role in reducing the adverse events since nurses have higher safety awareness compared to that of doctors (Pronovost, 2003).

The goals of the present study were: to investigate on the perception of hospital organization culture regarding patient safety culture, reporting medical errors, and identify factors associated with the perception of patient safety and the nurse's safety management; to identify the nurse's patient safety-related hospital environment, organizational culture, and reporting medical errors; to investigate the incidence and the nurse's perception on reporting medical errors; to identify the factors associated with the nurse's perception on patient safety.

## Materials and Methods

### Study design and setting

This study was conducted by a random sampling survey and analysis from December 2008 to January 2009 at a hospital in Goyang city Kyeonggi province. This study aimed to identify the nurse's perception on patient safety and the related factors. 126 nurses who worked at the National Cancer Center participated in this survey.

### Definition:

"Event" is defined as any type of error, mistake, incident, accident, or deviation regardless of whether or

not it is harmful to a patient.

- "Patient safety" is defined as the avoidance and prevention of patient injuries or adverse events resulting from the process of healthcare delivery.

- "Hospital environment" is defined by the facilities and the staffing conditions related to patient safety.

- "Organizational culture" is defined as the overall value and behavior shared by all staff members.

- "Medical errors of near miss" is divided if the error harmed the patient or not. If the error harmed the patient it is called a medical error, or a near miss.

- A "risk factor" is defined as the factor that is not related to the patient's illness but to the cause of the adverse event.

### Measures

Korean version of the AHRQ patient safety survey (Kim, 2007) on a self-report 5-point Likert scale. It was divided into 'Not at all' = 1, 'No' = 2, 'usually' = 3, 'yes' = 4, 'strongly agree' = 5. 'Cronbach's alpha .87. The questionnaire consists of all 69 items. It contains three sections, hospital environment, organizational culture, and the reporting system.

In detail the hospital environment and the staff (3~23), overall evaluation of patient safety (38), organizational culture (24~27), leadership, cooperation (39~49), communication (28~33), reporting system, frequency of reporting medical errors (34~37), and the frequency of reporting medical errors in 12 months (50).

### Statistics

Stata 10.0 was used for descriptive analysis. To maintain consistency, if the question contains negative expressions, we calculate it in reverse. ANOVA (Analysis of variance) and logistic regression were applied.

## Results

The average working experience at a hospital was 2.27 years. The nursing career was 2.7 years. It was 122 (96.83%) who worked in direct contact with patients. The most common answers were 94(74.6%) in relation to the common working hours per week which were 40-59 hours. The means for a working environment related to patient safety was 3.4 ( $\pm 0.62$ ), and the associated factors were the duration of working hours at a present hospital,

**Table 2. Frequency of Report for Medical Errors and Near Misses** (n=126)

Type of error(n)		Never (%)	Rarely (%)	Some times (%)	Most of time (%)	Always (%)	Mean
Near miss	Mistake(s) that corrected before harming the patient	4 (9.17)	20 (15.9)	52 (41.3)	30 (23.8)	20 (15.9)	3.33
	Mistake(s) that could not have harmed the patient	4 (3.17)	17 (13.5)	52 (41.3)	32 (25.4)	21 (16.7)	3.38
	Mistake(s) that could have, but did not harm the patient	5 (3.97)	18 (14.3)	45 (35.7)	30 (23.8)	28 (22.2)	3.46
Medical error	Mistake(s) that actually harmed the patient	7 (5.56)	22 (17.5)	30 (23.8)	19 (15.1)	48 (38.1)	3.62

**Table 3. Nurse Overall Perception of Patient Safety**

	Regression Coef.		Beta	Standardized regression Coef.	
	B	Std.Error		t	P-statistics value
Constant	-0.18	0.57		-0.31	0.76
Hospital environment	0.43	0.18	0.23	2.39	0.02†
Organizational culture	0.52	0.15	0.33	3.37	0.001‡
Reporting medical error	0.12	0.06	0.17	2.11	0.04†

†p<0.05 ‡p<0.01

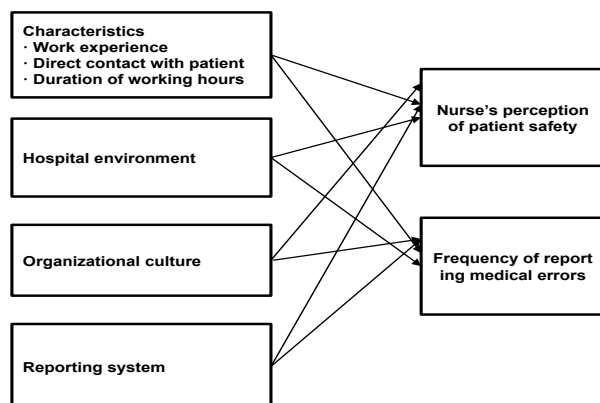
special area and direct contact with patients. Among organizational culture factors related to patient safety, the means were 3.81(±0.54) for the boss/manager's perception of patient safety and 3.37(±0.49) for the cooperation/collaboration between units. The frequency number of errors reported by nurses was 1~2(22.2%) times over the past 12 months. For incidence reporting, the items that the 'nurses perceived communication among clinicians as fair' had a means of 3.23(±0.40) and 'overall evaluation of patient safety was good' 3.34(±0.73).

Near misses like mistake(s) corrected before harming the patient 52 (41.27%), mistake(s) that could not have harmed the patient 52(41.27%), mistake(s) that could have, but did not harm the patient 45(35.71%), 'sometimes' was the highest answer. Medical errors like mistake(s) that actually harmed the patient, 'always' 48(38.1%) was the highest answer, the following order were 'sometimes' 30 (23.8%), 'rarely' 22 (17.5%).

In other words, if actual medical errors occurred nurses would 'always report' or 'sometimes report', but if near misses occurred they would 'sometimes report'

There was no significant difference on hospital working experience, a nurse's career, and direct contact with patients. The answers given were above 3 on average. Thus, this provided a positive outcome.

There was no significant difference on hospital working experience, nursing career, and direct contact with patients. On average, the answers given were above a (3)which provided a positive outcome. These



**Figure 1. The Framework of the Study**

positive answers were in accordance to a boss/manager's perception.

It showed significant difference depending on whether the nurses had direct contact with their patients or not. In relation, the president of the hospital had concerns over patient safety and the cooperation among units (p = 0.04). Otherwise, the group who had direct contact with the patients gave a positive answer compared to the group that did not. There was no significant difference in working experience and nursing career.

Nurse's perception related to communication was significantly different, depending on working experience (p=0.03) at the hospital and nursing career (p=0.01). The groups who had worked longer than 5 years gave positive answers compared to the group who did not. Nurses who worked less than one year gave a negative answer. The more experienced nurses gave a positive answer. The frequency of reporting medical errors were significantly different, depending on working experience (p=0.01) at the hospital and nursing career (p=0.0001). It showed highest frequency 2.21 of reporting in nurses who worked less than 1 year. The number of reporting medical errors depended on experience, 6-10 years experience were the highest, the next order was 1-5 years, 11-15 years, more than 20 years, less than 1 year, and finally, 6-20 years.

According to multiple logistic regression analysis, it had statistical significance in all areas (p<0.05). Organization culture was highly related in the nurse's perception; the next order was the hospital environment, and the reporting of medical errors.

**Discussion**

They gave a 3.17 which was more than average (3) positive answers to overall hospital environment, organizational culture, and reporting medical errors. However, there were only 2 answers to 'yes'. So we couldn't admit that their perception was 'strongly agree', and the result was similar to Kim et al. (2007). It raised the issue of medical errors in the reporting system for the lack of concept related to communication problems. This was already discussed as one of the risk factors in medical errors in connection with the fundamental causes of Joint Commission Resources (2007) and Ahn (2006) for the management of patient safety. The reporting of medical errors is not easy. It is reported that individuals with great psychological pressures are responsible.

Pronovost (2003) said the system should be built for medical errors in order to avoid making the same mistake. In connection to this, these medical errors should not be hidden. Strengthening leadership and organizational culture through increasing the reporting rate for medical errors, statistics and data analysis should be reformed to build a system. Pronovost (2003) is the solution in resolving the difficulties of reporting medical errors. The frequency of reporting medical errors is significantly different, depending on working experience. The highest

number of medical errors was reported by a nurse who worked there for 12 months. It can be interpreted that the reporting rate by a new nurse are more likely to raise medical errors, but more than half of the respondents (n = 89, 70.64%) had a career of 1-10 years, less than 1 year experience with 13 patients, and 1-10 years of working experience under the hospital's nurses, which was the most reported.

Respondents about 40-45% reported errors 'most of times/always' also reported the near misses and 53.18% was 'most of times/always' reported that the actual reporting rates for medical errors had no difference with the near misses. In addition, in the case of actual medical errors that occurred, 'rarely reported' turned out to be 17.46%. It was lower than the doctor's responses which were (22%). However, it actually harmed the patients experiencing a medical error case 'most of times/always'. According to the doctor there were reports of 54.3%, 78.5% replying. This was compared with (Kang, 2005), nurse's rate of reporting that was lower in the case of actual errors. This shows that a significant number of reports on medical errors were missing. This can be interpreted that these medical errors were hidden by nurses afraid to report. System and culture requires for patient safety and medical errors reporting (Kim 2007, Kang 2005).

Meanwhile, communication problems were perceived as more negative, less than 1 year of nursing career, whose immediate supervisor was viewed as negative also. In other words, it shows that a nurse's clinical experience may vary depending on the nurse's perception. This is also the same result as that of the perception of nurse's Kim (2007), decision-making process, Lim and Lee (2004), too. However, in this study, the most negative group was of nurse's who had 11-15 years experience, but it was 1-5 years experienced nurses on Kim (2007) study. In this study, compared to the Kim (2007) study (n = 886), the number of nurse's were smaller (n=126). This was interpreted that in our study, the less experienced subjects mostly participated in the response.

Organization culture was highly related to a nurse's perception, the next order was hospital environment, and the reporting of medical reports. It showed differences according to a study that was surveyed on doctors (Kang, 2005), it was focused on staffing, the openness of communication, adaptation of procedures, and blameless response.

Through this study it made the following recommendations. Further research will be needed, survey on other health care professionals about their perceptions of patient safety. We must develop legally certified medical errors reporting system and share that with other agencies to collect data and analyze. In the case of medical errors, it is necessary to make organizational culture to openly discuss the problems by research and development.

Nurse's perception of Cooperation/collaboration between units was associated with the direct contact

with patients. Frequency of incidence reporting was associated with duration of working at a present hospital and their work experience. Nurse's perception of hospital environment, organizational culture, and incidence reporting was above average and mostly associated with organizational culture.

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