



The Role of Professional Behavior to Improve Patient Safety Culture in Clinical Nurses: A Cross-Sectional Study

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Abstract

Background: Safety culture is one of the most important determinants of patient safety in hospitals. Due to the increasing prevalence of medical errors, increasing public attention, and public opinion pressure on this issue as well as the limitations of studies in this area, the current study was conducted to identify the role of professional behavior to improve patient safety culture in clinical nurses.

Methods: This cross-sectional study was performed on 230 nurses in Shahroud Iran. Data collection instruments included a demographic information form, the hospital survey on patient safety culture questionnaire, and the nursing professional behaviors scale. Stratified random sampling was used and data were analyzed by using descriptive and inferential statistics (linear regression analysis).

Results: Participants' mean scores of patient safety culture and professional behavior were 132.51 ± 15.97 and 109.57 ± 18.01 , respectively. A high score of nurses' professional behavior was directly associated with a higher level of patient safety culture. In addition, the number of working hours per week and change in the workplace were significantly related to nursing safety culture level (P -value=0.002).

Conclusions: Professional behavior is an effective factor in enhancing safety culture in nurses. Therefore, paying attention to the training and proper application of professional behavior in nurses can improve the level of patient safety culture.

Keywords: Nurse, Patient safety, Professional behavior.

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Introduction

The world health organization (WHO) considers patient safety a global issue and has created a global alliance to promote international cooperation and facilitate the process of improving patient safety worldwide.¹ Patient safety culture is an important research goal in health studies² and has been a top priority in health care systems worldwide for the past two decades. Numerous initiatives and programs have been developed and implemented, including the reviews of patient safety culture, team strategies and tools for enhancing patient safety performance, internationally accredited programs, and issuing a certificate for the improvement of patient safety at national and hospital level.^{3,4} The quality of nursing services is an important factor in ensuring patient safety because routine nursing care directly leads to negative consequences for the

patient.⁵ Nurses play an important role in patient care and are the main innovators in safety and quality in the clinical setting.^{6,7} Safety is one of the most important aspects of health care services.⁸ On the other hand, patients expect the care system and nurses to provide them with high-quality services. Despite the efforts of health care workers and the availability of ample facilities, patient dissatisfaction is increasing, rooted in the failure of physicians and nurses to communicate with patients.⁹ Patient safety culture can also be associated with risk identification.¹⁰ On the other hand, Missed nursing care reduces the quality of nursing care, leads to incidents and complications such as hospitalization, and ultimately leads to negative consequences such as dissatisfaction and readmission in patients.¹¹⁻¹³ The main cause of error in nursing care is the limited resources in the workplace such as inadequate workforce, time, and coworker support.¹⁴ Similarly, according to the results of Kim et al.'s study, missed nursing care was found to be correlated with clinical career, nursing work environment, and patient safety culture.¹⁵ Also, some studies in many countries have shown that patients are not always safe in health care centers.¹⁶⁻¹⁹

Patient safety culture is a very important aspect and an important issue in health care management.²⁰ The best scores in terms of safety culture are related to lower surgical site infection rates in hospitals²¹ reduced injuries, significant adverse events, and risk-adjusted mortality.²² Patient safety culture reflects the intangible aspects of health care that are influenced by the leadership, supervision, and feedback of specialists.²³ Health care systems should strive to improve patient safety by applying the expertise of various health care professionals such as physicians, nurses, pharmacists, and nutritionists who are associated with patient safety culture. Patient safety in health care includes the safety of both patients and health care professionals.²⁴ Patient safety cultures have emerged to improve health care performance and serve as basic information for further improvement.²⁵ Achieving a positive culture can be challenging because attitudes to patient safety and the nature and prevalence of adverse events vary across countries.^{26,27} For example, the results of a study by Ebrahimzadeh et al. showed that in Iranian hospitals, patient safety culture among health care professionals was at the moderate and poor level,²⁰ as in previous studies, patient safety culture was also reported to be poor among nurses.^{28,29} Therefore, it is necessary to improve patient safety levels and

patient safety culture in nurses.³⁰ One of the factors related to patient safety culture is the professional behavior of nurses. According to the results of Jabari et al.'s study, patient safety culture in nurses and the professional behavior of nurses were reported to be at moderate levels in this regard.³¹

Professional behavior is defined as the ability to meet patients' ethical expectations. These expectations are based on patients' well-being, independence, and social justice. This type of behavior is determined by the commitment to professional duties, adherence to ethical principles, and sensitivity to the general public.³² The professional behavior of the individual begins in his or her family, is nurtured under the process of nursing education, grows in the workplace, and develops as the nursing job performance.³³ Following academic education, the development of professional values in nurses is mainly influenced by professionals in this field, colleagues, patient care conditions, and organizational values.^{34,35} It is the nature of nurses to help patients or healthy people, families, and the community. They must provide quality services about life, dignity, personality, integrity, and values and decisions of human beings whom they regard as the most valuable being in life. When providing services, nurses need to be aware of the values that guide their personal and professional behaviors and to use those values to shape their professional responsibility.^{36,37} In this regard, the results of Shahriari et al.'s study showed that the quality of nursing care and nurses' performance on patient care is influenced by the observance of professional values.³⁸ Identifying the level of patient safety culture is a great step that helps healthcare managers in planning to improve the quality of care provided to patients.³⁹ Due to the low level of patient safety culture in nurses reported by the review of researches, the purpose of this study was to investigate the role of professional behavior to improve patient safety culture in clinical nurses in Iran.

Materials and Methods

The current study was conducted in a cross-sectional design in clinical nurses. This study was carried out by 230 clinical nurses working in Imam Hossein and Bahar hospitals in Shahroud, northeast of Iran. Eligible participants were selected by stratified random sampling method. The inclusion criterion was having at least one year of work experience, and not answering 30% of the questions in each questionnaire was the exclusion criterion. Data were collected by using a demographic information form, hospital survey on patient safety culture questionnaire (HSOPSC), and the nursing professional behaviors scale.

Demographic information form: This form included gender, educational level, marital status, monthly income, economic status, workplace ward, workplace hospital, the grade point average (GPA) in last educational degree, and average working hours per week. The validity of the demographic information form was approved by 10 faculty members of Shahroud university of medical sciences.

The Hospital Survey on Patient Safety Culture: The Hospital Survey on Patient Safety Culture (HSOPSC) questionnaire, developed by the agency for healthcare research and quality (AHRQ), has 42 questions. The purpose of

HSOPSC is to measure the status of the patient safety culture from various dimensions (Frequency of event reporting, the overall perception of patient safety, manager expectations and actions promoting patient safety, organizational learning and continuous improvement, teamwork within hospital units, communication openness, feedback and communication about the error, non-punitive response to error, staffing, hospital management support for patient safety, teamwork across hospital units, hospital handoffs and transitions).⁴⁰

It is rated on a 5-point Likert scale ranging from completely false to completely true with the highest score being 5 and the lowest being 1. The scoring method for the questions of 2, 3, 4, 6, 10, 11, 21, 25, 26, 27, 29, 30, 31, 34, 35, 37, 39, 40, 41, and 42 is reversed. To obtain the score for each dimension, the total scores of questions for that dimension are aggregated, and for obtaining the overall score of the questionnaire, the total scores of all questions are aggregated. Higher scores indicate higher safety culture.³ In the study of Moghri et al., the reliability of the Persian version of this tool was determined by a Cronbach's alpha of 0.86. The construct validity of this questionnaire was also confirmed by assessing the correlations between domains. The value of the fit function was 14.25, and with regards to this value for the fit function, the goodness of fit index (GFI) was obtained as 0.96. The internal correlations of the questions ranged from 0.8 to 0.57. The Cronbach's alpha for the internal correlations of all domains was 0.82 and the Spearman Brown's coefficient was 0.81.⁴¹ The reliability of the total score of this instrument in the present study was confirmed based on internal consistency (Cronbach's alpha coefficient = 0.70).

Nursing professional behaviors scale: The nursing professional behaviors scale (NSPBS) was developed by Heshmati-Nabavi et al. and its reliability was assessed by internal consistency evaluation by Cronbach's alpha calculation. Its reliability was confirmed by a Cronbach's alpha coefficient of 0.76. This scale is made up of 27 items including the options of "always = 5", "never = 4", "sometimes = 3", "no idea = 2", and "often = 1". The minimum score is 27 and the maximum score is 135. The highest score indicates the best professional behavior and vice versa. This questionnaire has no subscale.⁴² The reliability of this questionnaire in the present study was confirmed based on internal consistency (Cronbach's alpha coefficient equal to 0.74).

According to Jabari et al.'s study³¹ and considering 5% alpha, 85% power, and 0.291 variances for patient safety culture, the sample size was estimated to be 196, and with a sample loss of 15%, it was determined to be 230.

Data were analyzed using descriptive statistics and inferential statistics test (linear regression analysis by backward method). A significance level of 0.05 was considered for all the tests.

The present study was approved by the Ethics Committee of Shahroud university of medical sciences under code ETHICS. RES.SHMU.1396.126. Participants gave written informed consents.

Results

The majority of participants were female (88.3%) and married (73%). Other descriptive information of the study participants is shown in table 1. The mean scores of the

professional behavior of nurses and patient safety culture were reported to be 132.49 ± 15.97 and 109.65 ± 18.01 , respectively. In addition, in terms of patient safety culture, the highest score was associated with the dimension of hospital handoffs and transitions (8.17 ± 2.96) and the lowest score with the dimension of non-punitive response to error (16.04 ± 3.89) (Table 2). The results of table 3 showed that there was a significant positive correlation between patient safety culture and the professional behavior of nurses ($r=0.284$, $Pvalue<0.001$). The multivariate linear regression model by backward method showed that more

than 14% of the variance of patient safety culture was predicted by the variables within the model, such that the professional behavior, the working hours per week, and the workplace (hospital) of the study participants had a significant relationship with the patient safety culture, and the patient safety culture increased by 0.241 units per unit increase in the professional behavior and decreased by 0.207 units per unit increase in the working hours per week. Also, changing the workplace (hospital) from Imam Hossein hospital to Bahar hospital led to a 6.313 unit increase in the patient safety culture.

Table 1. The demographic characteristics of clinical nurses

Variable	Number	Percent
Workplace hospital		
- Bahar	92	40.0
- Imam Hossein	138	60.0
Gender		
- Male	27	11.7
- Female	203	88.3
Educational level		
- Bachelor degree	219	95.2
- Master degree	11	4.8
Marital status		
- Single	62	27.0
- Married	168	73.0
Monthly income		
- 10 to 20 million Rials	149	64.8
- More than 20 million Rials	81	35.2
Economic status		
- Low	22	9.6
- Moderate	147	63.9
- High	61	26.5
Workplace ward		
- Emergency	40	17.4
- Internal	94	40.9
- Surgical	43	18.7
- Intensive care	53	23.0
-		
	Mean	SD
The grade point average (GPA)	16.42	0.99
Average working hours per week	49.75	11.09

SD. standard deviation

Table 2. The mean score of professional behavior, patient safety culture and its subscales in clinical nurses

Variable	Mean	SD
Professional behavior	132.51	15.97
Patient safety culture	109.57	18.01
Frequency of event reporting	9.92	1.96
Overall perception of patient safety	13.33	2.70
Manager expectations and actions promoting patient safety	12.13	2.99
Organizational learning and continuous improvement	10.75	2.29
Teamwork within hospital units	14.29	3.53
Communication openness	8.89	2.29
Feedback and communication about error	10.35	2.36
Non-punitive response to error	8.17	2.96
Staffing	10.22	3.68
Hospital management support for patient safety	9.44	2.34
Teamwork across hospital units	8.92	2.50
Hospital handoffs and transitions	16.04	3.89

Table 3. The role of independent variables on patient safety culture of clinical nurses in a linear regression model (backward method)

Variable	β	SE	T	Pvalue
Constant value	157.72	18.30	8.61	<0.001
Professional behavior	0.241	0.055	4.387	<0.001
Workplace hospital				
Bahar	Ref			
Imam Hossein	-6.313	2.023	-3.12	0.002
The grade point average (GPA)	-1.90	0.987	-1.924	0.056
Average working hours per week	-0.207	0.090	-2.308	0.022

SE. standard error

Discussion

According to the results, the majority of participants in the present study (88.3%) were female, consistent with the results of the previous studies.^{28,43-45} In line with these results and according to the results of studies conducted by the national science foundation⁴⁶ and the U.S. department of education,⁴⁷ women were more active in jobs such as nursing, teaching, and social works, while men accounted for a greater number of graduates in engineering disciplines and occupations, with only 12% of them hold a bachelor's degree in nursing.

In the present study, the strongest dimension of patient safety culture was reported as the hospital handoffs and transitions. The possible reason for this result may be because the present study was conducted in educational hospitals and nurses working in these hospitals gained more awareness of this dimension of the patient safety culture by taking part in in-service training courses. This finding is inconsistent with the study of Asefzadeh et al. aimed at investigating the patient safety culture and occupational stress in nurses in Mazandaran,³⁰ and with the study of Alquwez et al, in which the dimension of hospital handoffs and transitions was reported as the weakest dimension.⁴⁸ The possible reason for this discrepancy may reside in the differences in supervision and management between hospital departments regarding the patient safety culture in the above studies.

The results of the present study showed that the dimensions of non-punitive response to error and communication openness were the weakest dimensions of patient safety culture, consistent with the results of Alqattan et al.'s study which aimed to evaluate the patient safety culture in a secondary care center in Kuwait,⁴⁹ and with the results of Alquwez et al.'s study which aimed to examine the nurses' perceptions of patient safety culture in Saudi Arabia.⁴⁸ In this respect, it can be said that some experts believe that the word "error" is too negative, hostile, and leads to a culture of blame. A professional individual whose confidence and morale are damaged by an error may be less likely to work and may abandon his medical career. Many experts suggest that the term "error" should not be used.⁵⁰ In this regard, Granel et al. (2019) noted that "blame culture" does not facilitate to improve the level of patient safety culture.⁵¹

Based on the results of this study, more than 14% of the variance of patient safety culture was predicted by the variables within the regression model. In this regard, the results of the study by Lotfi et al showed that 9% of the variance of patient safety culture was predicted by the variables within the regression model.⁴⁵ Also, in the study by Alquwez et al., 25% of the variance of patient safety culture was predicted by the variables within the regression model as well.⁴⁸ The difference between the results of the above-mentioned studies and the present study may be attributed to the differences in the culture of the studied populations or the studied variables within the model.

According to the results obtained from this study, patient safety culture had a significant and direct relationship with the professional behavior of nurses. This finding is in line with the results of Jabari et al.'s study.³¹ The results of the study by

Lotfi et al. also showed that nurses' organizational commitment and ethical leadership of nursing managers were the predictors of patient safety culture.⁴⁵ Given the potential positive impact of professional behavior on safety culture in nurses, according to Kowalski et al.'s study, it can be stated that the evolution of nurses' professional behaviors began in the family and continued until reaching the nursing job in the workplace.³³ Given that this study was conducted in teaching hospitals and nursing students interact with nurses in their clinical courses, they may learn from nurses in some cases. If there is no appropriate professional behavior among nurses, it can cause a decrease in the safety culture.⁵² Also, some of those behaviors or training may be regarded as part of the medical culture.⁵³ In addition to nursing, these types of problems can also be seen in other medical professions such as pharmacy, physiotherapy, or dentistry.⁵⁴ It can be stated that paying attention to the proper formation of individuals' professional behavior in different medical professions, especially nursing, seems necessary to promote their safety culture level.

The results of the present study showed that there was a significant relationship between the workplace (hospital) of nurses and the patient safety culture. It is consistent with the findings of Dincer et al.'s study, which aimed to determine the nurses' perceptions of patient safety culture in palliative care centers.⁴³ In this study, a significant relationship was found between the workplace institute and the patient safety culture.

The results indicated that there was a significant and inverse relationship between working hours per week and patient safety culture, consistent with the results of previous studies,^{55,56} in which the level of patient safety culture decreased in nurses by increasing their working hours per week. With the decrease in the level of safety culture perceived by nurses, the errors they make are likely to increase as well. Also results of Alrabae et al. (2021) study showed that overall workload was significantly and negatively associated with the patient safety culture.⁵⁷ According to the results of the study by Kowalski et al. (2017), high working hours were identified as one of the causes of health errors in this respect.⁵⁸ High working hours appear to be associated with burnout in nurses and a decrease in safety culture. For example, in their study, Hall et al. showed that moderate to high levels of burnout are associated with poor patient safety outcomes such as medical errors.⁵⁹ In other words, increasing nurses' working hours probably leads to increased burnout (possibly due to physical and psychological exhaustion, high workloads, etc.) during rotating shifts, which ultimately reduces the nurse's desire to maintain or promote patient safety culture in the hospital.

Factors that could potentially affect the patient safety culture and the professional behavior of nurses, form the authors' perspectives, and were not controlled in this study were considered the limitations of the present study; factors such as the type of employment, the amount of overtime per week, the desire for changing job in the future, and the type of work shifts, which are suggested to be investigated in future studies.

The results of this study indicated that nurses' professional behavior is a positive factor in patient safety culture. It is recommended that good degrees of patient safety culture can be

achieved by institutionalizing appropriate professional behavior among nurses and nursing students and prioritizing patient safety over other issues in professional clinical practices. It is also necessary to provide an open environment, without the blame and threat, for reporting nurses' problems and for better interaction of senior nursing managers with clinical nurses.

Iranian nurses are overworked and interact with problems in the safety of patients. Occupational health nurses should prioritize this problem. According to the results of this study, one of the factors influencing the promotion of patient safety culture in nurses is their professional behavior. Therefore, it is desirable that interventions such as teaching professional nursing behaviors during the employment period (such as in-service training courses) and even the study period and before employment, institutionalized professional behavior in this group of medical staff. Providing this information can be a useful guide for occupational health nurses to promote patient safety culture in nurses.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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