Original Article

Determining the Patient Safety Culture of Operating Room Nurses in Turkey

Temiz Zeynep, PhD, RN
Surgical Nursing Department, Artvin Coruh University Health Sciences Faculty, Artvin, Turkey

Ozbas Ayfer, PhD, RN
Surgical Nursing Department, Istanbul University-Cerrahpasa Florence Nightingale Nursing Faculty, Istanbul, Turkey

Cavdar Ikbal, PhD, RN
Surgical Nursing Department, Istanbul University-Cerrahpasa Florence Nightingale Nursing Faculty, Istanbul, Turkey

Tutuncu Serife Gozde, MSc, RN
Nursing Department, Sinop University School of Health, Sinop, Turkey

Ayoglu Tuluha, PhD, RN
Surgical Nursing Department, Istanbul University-Cerrahpasa Florence Nightingale Nursing Faculty, Istanbul, Turkey

Akyuz Nuray, PhD, RN
Surgical Nursing Department, Istanbul University-Cerrahpasa Florence Nightingale Nursing Faculty, Istanbul, Turkey

Ozbay Suna, RN, MSc
Istanbul University, Istanbul Faculty of Medicine, Mono Block Operating Room, Turkey

Correspondence: Temiz Zeynep PhD, RN, Artvin Çoruh University, Faculty of Health Sciences, Nursing Department, Turkey, City Campüs, Çayağzı district. Center/ Artvin E-mail address: erzeynep_@artvin.edu.tr

Abstract

Background: One of the most important strategies for determining and improving patient safety in health institutions is creating a patient safety culture. Little is known about the perception towards patient safety culture among operating room nursing in Turkish setting.

Objectives: To determine the level of patient safety culture among nurses who play an active role in the operating rooms in Turkey.

Methodology: This study was designed as a descriptive study. The study included 82 nurses who were actively working and had not taken time-off between June and September 2014. "Demographics Characteristics Form" and "Patient Safety Culture Scale (PSCS)" were used to collect the related data. The data were evaluated using descriptive statistics, the t test for independent groups, the Mann Whitney U test and the Kruskal –Wallis variance analysis.

Results: Mean age of the nurses who participated in the study was 35.19±6.83. 84.1% of the nurses had a bachelor degree. Mean number of years worked in the same institution was 11.07±7.44. 58.5% of the nurses had patient safety training and 42.7% had quality training. Mean PSCS score of the nurses was 2.38±0.36. The highest mean score was of staff behavior (2.53±0.40), while the lowest was of care environment (2.19±0.49).

Conclusion: Although several training programs had been conducted, this study demonstrated that the level of patient safety culture and its components were slightly above moderate, but it is not yet at the desired level. Nurses should continue to take responsibility for patient safety in their operating rooms by improving their knowledge base and incorporating it into their daily work lives. Patient safety should be addressed in detail in the in-service training programs of hospitals.

Keywords: Patient safety; nurses; operating rooms; organizational culture

Introduction

Patient safety is a crucial aspect of the healthcare provision delivery (Behzadifar et al., 2019). The patient safety culture is considered as important for patient safety (Fujita et al., 2013). One of the most important strategies for determining and improving patient safety in health institutions is creating a patient safety culture (Gunes et al., 2016). Positive patient safety culture is an essential aspect of reducing errors and improving patient outcomes (Alqattan et al., 2018; Ginsburg et al., 2014). Hospital staffs with positive patient safety can help healthcare organizations to reduce medical adverse events, such as patient fall, medical errors, and work absence (Huang et al., 2010; Mardon et al., 2010; Wang et al., 2014; Lee et al., 2016). Health professionals' perceptions and attitudes about patient safety should be intermittently measured in order to establish and develop a patient safety culture (Elsous et al., 2017).

Nurses' perception of patient safety culture is linked to work load demands, in which increased demands were associated with lower safety (Richardson and Storr, 2010). The managerial commitment, a positive work environment, education level and knowledge transfer among nursing staff are significant factors connected to higher patient safety culture perception and have an impact on patient outcomes (Elsous et al., 2017; Aboshaiqah and Baker, 2013; Kirwan et al.,2013).

The results of a study conducted in hospitals in Turkey by Gunes et al. reported that many Turkish nurses have negative perceptions towards a good patient safety culture within their institution. Participants indicated their affiliated institution did not have a protocol or policy concerning event reporting (Gunes et al., 2016). In another study, patient safety culture score average of the operating room nurses was at medium level (Rızalar and Topcu, 2017). Another study has reported that patient safety culture among the healthcare professionals in hospitals of Iran is moderate and weak (Ebrahimzadeh et al., 2017). Nie et al. in China (Nie et al., 2013) and Alshammari et al. in Saudi Arabia (Alshammari et al., 2019) demonstrated that hospital staffs are affirmative toward patient safety culture within their organization.

The operating room (OR) and post anesthesia care unit (PACU) are high risk units with a high potential for patient harm, but few studies have attempted to measure the Patient Safety Culture in these units. Little is known about the perception towards patient safety culture among operating room nursing in Turkish setting. A strong patient safety culture in the operating room (OR) is essential to promote safe care. Accordingly, the aim of this study was to determine patient safety culture of nurses working in operating room in two Turkey hospitals. Specifically, the study intended to:(1) describe the demographic profile of the operating room nurses,(2) determine the perceptions of the respondents on the composites/dimensions of PSC,(3) explore the factors that affect the nurses' patient safety culture.

Methods

Study Design: A descriptive study was conducted to assess the PSC two university hospital in the Turkey.

Setting and sample: Data were collected between June and September 2014. This study was conducted in two university hospitals in Istanbul. These hospitals are the biggest and oldest hospitals in Istanbul. A total/complete enumeration, where all nurses from the hospital's roster who have been working in the current setting for at least 6 months and who consented to participate in the study, was conducted. The nurses who volunteered to participate in the study were included. Nurses who were asked to complete the survey had enough knowledge about the hospital. Nurses who were on sick leave, maternity leave, or those who were on vacation at the time of the data collection were excluded. Also, those who were on probation or those who have been working in the current setting for less than 6 months were not included. No sampling method was used in this study and the researchers tried to reach the whole population. The study population consisted of 110 nurses working in ORs of two university hospitals. The data obtained from the 82 nurses who filled out the questionnaire were used in this study.

Measurements/Instruments: Data collection tools included the Demographics Characteristics Form and the Patient Safety Culture Scale (PSCS) whose reliability and validity studies were conducted by Turkmen, Baykal, Seren, & Altuntas (Turkmen et al., 2011). The Demographics Characteristics Form consists of 8 questions for identifying nurses characteristics. The 51-item PSCS consists of 5 sub-dimensions

including management and leadership (17 items), staff behavior (14 items), unexpected event and error reporting (5 items), staff education (7 items) and care environment (8 items). The PSCS is a 4-point Likert scale rated as "1.completely disagree", "2.disagree", "3.agree", 4."completely agree". For the calculation of PSCS score, item scores from each sub-dimension are summed to obtain number of items. A total score, which then is divided by the number of items and a total mean score between 1 and 4 is obtained for each sub-dimension. The total scale score is calculated by summing the mean score for each 5 sub-dimension which is then divided by 5, giving a scale score between 1 and 4. Scores approaching 4 show a positive attitude toward patient safety culture, and scores approaching 1 show a negative attitude toward patient safety culture (Turkmen et al., 2011). In the present study, total Cronbach's alpha for whole scale was 0.82, and for dimension values were as follows: staff behavior, 0.86; care environment, 0.81; management and leadership, 0.80; unexpected event and error reporting, 0.71; and staff education, 0.67.

Data collection/Procedure: Necessary explanations were made to the nurses by the researchers. The scale was administered during work hours without interfering with the participants' duties. The nurses were given time to fill out the Forms and then they were collected.

Ethical Consideration: Adherence to general data privacy principles (transparency, legitimate purpose, and proportionality) and the requirements of lawful collection, processing, and retention of data were ensured. Also, identifying information were concealed during the study by assigning an alphanumeric code to maintain anonymity and obviate the possibility that responses could be linked to study respondents. Personal data were encrypted during storage and while in transit and other technical security measures were implemented that will control and limit access.

The study was conducted after formal permissions for the study were obtained from the Directorates of the Hospitals. Prior to the administration of data collection tools, nurses were informed of the aim and content of the research. The respondents were notified that all information would be kept confidential and be only used for scientific purposes. A verbal consent was obtained from each participant.

Data analysis : The data collected were transferred to the computer, and data analysis was performed using SPSS 16.0. The data were evaluated using descriptive statistics (frequency, mean, standard deviation), the t test for independent groups, the Mann Whitney U test and the Kruskal –Wallis variance analysis. A p value of <0.05 was considered statistically significant with a 95% confidence interval.

Results

The mean age of the nurses who participated in the study was 35.19±6.83 years. Of all nurses, 84.1% had a BSN degree and 93.9% were female. The mean number of years of work experienced in the same institution was 11.07±7.44 years. Of the nurses, 58.5% received training on patient and staff safety and 42.7% on hospital service quality standards in institution (Table 1). The mean PSCS score of the nurses was 2.38±0.36. The highest mean score was on the sub-dimension of staff behavior (2.53±0.40), whereas, the lowest was on the sub-dimension of care environment (2.19±0.49) (Table 2).

Table 3 introduces nurses' characteristics and the comparison of their scores on the PSCS sub-dimensions. The comparison of the mean PSCS scores based on age revealed that nurses aged 34 years or older had higher mean scores on the PSCS (2.47±0.32) and a statistically significant difference was found between the mean scores on the sub-dimensions of unexpected event and error reporting and age (p<0.05). Female nurses' PSCS total mean scores were higher than male nurses' PSCS total mean scores (2.40±0.35), and the difference in the PSCS mean score was statistically significant (p<0.05). No statistically significant difference was found between educational level and PSCS total mean scores (p>0.05), whereas there was a statistically significant difference between the mean scores on the sub-dimensions of management and leadership and unexpected event and error reporting and educational level (p<0.05). Nurses with more years of working experience in the institution had higher mean scores on the PSCS (2.46±0.31), however, the difference between the years of working experience and the PSCS mean score did not reach statistical significance (p>0.05), whereas the difference between the mean score on the sub-dimension of unexpected event and error reporting and years of working

experience in the institution was statistically significant (p<0.05). The mean PSCS score of the nurses who had received training on patient safety was higher (2.42±0.37), with only

statistically significant difference between the mean scores on the sub-dimensions of management and leadership and staff education (p<0.05) (Table 3).

Table 1. Descriptive Characteristics of Nurses (N=82)

Characteristics	n	%	X±SD
Age			35.19±6.83
Gender			
Male	5	6.1	
Female	77	93.9	
Education			
Associate degree	4	4.9	
Bachelor degree	69	84.1	
Master degree	9	11.0	
Have you received patient safety training?			
Yes	48	58.5	
No	34	41.5	
Have you received quality training?			
Yes	35	42.7	
No	47	57.3	
Institution working years			11.07±7.44

SD: standard deviation

Table 2. The overall and sub-dimension mean score of patient safety culture scale of nurses (n=82)

Sub-dimensions	Number of items	X±SD
Management and leadership	17	2.36±0.42
Staff behavior	14	2.53±0.40
Care environment	8	2.19±0.49
Staff education	7	2.42±0.50
Unexpected event and error reporting	5	2.40±0.46
PSCS score	51	2.38±0.36

SD: standard deviation

Table 3. Comparison of Mean PSCS Score by Some Characteristics of Nurses (N=82)

Characteristics	Management and leadership	Staff behavior	Unexpected event and error reporting	Staff education	Care environment	PSCS
Age						
18-25	2.53±0.34	2.53±0.24	2.45±0.34	2.38±0.43	2.42±0.41	2.46±0.28
26-33	2.31±0.44	2.40±0.43	2.17±0.42	2.20±0.60	2.24±0.51	2.19±0.37
34 and over	2.37±0.43	2.60±0.39	2.51±0.46	2.54±0.40	2.35±0.39	2.47±0.32
Kruskal Wallis test	KW: 1.33	KW: 5.48	KW: 8.30	KW: 4.87	KW: 5.93	KW: 8.82
Significant level	**p:0.513**	p:0.065	**p:0.016**	p:0.087	p:0.68	**p:0.012**
Gender						
Female	2.37±0.43	2.54±0.41	2.41±0.47	2.46±0.44	2.23±0.47	2.40±0.35
Male	2.29±0.26	2.40±0.10	2.24±0.35	1.80±0.91	2.20±0.48	2.06±0.35
Mann Whitney-U test	MW-U:150.0	MW-U:114.0	MW-U:150.0	MW-U:120.5	MW-U:140.0	MW-U:89.0
Significant level	p:0.409	p:0.127	p:0.404	p:0.160	p:0.420	**p:0.045**
Education						
Associate degree	2.52±0.24	2.67±0.29	2.70±0.34	2.32±0.45	2.31±0.41	2.50±0.29
Bachelor degree	2.31±0.42	2.49±0.40	2.34±0.46	2.40±0.51	2.17±0.51	2.34±0.36
Master degree	2.69±0.40	2.75±0.36	2.66±0.34	2.60±0.40	2.30±0.43	2.60±0.32
Kruskal Wallis test	KW: 7.34	KW: 4.07	KW: 7.50	KW: 1.93	KW: .26	KW: 4.02
Significant level	**p:0.025**	p:0.131	**p:0.023**	p:0.381	p:0.878	p:0.133
Institution working year						
1-5	2.44±0.33	2.43±0.27	2.22±0.34	2.24±0.58	1.99±0.55	2.26±0.38
6-10	2.30±0.45	2.53±0.48	2.38±0.58	2.50±0.56	2.21±0.53	2.38±0.43
11 and over	2.36±0.46	2.54±0.40	2.53±0.38	2.48±0.34	2.22±0.38	2.46±0.31
Kruskal Wallis test	KW: .67	KW: 3.68	KW: 7.14	KW: 3.00	KW: 2.80	KW: 4.93
Significant level	p:0.103	p:0.494	**p:0.026**	p:0.878	p:0.668	p:0.845
Have you received patient safety training?						
Yes	2.45±0.38	2.56±0.41	2.39±0.49	2.51±0.46	2.19±0.51	2.42±0.37
No	2.25±0.46	2.49±0.39	2.41±0.41	2.29±0.52	2.20±0.47	2.33±0.33
Student t test	t:2.15	t:.73	t:-.19	t:2.03	t:-.11	t:1.14
Significant level	**p:0.025**	p:0.305	p:0.812	**p:0.053**	p:0.645	p:0.297

PSCS: Patient safety culture scale

Discussion

The perception of patient safety culture appears to be slightly above moderate level in this study. In a study of nurses working in operating room and surgical clinics by Pimentel et al., (Pimentel et al.,2017) and in a study of nurses working in various departments (operating room and intensive care unit) by Karaca and Arslan (Karaca and Arslan, 2014) and Rızalar and Topcu (Rızalar and Topcu, 2011) the level of patient safety culture was slightly above moderate. The results of this study are consistent with previous studies (Rızalar and Topcu, 2011; Pimentel et al.,2017; Karaca and Arslan, 2014).The comparison of PSCS mean scores based on age and gender (Table 3) revealed a statistically significant difference between the scale total mean score and the groups ($p<0.05$). One of previous studies revealed no statistically significant difference, which is in contrast with the results of this study (Karaca and Arslan, 2014). It appears that the statistically significant difference can be attributed to the fact that the nurses who constituted the study sample are working in operating rooms, a special unit where patient safety and team concept are high priorities and where there are high rates of risks and medical errors. In this study, there was a statistically significant difference between the sub-dimensions of age groups and unexpected event and error reporting (Table 3). It is likely that the difference is associated with the fact that nurses aged 34 years or older have more professional experience than their younger counterparts, are more skilled at problem solving, have higher levels of ethical sensitivity and attach more importance to errors. The comparison of the PSCS mean scores based on educational level revealed that the scale total mean score of the nurses with a master's degree was higher but the difference did not reach the level of statistical significance. A statistically significant difference was noted between the mean scores on the sub-dimensions of management and leadership and unexpected event and error reporting and the groups. A study by Bump et al., demonstrated that the frequency of error reporting among staff was higher than trainees (Bump et al., 2017). Similarity, Pimentel et al. found significant variability in perioperative patient safety climate across survey dimensions and levels of training (Pimentel et al., 2017). The International Council of Nurses believes that accumulating an integrated body of scientific knowledge focused on patient safety and the infrastructure to support its development. Therefore, nurses with a master's degree can be considered to have higher expectation about patient safety based on the education they received (ICN, 2012).

The mean score on the sub-dimension of "adverse events and error reporting" was significantly higher in nurses with ≥11 years of working experience in the institution compared to that in nurses with working experience of ≤10 years. The results obtained were not consistent with those reported by Guneş et al., and Karaca and Arslan (Guneş et al., 2016; Karaca and Arslan, 2014). With more experience, awareness regarding safety practices undertaken in an institution increases. As the years of working experience in the institution increased, so did error reporting, which likely indicates lack of fear of reporting and higher levels of self-confidence among employees. Perhaps this demonstrates that the nurses think patient safety is mostly associated with organizational structure, number of employees, and number and calibration of equipment rather than individual mistakes.   The comparison of nurses' mean scores on the PSCS and its sub-dimensions with their status of receiving training on patient safety revealed no statistically significant difference in total scale mean scores between the groups. There was a statistically significant difference between the groups in the sub-dimensions of "management and leadership" and "staff education" ($p<0.05$). Health professionals have been provided with training on patient safety practices. It appears that the employees possessed an insufficient attitude and behavior toward creating a patient safety culture while the managers adopted and supported practices. Within this context, as the level of continuous learning from mistakes increases so does the patient safety culture of managers, communication and the frequency of error reporting. Similarly, in a study by Karaca and Arslan, a statistically significant difference was found in the same sub-dimensions (Karaca and Arslan, 2014). These results indicate that patient safety culture of the manager is the most important factor in health workers' practicing patient safety. Accordingly, it can be inferred that health workers' implementation of patient safety practices is associated with the adoption of patient safety culture by managers; managers play an important role in the implementation of

patient safety practices. In order to build patient safety culture in an institution, therefore, managers should believe in this issue and display the required awareness, attitudes and behaviors to create this culture.

Limitations*:* Although researchers evaluate the internal validity of the questionnaire, some of the nurses **(8 nurses)** enrolled in this study expressed being unfamiliar with some concepts and terms in the questionnaire. The concepts and terms related to this limitation are "the criteria for patient safety are included in the performance evaluation of all employees" and "patient safety is taken into account during maintenance inspection". The researcher explained these terms and concepts using their dictionary definitions without adding any subjective comments.

Conclusion and Recommendations: It is an important responsibility for managers to build safety cultures in hospitals since it requires renovation and senior management of the institution is obliged to assume important responsibilities. The patient safety culture created in institutions would provide an environment where errors can be discussed openly without fear of being punished, and enable studies to be conducted on patient safety, thus to succeed and persist, thus considerably improving processes of diagnosis, treatment and care.

In this study, the level of patient safety culture and its components was slightly above moderate. This finding indicates that there exists a culture of patient safety and training programs have been conducted by managers, which however is not yet at the desired level. It can be recommended that the factors such as individual errors, organizational structure, insufficient number of employees and devices failure that may predispose to errors and risky activities in the context of a patient safety culture should be identified, an effective error reporting system should be established, health professionals should be provided training about medical errors related to the unit where the nurse is working, solutions should be provided at each level in risky practices, finances should be provided by the institution for patient safety, managers should pay more attention to initiating patient safety visits to the units and the sample of this study should be repeated with larger groups.

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