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Evaluation of Patient Safety Culture of Nurses in Northern Cyprus

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Abstract

BACKGROUND/AIMS: Patient safety culture is the outcome of values, perceptions, attitudes, skills and behaviors of an individual or group that determine the style, competence and promises of an institution in health and safety management. Nurses play an important role in improving quality in health care through initiatives and strategies for patient safety. This study was conducted to evaluate patient safety culture in nurses working in a university hospital in Northern Cyprus.

MATERIALS AND METHODS: This survey was planned as a cross-sectional descriptive study and 130 nurses were included in the sampling. The survey data were collected using the Personal Information Form and the Patient Safety Culture Scale (PSCS).

RESULTS: In this study, the total mean score of the nurses from the PSCS was 2.82±0.44. The mean scores of the nurses' subscales related to PSCS were determined as follows: 2.88±0.54 in the "care environment", 2.83±0.56 in the "employee behavior", 2.83±0.59 in the "employee training", 2.81±0.50 in the "management and leadership", and 2.68±0.54 in the "unexpected incident and error reporting" subscales. The total Cronbach's alpha reliability coefficient of the scale was 0.963 and between 0.807-0.963 for the subscales.

CONCLUSION: It was determined that the nurses' PSCS scores were above the average level. Developing a patient safety culture in institutions is important for quality improvements which are rapidly advancing in healthcare services nowadays.

Keywords: Patient safety, patient safety culture, nurse

INTRODUCTION

Worldwide, patient safety, which is a fundamental principle of health care, is receiving increased attention.[1,2] The safety of health care is a major global concern today.[2] "*To err is human*" was a report published in 1999 by the institute of medicine, in which it is estimated that approximately 98,000 people died each year in the United States of America (USA) because of medical errors.[3,4] Medical errors account for 9.5% of all deaths in the USA. Medical errors were reported to be the third most common cause of death after heart disease and cancer.[4,5] When the root causes of medical errors were examined, the errors were caused by problems related to the system, such as organizational structure, technical infrastructure and inadequate human power.[6,7] In this regard, the World Health Organization formed a patient safety unit in 2004 and the practices for patient safety were begun to be carried out more systematically.[8-10]

The prevention of health-related errors and the elimination of problems caused by these errors depend on the formation of patient safety culture.[11] Patient safety culture is the product of the values, perceptions, attitudes, skills and behaviors of the individuals or groups

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which determine the style, competence and promises of an institution in health and safety management.[12,13] Safety culture is based on three main principles including trust, reporting and improvement.[7] A positive safety culture involves effective teamwork, communication, a non-punitive approach towards errors, and cooperative learning.[14] In this regard, it is important to believe that mutual trust-based communication, common perceptions of safety and preventive measures are beneficial. In order to develop the safety culture of an institution, it is necessary that all of the employees of the institution have knowledge about these safety implementations, take an active role in their implementations and work as a team.[15]

Nurses, one of the important elements of patient safety culture, are an important professional group actively working in all areas of the health system.[16] In the delivery of health services, nurses constitute the largest proportional group of all healthcare personnel and at the same time provide the closest and most continuous care services to the patients. In this regard, activities that improve patient safety are significantly related to nursing care.[17] Nurses are responsible for protecting their patients from all possible hazards, and for preventing or minimizing undesirable consequences of processes and treatments applied in all environments where they serve patient care.[18]

It is necessary to evaluate the perceptions and attitudes of the nurses and all the personnel regarding patient safety in order to be able to establish and improve patient safety culture, and this evaluation should be repeated at regular intervals.[19] The assessment of safety culture in institutions allows for the identification of areas related to patient safety, in order to raise awareness about patient safety in personnel, to monitor changes over time in patient safety interventions, and to compare outcomes.[20]

In the literature review, no study was found on the evaluation of patient safety culture of nurses in Northern Cyprus. The definition of patient safety culture of nurses is thought to be a guide for studies on the development of patient safety culture.

Objectives of the study: This study was conducted in order to evaluate patient safety culture in nurses working in a university hospital. In this survey, answers to the following questions were investigated:

1. What is the level of the nurses' total and subscale scores in the patient safety culture questionnaire?

2. Is there any difference between the nurses' descriptive characteristics and their mean scores of the culture of patient safety scale?

MATERIALS AND METHODS

Study type: This survey was planned as a cross-sectional and descriptive study.

Setting: This study was conducted in a university hospital. Patient care in the university hospital where the survey was carried out is realized according the principles proposed by the Joint Commission International to ensure patient safety.

Population and research sample: Nurses working in the university hospital (ward, intensive care, operating room, outpatient clinic) composed the population and 130 nurses who agreed to participate in this survey were included in the research sample. The total number of nurses was 220 and the participation rate was 59.09%.

Data collection tools: Data were collected using the "Personal Information Form" and the "Patient Safety Culture Scale (PSCS)". The Personal Information Form was created to determine the socio-demographic characteristics of the nurses and it consists of 11 questions. The PSCS was developed by Türkmen et al.[6] for the evaluation of patient safety culture. In the nursing group, this scale, which had validity/reliability studies, consists of 51 items. The PSCS; consists of 5 subscales consisting of management and leadership (17 items), employee behavior (14 items), unexpected events and error reporting (5 items), employee training (7 items) and the care environment (8 items). PSCS is a four-point Likert type measuring instrument. The efficacy of patient safety practices has been assessed according to scores ranging from 1 to 4 as follows "1; *I do not agree at all*", "2; *I do not agree*", "3; *I agree*", "4; *I fully agree*". In the interpretation of the scale score, a high average score shows positive patient safety culture, and a low score indicates the presence of a negative patient safety culture. The total Cronbach's alpha reliability coefficient of the PSCS was found to be 0.97 and the sub-dimensions of the PSCS were found to be between 0.83 and 0.92. In this study, the total Cronbach's alpha reliability coefficient of the scale was 0.963 and the subscales were between 0.807 and 0.963.

Ethical considerations: Approval for this scientific research by the ethics evaluation board of the university (approval number: YDU/2016/42-348, date: 22.12.2016) and permission of the university hospital were granted for the research to be implemented.

Data collection: Data were collected between January and April, 2017 from the nurses by face-to-face interviews. After the researchers explained the purpose of the study to the nurses, written informed consent was obtained from them.

Statistical Analysis

Data obtained from this study were evaluated by the SPSS 20.0 (SPSS, Inc., Chicago, IL, USA) program. Numerical and percentile distributions, arithmetic means and standard deviations of the data were examined. Numerical data without normal distribution were subjected to the Mann-Whitney U Test. Statistical significance was accepted as $p<0.05$ at a 95% confidence interval.

RESULTS

In the present study, when the personal and professional characteristics of nurses were analyzed, it was determined that 42.3% of them were under the age of 25 (28.56±7.58 years of age mean), 85.4% of them were female, 70.0% of them were undergraduate and 71.5% of them had working experience of between 0-5 years, and 53.1% of them were working in clinics (Table 1).

Regarding the patient safety training status of the nurses, it was found that 60.8% of them had been trained about patient safety. 71.5% of all nurses participating in this study stated that they found their training for patient safety to be insufficient (Table 2).

It was found that 17.7% of the nurses needed to be trained on the correct identification of the patient, 33.1% on safe drug applications, 26.9% on transfusion safety, 30.0% on safe surgical applications, 13.8% on reducing risks resulting from falls, 23.1% of them on effective communication, 41.5% of them on radiation safety, and 33.8% of them on medical device safety (Table 3).

Table 1. Personal and occupational characteristics of the nurses (n=130)

Characteristics		n	%
	25 and below	55	42.3
Age	Between 26-30	50	38.5
Mean (28.56±7.58)	31 and above	25	19.2
Gender	Female	111	85.4
	Male	19	14.6
Educational status	Diploma in nursing	13	10.0
	Associate diploma	15	11.5
	Bachelor	91	70.0
	Postgraduate	11	8.5
Working unit	Service	69	53.1
	Outpatient clinic	20	15.4
	Intensive care	32	24.6
	Operation room	9	6.9
Total working experience	0-5 years	93	71.5
	6 years and above	37	18.5
Total		130	100.0

The mean scores and standard deviations of the PSCS and its subscales were calculated. The total score of the nurses from the PSCS was 2.82±0.44. The lowest mean subscale score was in the "unexpected incident and error reporting" subscale (2.68±0.54), and the highest was in the "care environment" subscale (2.88±0.54) (Table 4).

Comparison of the mean PSCS scores and in-service education status of the nurses showed that there were statistically significant differences in the subscales of patient safety education between PSCS and the "management and leadership", "care environment" and "employee behavior" subscales and the patient safety training status of the nurses ($p<0.05$). It was found that the mean scores were higher for those who had received in-service training in PSCS and the "management and leadership", "care environment" and "employee behavior" subscales ($p<0.05$) (Table 5).

In this study, the mean scores of the nurses and their subgroups were compared with their age and gender, their educational status, their working clinics and their occupational experience, but no statistically significant difference was found between these variables and the mean scores obtained from PSCS ($p>0.05$).

DISCUSSION

Nowadays, the formation of patient safety culture is an important goal of system-based safety development efforts.[21] This study was performed with the aim of evaluating patient safety culture in nurses.

In the present study, the mean PSCS scores of the nurses' patient safety culture was 2.82±0.44. In other studies where the same scale was used, the total score averages of the nurses' PSCS were evaluated: the score average was 3.00±0.539 in Karaca and Arslan's[22] study performed in two private hospitals and the score average was 1.88 in the study of Yolcu et al.[20] performed in eight state hospitals. In addition, the total score averaged by the nurses from the PSCS was 2.64±0.43 in the study of Rızalar et al.[13] and 2.81±0.40 in the study of Ertürk et al.[23]. In studies conducted by Erdağı and Özer[24], for the nurses' perceptions of patient safety culture, it was determined that the nurses had a moderate sense of security. The results of our study were found to be similar to these studies. Unlike our findings, in a study by Yapucu Güneş et al.[25], carried out in Turkey with 554 nurses, it was determined that nurses had a negative perception of patient safety.

The lowest score average was found in the "unexpected incident and error reporting" subscale, and the highest score average was found in the "care environment" subscale. In a study conducted by Karayurt et al.[26] to identify patient safety culture with a different scale, the "hospital interventions and change" subscale score was the highest and the "error reporting frequency" subscale score was the lowest. The results of this study are similar to our findings. The lowest score for "error reporting" does not determine that the error rate is really low.

The "care environment" subscale of the patient safety culture includes the physical structure and equipment of the institution, materials, devices and technologies, electronic medical records, barcode systems for materials and drugs, identification safety systems, and security measures at the entrances and exits of institutions. In our study, the "care environment" is the subscale (2.88±0.54) in which the nurses had the highest total PSCS total score, suggesting that the institutional care environment in which the research was conducted was effective in ensuring patient safety. The mean score of this subscale was determined to be 2.07 in the study of Yolcu et al.[20], and 2.58±0.51 in the study of Rızalar et al.[13], and the average score obtained in our study was higher than those scores. The higher score obtained from the "care environment" subscale is considered to indicate that the physical structure and equipment, material, device, technology usage and care facilities of the hospital where the study was conducted were good.

The "employee behavior" subscale includes subjects such as compliance with working rules, knowing quality criteria and institutional targets, conforming with team work, cooperation with colleagues for patient benefit, giving suggestions to improve patient safety, and informing patients and relatives when an error occurs [6] There is evidence in the literature that improved team work is associated with reduced mortality.[27] In our study, it was determined that the mean scores of the nurses' PSCS "employee behavior" subscale was in second place (2.83±0.56). The mean score for this subscale was 2.99 in the study

Table 2. Patient safety training status of the nurses (n=130)

Characteristics		n	%
Patient safety training status	Trained	79	60.8
	Not trained	51	39.2
Opinions on patient safety training sufficiency	No answer	6	4.6
	Sufficient	31	23.9
	Insufficient	93	71.5
Total		130	100.0

Table 3. Patient safety training subjects that nurses need (n=130)

Subjects	Education needs	n	%
Identifying patients correctly	No	107	82.3
	Yes	23	17.7
Safe drug application	No	87	66.9
	Yes	43	33.1
Transfusion safety	No	95	73.1
	Yes	35	26.9
Safe surgical applications	No	91	70.0
	Yes	39	30.0
Reducing the risk resulting from falls	No	112	86.2
	Yes	18	13.8
Effective communication	No	100	76.9
	Yes	30	23.1
Radiation safety	No	100	76.9
	Yes	30	23.1
Medical devices safety	No	86	66.2
	Yes	44	33.8
Total		130	100.0

of Yolcu et al.[20], and 2.80±0.58 in the study of Rızalar et al.[13], and these results are similar to our findings. Unlike our findings, in a patient safety culture study conducted by Klemenc-Ketis et al.[27], it was determined that the quality of team collaboration and communication was perceived by members of the health team as high. In our study, nurses received one of the highest scores from the "employee behavior" subscale. This finding indicated that nurses could provide an important contribution to patient safety culture as employees.

Training on patient safety is important in the prevention of mistakes and the improvement of patient safety Yolcu et al.[20]. In our study, it was determined that the "employee training" subscale was the third most important among the PSCS averages of the nurses (2.83±0.59). The mean score of this subscale was determined to be 2.6±0.37 in the study of Yolcu et al.[20], and 2.59±0.73 in the research of Rızalar et al.[13]. It was found that the average score obtained in our study was higher than these other scores. In the present study, it was determined that

Table 4. Score means and standard deviations of nurses' PSCS and subscales (n=130)

PSCS subscales	Numbers of items	Mean	Standard deviation
Management and leadership	17	2.81	0.50
Employee trainings	7	2.83	0.59
Unexpected incident and error reporting	5	2.68	0.54
Care environment	8	2.88	0.54
Employee behavior	14	2.83	0.56
PSCS total	**51**	**2.82**	**0.44**

PSCS: Patient Safety Culture scale.

more than half of the nurses (60.8%) received in-service training on patient safety. Similarly, in the study by Yilmaz and Goris[11], 69.6% of nurses were found to have received patient safety training as part of in-service training programs. A large number of nurses who participated in our study stated that their training for patient safety was inadequate. The nurses indicated that they needed training in the areas of radiation safety, medical device safety, safe drug applications, safe surgical applications, transfusion safety, effective communication, correct identification of the patient, and the reduction of the risk of falling. This finding is important in terms of showing the awareness of nurses about their own training needs. Continuous training on patient safety for all healthcare professionals is important for the establishment of patient safety culture in institutions. These findings obtained from our study emphasize the importance of regular training on patient safety to be carried out in institutions and the importance of determining the needs of nurses to prepare programs in this direction.

Managers and leaders should take the lead in measuring patient safety culture perceptions and attitudes, and pay attention to these outcomes in order to determine areas for improvement and the concerns of employees.[13] In our study, it was determined that the mean score of the nurses regarding the subscale of PSCS "management and leadership" was ranked in fourth place (2.81±0.50). The mean score for this subscale was determined to be 2.99±0.37 in the study of Yolcu et al.[20] and 2.62±0.49 in the research by Rızalar et al.[13]. Unlike our findings, in a study conducted by Hemmat et al.[28] in Iran, "expectations and actions of the managers upon patient safety" was the highest patient safety

Table 5. Comparison of mean PSCS scores and in-service education status of the nurses

Scales	In-service education	n	Mean	U	p
Management and leadership	No	51	53.25	1390.00	0.003*
	Yes	79	73.41	-	-
Employee training	No	51	58.90	1678.00	0.103
	Yes	79	69.76	-	-
Unexpected incident and error reporting	No	51	60.25	1746.50	0.195
	Yes	79	68.89	-	-
Care environment	No	51	57.31	1597.00	0.038*
	Yes	79	70.78	-	-
Employee behavior	No	51	56.11	1535.50	0.021*
	Yes	79	71.56	-	-
PSCS total	No	51	53.09	1381.50	0.003*
	Yes	79	73.51	-	-

*p<0.05. PSCS: Patient Safety Culture scale.

subscale. In our study, the "management and leadership" subscale mean score was not at the desired level. According to this result, it could be said that nursing managers should make more effort to support the practices of patient safety culture.

Patient safety culture is the basis for the prevention and correction of errors.[11] However, in our study, it was determined that the lowest score given by the nurses from the PSCS was in the "unexpected incident and error reporting" subscale. Similar findings were obtained in the "unexpected incident and error reporting" subscale in similar studies using PSCS.[13,20,22,23] Yolcu et al.[20], 2.99±0.39 and Rızalar et al.[13], 2.58±0.69, expressed that the "unexpected incident and error reporting" rate was low, which is in parallel with results from other studies conducted with different scales. It is believed that employees fear that they will be punished, excluded or negatively affected in their careers so they avoid reporting unexpected incidents and errors.[12,26,29,30,31,32] In this regard, in the study by Yilmaz and Goris[11], the "non-punitive response against errors" was identified as the lowest subscale. Reporting unexpected "incidents and errors" is aimed at forming awareness in the institution, and to develop a system which will prevent all possible risks, focus on solutions to reduce risks and to prevent medical errors and adverse events.[11,33] In this study, the mean PSCS scores of the nurses and subscales and their age and gender groups, education status, departments, and occupational experience were compared, but there was no statistically significant difference between these variables and the mean scores of PSCS ($p>0.05$). In a study using another PSCS in the operating rooms of seven health institutions in Tunisia, it was determined that there was no relationship between the scales and the ages, genders, or professional experiences of the participants.[34]

It was found that the total scores of the PSCS, the "management and leadership", "care environment" and "employee behavior" subscales of those nurses who had received in-service training were higher than those of the non-trained nurses ($p<0.05$). In the study of Rızalar et al.[13], it was determined that the average of the subscale scores of those nurses who had received training in certain subjects were higher than those who had not. In Karaca and Arslan's[22] study, the nurses' mean score of PSCS and its subscales were found to be statistically significant in all subscales other than the "care and technology" subscale in terms of their patient safety training. In the study of Ertürk et al.[23], it was determined that the scores of those individuals who had received patient safety training was not statistically significantly higher in all the subscales and the difference between the groups was higher than the total score. It is important for nurses to gain competence in order to prevent errors and improve patient safety. This competence, which is acquired during the training period, should be supported by orientation programs in the field of work and continuous training. The training needs of employees should be determined and training programs should be planned accordingly.

Study Limitations

This study has one limitation. It was carried out only in a university hospital. The results of this study can only be generalized to this hospital, and not to other hospitals and clinics.

CONCLUSION

In conclusion, in this study, it was determined that the nurses' PSCS scores were above the average level. The lowest mean score was in the "unexpected incident and error reporting" subscale, and the highest mean score was in the "care environment" subscale. The total scores of PSCS, "management and leadership", "care environment" and "employee behavior" subscales of those nurses who had received in-service education were found to be higher than those who had not received training. It is important to ensure patient safety culture in all institutions. Therefore, based on the findings of this study, to assess the patient safety culture of all employees in the institution, to determine any insufficiencies, to monitor any changes, and to carry out an effective error reporting system which allows employees to report medical errors without fear, it is recommended to repeat the patient safety culture measurements and to provide continuous training on patient safety and to raise the awareness of all employees by emphasizing the necessity for patient safety in these training sessions.

MAIN POINTS

- In this study, it was determined that the nurses' PSCS scores were above the average level.
- The highest score average was found in the "care environment" subscale and the lowest score average was found in the "unexpected incident and error reporting" subscale.
- The positive "care environment" subscale result suggests that the institutional care environment in which this research was conducted is effective in ensuring patient safety.

ETHICS

Ethics Committee Approval: Approval for this scientific research by the ethics evaluation board of the university (approval number: YDU/2016/42-348, date: 22.12.2016).

Informed Consent: It was obtained.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Concept: Ş.Ö.K., B.T.D., Design: Ş.Ö.K., Supervision: N.B., Ü.D.Y., Fundings: B.T.D., Materials: B.T.D., N.A., Data Collection and/or Processing: B.T.D., N.A., Analysis and/or Interpretation: Ş.Ö.K., B.T.D., N.B., Ü.D.Y., Literature Search: Ş.Ö.K., B.T.D., N.B., Writing: Ş.Ö.K., B.T.D., N.B., Critical Review: Ş.Ö.K., N.B., Ü.D.Y.

DISCLOSURES

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