The perceptions of nurses about patient safety culture: an example province in north east of Turkey

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ABSTRACT

The purpose of this study is to evaluate the perceptions of nurses about the patient safety culture and include five hospitals which are in a province in north east of Turkey.

The research universe consists of 1299 nurses working in different five hospitals. It was used for sample selection in this study. The data were collected by "Nurse Information Form" and "Patient Safety Culture Scale". In analysis of the data were used Kolmogrov-Smirnov, Kruskal-Wallis and Mann-Whitney U

Nurses' the mean score of scale was 2.90 ± 0.379. There were significantly differences between the hospitals about the mean score of scale and subscales ($p<0.05$). There were significantly differences between nurses' education levels and experience in the profession and the mean score of scale and subscales ($p<0.05$). A significant difference was not found between nurses' ages, duties, departments, working procedures, working hours in a week and experience years in the institution and the mean scores of scale and sub-dimensions ($p>0.05$).

It was determined that there were significant differences between the institutions' mean score of PSCS and all sub-dimensions and the perception of the patient safety culture of the nurses who were working in private hospitals higher than in other hospitals.

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INTRODUCTION

The patient safety is a cornerstone to high-quality healthcare (Iha, 2008). It should be considered as a prerequisite of thematic assistance and is essential in the face of current scenario of growth of health care demands and increased level of complexity in the various areas of health services (ICN, 2015). Health services, which are known to be complex organizations, have over the years devised improvement strategies and added quality to the health care service (Chassin and Loeb, 2013).

The patient safety concept is defined by National Patient Safety Foundation as "*Making care continually safer by reducing harm and preventable mortality*" and by World Health Organization as "Patient safety is the absence of preventable harm to a patient during the process of health care and reduction of risk of unnecessary harm associated with health care to acceptable minimum" (NPSF, 2019; WHO, 2020). According to the researches between 210 thousand and 410 thousand people die every year because of medical harms (James, 2013; Pazarcıkcı and Efe, 2018).

Patient safety is an important issue in nursing, includes the areas of education, clinical education and management (Rashvand and Ebadi, 2014). The importance of observing safe nursing practices stems from the pain and suffering that patients and their families suffer from the harms of the treatment team members (Vaismoradi et al., 2011). The nurses must be attention about every situation that damages or may damage patient safety in order to the nurses fulfill these obligations (Türk and Eşer, 2007; Türkmen et al., 2011). Every intervention, which the nurses apply to carry on the patient safety, also contributes to the improvement of the quality of health care (Mitchell, 2008; Rızalar et al., 2016). Determining the factors which effect the patient safety culture by nurses and their perception of patient safety culture are an important step in the adoption and development of the patient safety culture in the institution (Korkmaz, 2012; Rızalar et al., 2016; Karaca and Arslan, 2014). One study showed that a climate of teamwork was associated with an improved attitude among nurses towards patient safety (Li, 2013). In this context, the aim of this study is to evaluate the perceptions of nurses about the patient safety culture.

METHODS

Participants

The research was conducted in five hospitals in a province in north east of Turkey, which a university, two private branches, one state and one private hospital in a city center. The study' universe consists of 1299 nurses, 623 of these from in institution A (university hospital), 227 of these from institution B (private branch public hospital), 208 of these from institution C (private branch public hospital), 130 of these from institution D (public hospital) and 111 of nurses from institution E (private hospital).

In this study, stratified sampling method was used for sample selection by including all nurses working in institutions. The study' sample consists of 297 nurses, 142 of these from institution A, 52 of these from institution B, 48 of these from institution C, 30 of these from institution D, 25 of these from institution E. Only who is working as a nurse in these institutions and is volunteering to participate were included in the research.

Data Collection and Measures

The data were collected between September and December 2019 by using "Nurse Information Form" and "Patient Safety Culture Scale". After explaining to the nurses by the researchers, were given to the nurses for 20 minutes to answer.

Nurse Information Form: The form was prepared by the researchers based on the Literature and consists of 12 questions about age, gender, marital status, educational status, years of experience in the profession, the institutions where he/she works, years of experience in the institution, the department/clinics, the working method, the weekly working hours and taking an education about patient safety culture (Nazik et al., 2018; Özdemir and Şahin, 2015; Pazarcıkcı and Efe, 2018; Rızalar et al., 2016).

Patient Safety Culture Scale (PSCS): The scale was developed by Türkmen et al. (2011). The scale includes 51 items and consists of five sub-dimensions that include Management and Leadership (ML-17 items), Employee Behavior (EB-14 items), Adverse Event Reporting System (AERS-5 items), Staff Education (SE-7 items), and

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Care Environment and Technology (CET-8 items). In the study on the reliability and validity of the scale, Cronbach's α coefficients were 0.97 for the total score and between 0.83 and 0.92 for the sub-dimensions. The scale is a four points Likert scale and each item is evaluated with scores from 1 point to 4 point such as "1=I Totally Disagree", "2=Disagree", "3=Agree", "4=I Totally Agree". The total scale score; each sub-dimension' average score are summed up and the score obtained is divided by the number of sub-dimensions and the total scale score is obtained between 1 and 4. The score approaching 4 score shows a positive attitude toward patient safety culture, and the score approaching 1 shows a negative attitude toward patient safety culture (Türkmen et al., 2011). In this study, we found that the Cronbach's α coefficients were 0.92 for the total score and between 0.78 and 0.84 for the sub-dimensions.

Statistical Analysis

Kruskall- Wallis test and Mann-Whitney U test were used to analyze the data. In addition, $p < 0.05$ was considered statistically significant and the normal distribution was evaluated by Kolmogrov-Smirnov test for all the test.

RESULTS

In this study, it was determined that the average age of the nurses was 36.54±8.27 years, 43.3% were 40 years of age and older, 94.6% were women, 61.3% had bachelor' degree, 47.8% worked in the A institution, 28.6% worked in surgical clinics, 81.1% were clinical nurses, 63.6% worked in night shift, 55.6% worked between 41-59 hours in a week, 35% had professional experience years more than 21 years, 30.6% had between 6-10 years of experience in the institution where they work, and 72.7% received training about patient safety.

The mean score of the nurses was 2.90±0.37 from PCSC, and the highest mean score was found to be in SE and the lowest in AERS (Table 1).

Table 1. Nurses' Mean Scores of the Patient Safety Culture Scale and Dimensions (N=297)

PSCS and Dimensions	Item Number	Mean± SS
Management and Leadership (ML)	17	2.90±0.433
Employee Behavior (EB)	14	2.90±0.469
Adverse Event Reporting System (AERS)	5	2.84±0.446
Staff Education (SE)	7	2.95±0.431
Care Environment and Technology (CET)	8	2.91±0.469
The Mean Score PSCS	51	**2.90±0.379**

It was found that there was a statistically significant difference between the nurses' education levels and the mean score of PSCS and SE ($p < 0.05$). The nurses who had high school degree had higher PSCS and SE mean scores than nurses who had bachelor' degrees. There was no statistical significant difference between the nurses' education levels and the other sub-dimensions of the scale ($p > 0.05$; Table 2).

A significant difference was found in the nurses' experience years in the professional and the nurses' mean scores of PSCS and EB ($p < 0.05$). The nurses who had between one-five years experiences in the profession had higher the mean score of PSCS and EB than the nurses with experience over five years in the profession. And there was no statistical significant difference between the nurses' experience years in the profession and the other sub-dimensions ($p > 0.05$; Table 2).

Table 2. Comparison of nurses' education levels and years of experience with PSCS and dimensions

PSCS	n	ML Median(Min-Max)	EB Median(Min-Max)	AERS Median(Min-Max)	SE Median(Min-Max)	CET Median(Min-Max)	PSCS Median(Min-Max)
Education Level							
High School [1]	46	3.029 (2.07-5.35)	3.035 (1.77-5.57)	3 (2-4)	3 (2-4)	3 (2-4)	3.011 (2.13-3.99)
Associate [2]	46	2.882 (1.88-3.65)	2.928 (1.57-4)	2.800 (1.8-4)	3 (1.86-4)	2.875 (1.5-4)	2.933 (2.01-3.67)
Bachelor [3]	182	2.882 (1.71-4)	22.857 (1.57-4)	2.8 (1.4-4)	3 (1.57-4)	2.875 (1.38-4)	2.868 (1.75-4)
Master [4]	22	3 (2.18-3.41)	3 (2.21-3.64)	3 (2.2-3.8)	3 (2.14-4)	3 (2.13-4)	2.97 (2.26-3.67)
x^2_{kw} p MWU		$\chi2=4.455$ p=0.216	$\chi2=4.953$ p=0.175	$\chi2=4.941$ p=0.176	$\chi2=9.338$ **p=0.025** 1>2,3	$\chi2=6.357$ p=0.095	$\chi2=8.095$ **p=0.044** 1>2,3
Years of Experience							
1 year and below [5]	8	3.088 (2.06-3.53)	2.964 (2.14-3-79)	2.900 (2.4-4)	2.928 (2-3.71)	2.875 (1.88-4)	3.023 (2.27-3.51)
Over 1 year-5 years [6]	36	3.058 (2.18-3.76)	3.142 (2.21-5.57)	2.900 (2-4)	3 (2.14-4)	3.125 (2.25-4)	3.049 (2.29-3.76)
Over 5 years -10 years [7]	69	2.882 (1.88-5.35)	2.785 (1.57-4)	2.800 (1.8-4)	3 (1.86-4)	2.875 (1.5-4)	2.930 (2.01-3.99)
Over 10 years -20 years [8]	80	2.823 (1.71-3.71)	2.886 (1.57-3.79)	2.800 (1.4-3.8)	3 (1.57-4)	2.875 (1.38-3.88)	2.846 (1.75-3.58)
Over 20 years [9]	104	2.882 (1.93-4)	2.928 (1.77-4)	3 (1.6-4)	3 (2-4)	3 (2-4)	2.936 (2.12-4)
χ^2_{KW} p MWU		$\chi^2=6.663$ P=0.155	$\chi^2=12.348$ **P=0.015** 6>7,8,9	$\chi^2=7.436$ P=0.115	$\chi^2=9.000$ P=0.061	$\chi^2=8.477$ P=0.076	$\chi^2=9.691$ **P=0.046** 6>7,8

In this study, we did not find a significant statistically differences between the mean scores of PSCS and sub-dimensions and the nurses' age range, years of experience in the institution, the department/clinics, type of duty, the working method, and the weekly working hours (p>0.05).

A significant difference was found in the mean score of PSCS and all sub-dimensions and the nurses who received training about patient safety and did not received training (p<0.05)(Table 3).

Table 3. Comparison of the nurses who trained about patient safety with PSCS and dimensions (N=297)

Dimensions of PSCS	Trained Mean ±SS (n=216)	Untrained Mean ±SS (n=76)	Test/ p value
ML	2.980±0.434	2.690±0.350	U=4837.0 / **p=0.000**
EB	2.954±0.434	2.754±0.516	U=5268.0 / **p=0.000**
AERS	2.897±0.434	2.664±0.429	U=5310.0 / **p=0.000**
SE	3.036±0.407	2.706±0.416	U=4640.0 / **p=0.000**
CET	2.983±0.474	2.697±0.384	U=4747.0 / **p=0.000**
Total PSCS	2.970±0.367	2.705±0.340	U=4709.**0 / p=0.000**

It was found that the highest mean score of the institutions, which including in this research, was belonged to be in institutions E and the lowest in institutions A (Table 4).

Table 4. Comparison of the institutions' mean scores of the PSCS and dimensions (n=297)

Institution	ML Mean±SS	EB Mean±SS	AERS Mean±SS	SE Mean±SS	CET Mean±SS	TOTAL Mean±SS
A.[1] Institution n=142	2.73±0.40	2.83±0.54	2.75±0.47	2.82±0.45	2.77±0.49	2.78±0.40
B.[2] Institution n= 52	2.94±0.34	2.82±0.40	2.78±0.45	2.94±0.37	2.90±0.35	2.88±0.32
C.[3] Institution n= 48	2.98±0.37	2.97±0.32	2.96±0.38	3.05±0.33	2.96±0.40	2.98±0.29
D.[4] Institution n= 30	3.02±0.22	3.00±0.28	2.96±0.26	3.08±2.29	3.13±0.32	3.03±0.21
E.[5] Institution n= 25	3.42±0.51	3.17±0.40	3.06±0.41	3.31±0.40	3.36±0.37	3.26±0.33
χ^2_{KW}	χ^2=57.949	χ^2= 21.188	χ^2=24.384	χ^2=34.760	χ^2= 44.167	χ^2=44.278
p	**p=0.000**	**p=0.000**	**p=0.000**	**p=0.000**	**p=0.000**	**p=0.000**
MW-U	5>1-4; 2-5>1	5>1-4; 2-5>1; 3,4>2	5>1-4; 3-5>1; 3,4>2	5>1-4; 3-5>1; 3,4>2	5>1-4; 3-5>1; 4>3,2	5>1-4; 2-5>1; 3,4>2

DISCUSSION

In this study evaluated perceptions the nurses' of patient safety culture in five hospitals where located a city center in north east of Turkey. The roles of the healthcare professional nurses, who are in the hospital throughout twenty-four hours and have the most chance to observe the patient, have a great ang important area in patient safety (Türkmen et al., 2011 and Rızalar et al., 2016). In this study, it was determined that the average age of the nurses was 36.54±8.27 years, 94.6% were women, 61.3% had bachelor' degree, 47.8% worked in the A institution, 63.6% worked in night shift, 35% had 21 years and more professional experience, and 72.7% received training about patient safety.

In this study, it was found that the nurses' mean score of PSCS (2.90±0.37) was slightly above the middle level. The nurses' mean score of PSCS was indicated by in the study of Rızalar et al. (2016) with the same scale was at middle level (2.64 ±0.43), in the study of Karaca and Aslan (2014) was at high level (3.00±0.53), and Nazik et al. (2018) was at medium level (2.72±0.34). Bahrami et al. (2014) found out that the nurses' mean score of PSCS was insufficient level and approximately 28% of them had a good perception levels about patient safety in institution.

The nurses' mean score of ML sub-dimension (2.90±0.43) was above the middle level in all the hospitals. In order to the employees adopt the patient safety culture in institution, it is thought that managers should accept this culture, make the necessary improvements and arrangements, take precautions about identified patient safety risks and direct correctly their employees. Principally the managers' adoption of the patient safety culture is an important step to create this culture in the institution (AHRQ, 2014). It is known that the patient safety culture is more adopted and supported by private institutions management than the others. This idea was supported by the study of Karaca and Arslan (2014) in two private hospitals, the nurses' mean score of ML was high level (3.01±0.51). In this study, the nurses' mean score of ML was medium level due to one of the five institutions was a private institution. Rızalar et al. (2016) reported that the nurses' mean score of ML (2.62±0.49) was medium level in university hospital.

In this study, the nurses' mean score of EB was found above at medium level. Knowing the quality targets in institution and act accordance with them, protecting communication with the team and providing communication with the team to support the patient, informing to patients about the possible risks and working properly to prevent these risks from occurring or recurring by nurses show that EB is an important sub-dimension for patient safety (Türkmen et al., 2011). Rızalar et al. (2016) reported that the nurses' highest mean score was belonged to the EB and Karaca and Arslan (2014) also reported that the nurses' mean score of EB (3.01±0.67) was at high level.

Although the nurses' training rate was high, the mean score of AERS was found the lowest score (2.84±0.44) in all institutions. It is considered that the most important indicator for evaluating the patient safety culture in institutions is that using the report system. Despite the training about the patient safety, the lowest score shows that the nurses' perception was not affected by the training and the nurses could not adopt the patient safety culture. Karaca and Arslan (2014) reported that the nurses had the lowest score of AERS in spite of the high training rate about the patient safety and again Rızalar et al. (2016) stated that the nurses' mean score of AERS was the lowest score in their study. Gündoğdu and Bahçecik (2012) determined that 72% of the nurses did not report any event because of fear of punishment and Göz and Kayahan (2011) determined that the error reporting rate of men was higher than women.

In this study, the nurses obtained the highest mean score on the SE sub-dimension (2.95±0.43). In order to adopt the patient safety culture in the institution, the patient safety culture should adopt by all of the staffs such as senior manager and all workers. It was seen that due to the high level of SE in all institutions, managers adopted the patient safety culture and used education as an important step for organization the patient safety culture in institutions. According to the study of Adigüzel (2010), the communication in institution, controlling the employees' harms, effect of the manager had a vital place for organization the patient safety culture in institutions and the managers' perception level of patient safety culture is one of the most important factors affecting the employees' perception level of patient safety culture. In this study, 72.7% of the nurses stated that they received training on patient safety culture shows that all institutions which including in this study adopted the patient safety culture. In line with these results, it has been determined that the nurses were trained to increase their perception of patient safety culture and to adopt the patient safety culture in all institutions which participated in this study. Also, Karaca and Arslan (2014) indicated that the nurses' high level of SE was similar to our study results.

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In this study, the mean score (2.91±0.469) that the nurses got in the CET sub-dimension was above the medium level. The physical structure of the institution, medical equipment and devices used by nurses, electronic resources, barcoding systems, security system, entrance and exit controls include the CET sub-dimension of the scale. In this research, we found out that the nurses who are working in private hospital (institution E) got the highest score of CET than the other nurses. The financial resources structures of the private hospitals are better than the public and university hospital so this supports our results (Bıçakçı et al., 2018). In the study of Rızalar et al. (2016) reported similar findings with the results of this study, conducted in a university hospital, stated that the nurses' mean score of CET was low level.

The nurses who were trained about patient safety culture had a significant difference and higher mean score of PSCS and all sub-dimensions compared to the nurses who were untrained about patient safety culture in this study. The highest mean score of the nurses who were trained was in SE, and the lowest mean score was slightly above the medium level in AERS. Education on the patient safety culture contributes to patient safety in preventing medical harms and increases of the nurses' perception of patient safety culture. It is known that the nurses who receive training on patient safety adopt easier the patient safety culture. Education makes a difference in the patient safety culture and is an important component the development of the patient safety cultural structure (Li, 2013). In the study of Karaca and Arslan (2014), the nurses who were trained compared to the nurses who were untrained had a significant and high level of all the sub-dimensions and PSCS mean score, except the CET sub-dimension.

A significant difference was found between the nurses' education levels and the mean score of PSCS and SE, and it was determined that the nurses who graduated from high school had a higher mean score than the nurses who graduated from associate and bachelor' degrees. This result was thought to be due to that the nurses, who graduated from high school, have been in the profession for many years and were older. Contrary to this study, it was stated that the nurses' education levels did not affect the patient safety culture in the studies (Karaca and Aslan, 2014; Göz and Kayahan, 2011).

In this study, it was stated that the nurses who had experience between one and five years had a higher mean score of PSCS and EB than the nurses who had experience over five years. It is considered that the PSCS mean scores of the nurses who are with the low experience years are higher, depending on being new

and young in the profession, their perception levels, and their learning ability are high and be willing to learn. At the same time, the Burnout Syndrome, which increases proportionally with the year of experience in the profession, affects the perception of the patient safety culture (Erdagı and Özer, 2015). There are studies and causes supporting this result of the study such as the high average age of the nurses in this study, the nurses' safety knowledge has decreased with advancing age was stated in the study of Saraç (2009), the low average of age of the nurses provided an advantage to establish the perception of patient safety culture in the institutions was determined the study of Rızalar et al. (2016), Göz and Kayahan (2011) reported that the nurses with experience 0-5 years had a higher mean score of patient safety culture than the nurses with 5-10 years. In another study, it was stated in Karaca and Arslan (2014)' study that the experience years in the profession did not affect the patient safety culture scores.

A significant difference was found in the mean score of PSCS and all sub-dimensions of the hospitals participating in this study. The highest mean score of the PSCS and sub-dimensions was belonged to the nurses who were working in the private hospital (institution E) and the lowest mean score of the PSCS and sub-dimensions was belonged to the nurses who were working in the university hospital (institution A). In addition, it was indicated in this study that the mean score of the EB, AERS, SE, and PSCS were higher in institutions C and D than institution B, and the mean score of CET were higher in institution D than institutions C and D.

In recent years, patient safety has gained importance with the increasing quality and accreditation studies (Özdemir and Şahin, 2015; AHRQ, 2014). The studies for accreditation are carried out at different levels in each hospital. Therefore, the nurses' perceptions of patient safety culture were different between the institutions. In the literature, the study of Karaca and Arslan (2014) that was conducted in two private hospital, the institutions' mean score of patient safety was 3.09±0.38 and 2.86±0.69. Also, the study of Nazik et al. (2018) was conducted in two different hospital, was indicated that the institutions' mean score of patient safety were 2.69±0.32 and 2.72±0.28 and a significant different were determined between the institutions' mean scale of patient safety culture. These studies and our study included the similar results.

In this study, there was no significant difference between the nurses' age, sex, marital status, experience in the institution, the department/clinics, the duty type, the working procedure, and the weekly

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working hours and the PCSC and all sub-dimensions (p<0.05). Also, Karaca and Arslan (2014) reported that the nurses' age, the duty type, and experience years in the institutions and PSCS and all sub-dimensions. On the other hand, Karaca and Arslan (2014) indicated different results with the result of the study that a significant difference was not found the nurses' education levels and experience years in the profession. Göz and Kayahan (2011) found the PCSC mean scores of the nurses who were working at polyclinics and emergency department were higher than the others. In the study of Rızalar et al. (2016) there was no difference between the nurses' duty type and the PSCS mean score and, the result was similar to the results of this study.

CONCLUSION

The nurses' perceptions of patient safety culture were slightly above the middle level and the highest level of patient safety sub-dimension score belonged to the SE, and the lowest level of patient safety sub-dimension score belonged to the AERS. It was found that the PSCS and SE mean score of the nurses who graduated from high school were higher than the nurses who had bachelor' degrees, and the nurses with 1-5 years experiences in the profession had higher the PSCS and EB mean score than the nurses with over five years experiences in the profession. The patient safety perception of the nurses who trained about patient safety was higher level than the patient safety perception of the nurses who untrained about patient safety.

Comparing to the institutions' which participating in this study and their PSCS mean scores, it was defined that the highest score was belonged to the institution E, and the lowest score was belonged to the institution A. In addition, a significant difference was not found between the nurses' age range, sex, experience years in the institution, the department/clinic, the type of duty, the working procedure, and the weekly working hours and the mean score of the PSCS and all sub-dimensions.

Based on the result of this study, it is recommended to organize an education program about patient safety to nurses and ensure continuity in training, and to evaluate the nurses' perception of patient safety culture in institution.

Ethical Considerations

The ethical clearance issues were reviewed and approved by the Ethics Committee of an University on 10th July in 2019 (File no: 2019-4/5). Formal permissions were obtained from all hospitals where the research will be conducted. Participation to this research was based on volunteering, and the verbal permissions were obtained by explaining the purpose and content of the research to the nurses who agreed to participate. The personal information of the nurses, who participated in the study, was remained confidential and used only for the research.

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