



Assessment of Patient Safety Attitude Levels Among Healthcare Professionals Working in the Operating Room

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ABSTRACT

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Objective: This study aims to determine the factors affecting the perception levels of operating room (OR) nurses and nurse anesthetists working in the OR regarding patient safety attitudes.

Materials and Methods: This study was conducted using face-to-face interviews with 117 healthcare professionals working as OR nurses (n=60) and nurse anesthetists (n=57). The patient safety attitude questionnaire (SAQ), where the reliability analysis was also performed for the SAQ scale. and sociodemographic characteristics were used for this study. Qualitative variables were given as numbers and percentages (%), and the dataset belonging to quantitative variables that met the normal distribution criteria was given as mean (standard deviation), and data of quantitative variables that did not comply with normality were given as median, IQR, and 95% CI of the median.

Results: There were significant differences between OR nurses and nurse anesthetists regarding job satisfaction (p=0.015) and total SAQ score (p=0.040). Significant differences were detected between men and women participants regarding smoking (p=0.020) and stress recognition (p=0.040). The reliability analysis of the scale was as follows: total (α : 0.791), job satisfaction (α : 0.883), teamwork climate (α : 0.856), safety climate (α : 0.864), perceptions of management (α : 0.881), stress recognition (α : 0.791), and working conditions (α : 0.530).

Conclusion: It was shown that the patient safety attitudes of the healthcare professionals participating in this study are above average, although it is still insufficient, where the stress identification score of the female participant was higher, and it was also found that the nurses' job satisfaction and SAQ score were higher.

Keywords: Operating room, healthcare professionals, patient safety attitude, job satisfaction, teamwork climate, safety climate, stress recognition, working conditions

INTRODUCTION

Health services aim to protect and improve the health of individuals, families, and communities. It also aims to treat patients and ensure that those receiving treatments lead healthy lives. Medical errors during service delivery negatively affect health personnel and patients, although health care services are a priority issue for all countries. According to the principle of "no harm," which is one of the core principles of health sciences, health service delivery primarily focuses on the safety of patients and healthcare professionals. The health system's priorities include ensuring patient safety at every stage of health care and preventing medical errors (1).

Patient safety is defined as the efforts performed by healthcare professionals to avoid and eliminate harm to patients and their families while providing healthcare services. Creating a system that will avoid errors while providing health care services, protecting the patient from potential harm caused by errors, and removing the risk of error are the primary purpose of patient safety. A care system that includes for patient safety to be possible, institutions, healthcare professionals, and patients is built on a safety culture to prevent and learn from mistakes when necessary (2).

Job satisfaction, safety atmosphere, collaboration, working environment, stress awareness, management perspective, and employee contentment are all elements that contribute to patient safety. Paying attention to and managing these factors are paramount for healthcare providers in improving safety performance (3). Patient safety in the operating room (OR) and during surgery is a vital component of patient safety. Every year, more than 200 million procedures are conducted globally. ORs are complex and high-risk environments where high technology is used, and team members consisting of surgeons, anesthesiologists, OR nurses, and other OR personnel work in a multi-disciplinary manner, requiring the right decisions to be taken quickly to increase the chances of patients' survival (4).

While OR nurses play a critical role in supporting and protecting patient, patient safety in ORs is defined as protecting the patient against medical errors that may occur before, during, and after surgery. Since OR nurses are primary healthcare providers, they spend more time caring for patients than other healthcare staff (5). An OR nurse is expected to minimize the medical errors that may occur by managing the surgical process correctly, and, in addition, the protection of patients in the OR against possible harmful anesthesia risks is provided by nurse anesthetists, where nurses must work with other healthcare providers to create and develop an attitude toward patient safety (6).

For this reason, nurse anesthetists have a significant role in ensuring patient safety; therefore, they must act according to certain patterns for patient safety (7). The OR team's positive attitude/behavior toward patient safety will significantly reduce surgical complications. Thus, the problems related to the OR, one of the most critical steps in patient safety, will be considerably reduced (8). This study aims to determine the patient safety attitude perception of OR nurses and nurse anesthetists and the factors affecting their perception levels.

MATERIALS and METHODS

Type, Place, and Time of Research

Cross-sectional research was conducted using one-to-one interview techniques with healthcare professionals working as nurses and nurse anesthetists in the ORs of İnönü University, Turgut Ozal Medical Center, and Liver Transplant Institute between February 2022 and March 2022. Before starting the study, permission was obtained from the Director of Turgut Ozal Medical Center (2022/132784). This human-participant study was conducted in accordance with the Helsinki Declaration's current version's ethical requirements.

Ethics Committee Approval

Approval was obtained from the İnönü University Ethics Committee for non-interventional studies (2022/3155). Where strengthening the reporting of observational studies in epidemiology (STROBE) guideline was utilized to assess the likelihood of bias and overall quality of this study (9), each participant gave consent before the questionnaire was distributed.

Population and Sample of Research

Nurses and nurse anesthetists who were active in the ORs during the study period and were eligible to participate were included in the study. The minimal sample size to detect a significant difference was estimated using G*Power version 3.1.9.7, with type I error (alpha) of 0.05, power (1-beta) of 0.8, effect size of 0.55, and two-sided alternative hypothesis. Within this framework, 117 participants were included in this study.

Parameters and Scales Used in the Study

Demographic and Social Characteristics Form

The questionnaire used in this study consists of 19 questions and one scale (patient safety attitude questionnaire). Sociodemographic characteristics of healthcare professionals were listed as follows: age, gender, height, weight, marital status, number of children, smoking, alcohol use, presence of psychological illness requiring drug use (anxiety, stress, depression), presence of chronic disease (diabetes mellitus, cardiovascular disease, hypertension, asthma), educational level, total working time in the profession, total work-

ing time in the OR, Is working in the OR your choice?, Do you work the night shift?, Do you have a car? Do you have a house? Do you go on holiday every year?, Do you have a parent for whose care and maintenance you are primarily responsible?

Patient Safety Attitude Questionnaire (SAQ)

SAQ was developed in 2006 by Sexton and colleagues (10) from the University of Texas, aiming to determine healthcare professionals' patient safety attitudes and awareness. The scale consists of 5-point Likert-type questions, and the answers are listed as disagree strongly (1 point), disagree (2 points), agree slightly (3 points), agree (4 points), and agree strongly (5 points). Ten items (21, 36, 37, 38, 39, 40, 41, 42, 43, 45) are scored in reverse on the scale.

The reliability and internal consistency of the original version of the scale were tested using Raykov's \bar{n} coefficient, and its coefficient was found to be 0.90. The Turkish version of this scale was developed by Baykal et al. (11) in 2010, and Cronbach's alpha was used to evaluate the reliability and internal consistency of the Turkish version, and the alpha coefficient was calculated as 0.93. The Turkish version consists of 6 sub-dimensions and a total of 46 items. The sub-dimensions and the number of items they contain are listed as follows: Job satisfaction (11 items), collaboration climate (12 items), safety climate (5 items), management perspectives (7 items), stress recognition (5 items), and working circumstances are all evaluated (6 items).

In the study of Baykal et al., Cronbach's alpha values for the sub-dimensions were listed as follows: job satisfaction ($\alpha=0.85$), teamwork climate ($\alpha=0.86$), safety climate ($\alpha=0.83$), perceptions of management ($\alpha=0.77$), stress recognition ($\alpha=0.74$) and working conditions ($\alpha=0.72$). The total score achieved from the scale reflects the attitudes of healthcare professionals toward patient safety. The lowest and the highest scores that can be obtained from the scale are 46 and 230, respectively. As the total score increases, there is also an increased positive attitude toward patient safety. If we briefly define the sub-dimensions of the scale, the job satisfaction dimension aims to provide information about the employees' satisfaction with their job within the organization, while the teamwork dimension aims to determine how the quality of communication and cooperation among employees is perceived. The safety climate dimension aims to provide information on how employees perceive the rules and guidelines regarding patient safety in the hospital. The dimension of defining stress aims to determine how much stress factors affect the employees' work performance and their attitudes about stress during patient care. The working conditions dimension aims to measure employees' perceptions of the quality of the working environment. The management mentality approach dimension aims to show the extent to which the hospital management supports the work and efforts of the employees on patient safety (11–13). The primary endpoint measure was the total score of SAQ.

Statistical Analysis

IBM SPSS Statistics 26.0 (Statistical Package for the Social Sciences, Armonk, NY: IBM Corp, US) program was used in the analyses. The normal distribution of qualitative variables was analyzed with the Shapiro Wilk test. Quantitative variables that are of normal distribution were summarized as mean \pm standard deviation (SD), and the median, interquartile range (IQR), and 95% confidence interval (CI) of the median were used to summarize quanti-

Table 1. Descriptive statistics of the variables

Quantitative variables	Median (IQR)	95% CI	Mean±SD	95% CI
Age (years)	33 (11)	(31–35)	–	–
Height (cm)	167 (13)	(165–170)	–	–
Weight (kg)	67 (20)	(65–70)	–	–
Total experience (years)	10 (12)	(9–14)	–	–
Operating room experience	10 (11)	(7–10)	–	–
Perceptions of management	24 (7)	(23–26)	–	–
Teamwork climate	43 (9)	(41–44)	–	–
Safety climate	18 (5)	(17–19)	–	–
Job satisfaction	–	–	29.3±7.8	(27.7–30.6)
Stress recognition	–	–	15.4±4.3	(14.5–16.2)
Working conditions	–	–	20.1±3.7	(19.3–20.7)
Total score	–	–	147.6±23.9	(143–152)
Qualitative variables			n	%
Gender (M/F)			41/76	35.0/65.0
OR nurses/ Nurse anesthetists			60/57	51.3/48.7
Educational level				
Health vocational high school			3	2.6
Associate's degree			38	32.5
Bachelor's degree			69	59.0
Master's or Doctorate degree			7	6.0
Marrital status (married/single)			73/44	62.4/37.6
Child (yes/no)			69/48	59.0/41.0
Smoking (yes/no)			27/90	23.1/76.9
Alcohol (yes/no)			8/109	6.8/93.2
Anxiety-depression (yes/no)			9/108	7.7/92.3
Chronic disease (yes/no)			20/ 97	17.1/82.9
Is working in this unit a personal preference?			100/17	85.5/15.5
Do you work on night shift? (yes/no)			94/23	80.3/19.7
Do you have a house? (yes/no)			65/52	55.6/44.4
Do you have a car? (yes/no)			62/55	53.0/47.0
Do you routinely go on vacation annually?			42/75	35.9/64.1
Do you have a parent you are responsible for?			22/95	18.8/81.2

IQR: Interquartile range; CI: Confidence interval; SD: Standart deviation

tative data that were not normally distributed. Qualitative variables were given as numbers and percentages (%). Independent sample t-test and Mann-Whitney U-test were employed to compare two independent groups. Pearson's chi-square, Yates Continuity Correction, and Fisher's exact tests were used to compare qualitative data. For the Mann-Whitney U-test and independent sample t-test, the effect size (Cohen d) was interpreted as a small effect between 0.20–0.50, a medium effect between 0.50–0.80, and a large effect above 0.80 (14). The effect size (Cramer V) for chi-square tests was interpreted as a small effect between 0.10–0.30, a medium effect between 0.30–0.50, and a large effect above 0.50 (15). As analyses of internal consistency between and within sub-dimen-

sions (Cronbach's alpha coefficient under the parallel model assumption) and correlation statistics (Pearson correlation coefficient) were performed, we further mentioned above that also the reliability and internal consistency studies of the Turkish version of the SAQ scale used in this study were previously performed. $P < 0.05$ was considered a statistically significant value.

RESULTS

One hundred seventeen healthcare professionals, including OR nurses (n=60) and nurse anesthetists (n=57), were included in the current study. Forty-one (35%) participants were male, and

Table 2. Descriptive characteristics of the studied groups

Variables	Operation room nurses (n=60)		Nurse anesthetists (n=57)		ES	p
	Median (IQR)	Mean±SD	Median (IQR)	Mean±SD		
Quantitative variables						
Age (years)	35 (12)	–	32 (10)	–	0.503	0.010*
Height (cm)	165 (16)	–	170 (12.5)	–	0.177	0.422*
Weight (kg)	67.5 (22)	–	66 (21)	–	0.19	0.475*
Total experience (years)	12 (14)	–	10 (12)	–	0.527	0.006*
Operating room experience	9 (12)	–	10 (11)	–	0.203	0.274*
Job satisfaction	31 (10)	–	28 (9)	–	0.459	0.015*
Safety climate	17 (4.5)	–	18 (5)	–	0.014	0.941*
Stress recognition	15.5 (6.5)	–	14 (6)	–	0.319	0.137*
Working conditions	20 (5)	–	20 (4)	–	0.109	0.556
Teamwork climate	–	42.9±6.9	–	40.9±8.1	0.26	0.158**
Perceptions of management	–	24.2±4.3	–	23.0±6.7	0.21	0.252**
Total score	–	152.0±23.1	–	142.9±24.1	0.38	0.040**
Qualitative variables	n	%	n	%		
Gender (M/F)	18/ 42	30.0/ 70.0	23/ 34	40.4/ 59.6	0.108	0.328***
Marital status (married/single)	43/ 17	71.7/ 28.3	30/ 27	52.6/ 47.4	0.196	0.034***
Child (yes/no)	40/ 20	66/ 33.3	29/ 28	50.9/ 49.1	0.160	0.083***
Smoking (yes/no)	15/ 45	25.0/ 75.0	12/ 45	21.1/78.9	0.047	0.774***
Alcohol (yes/no)	4/ 56	6.7/ 93.3	4/ 53	7.0/ 93.0	0.007	1.000****
Anxiety-depression (yes/no)	5/ 55	8.3/ 91.7	4/ 53	7.0/ 93.0	0.025	1.000****
Chronic disease (yes/no)	12/ 48	20.0/ 80.0	8/ 49	14.0/ 86.0	0.079	0.541***
Educational level						
Health vocational school	3	5.0	0	0	0.648	<0.001*****
Associate's degree	2	3.3	36	63.2		
Bachelor's degree	49	81.7	20	35.0		
Master's or Doctorate degree	6	10.0	1	1.8		

*, Mann–Whitney U-test; **, Independent sample t-test; ***, Continuity Correction chi-square test; ****, Fisher exact chi-square test; *****, Pearson chi-square test; ES: Effect size; IQR: Interquartile range; SD: Standard deviation

76 (65%) were female. The median (IQR) age of the healthcare professionals in the OR participating in the study was 33 (11). Fifty-seven (48.7%) of the healthcare professionals in the OR are 32 years old and under, and 60 (51.3%) are 33 years old and over. In addition, 3 (2.6%) have high school graduates, 38 (32.5%) associate degree, 69 (59.0%) undergraduate and 7 (6%) master's degree. The descriptive statistics of the variables in the present study were given in Table 1.

With respect to Table 2, a statistically significant difference was found between OR nurses and nurse anesthetists groups in terms of age ($p=0.010$), total experience ($p=0.006$), job satisfaction ($p=0.015$), and the total score ($p=0.040$). In this case, it is seen that the perception of job satisfaction and the total score is statistically significantly higher in OR nurses than in nurse anesthetists. In the variables of height, weight, OR experience, safety climate, stress recognition, working conditions, teamwork climate, and percep-

tions of management, no statistically significant difference existed between the groups. There is a statistically significant relationship between the educational level status and group variable ($p<0.001$). However, no statistically significant relationship was found between the group variable and gender, marital status, child, smoking, alcohol use, history of anxiety-depression, and chronic disease variables.

In Table 3, the analyses of the patient safety perceptions and other variables of the healthcare professionals in the study concerning gender were analyzed. According to Table 3, there is a statistically significant difference in weight ($p<0.001$), height ($p<0.001$), and stress recognition ($p=0.040$) variables according to gender. Accordingly, it was seen that statistically, the perceptions of stress recognition were significantly higher in women than in men. In the factors of age, total experience, OR experience, job satisfaction, teamwork climate, safety climate, views of the management, working conditions, and an overall score, no statistically significant re-

Table 3. Characteristics of the variables with respect to gender

Variables	Female (n=76)		Male (n=41)		ES	p
	Median (IQR)	Mean±SD	Median (IQR)	Mean±SD		
Quantitative variables						
Age (years)	32.5 (12.5)	–	33 (10)	–	0.094	0.655*
Weight (kg)	60 (13)	–	82 (14)	–	1.9	<0.001*
Height (cm)	–	163.6±5.3	–	178.0±6.2	2.49	<0.001**
Total experience (years)	11 (13)	–	10 (10)	–	0.104	0.573*
Operating room experience	9.5 (11.5)	–	10 (10)	–	0.024	0.895*
Job satisfaction	29 (9.5)	–	31 (8)	–	0.315	0.091*
Teamwork climate	42.5 (9.5)	–	43 (7)	–	0.011	0.954*
Safety climate	18 (5)	–	17 (5)	–	0.195	0.292*
Perceptions of management	24 (7)	–	24 (7)	–	0.184	0.322*
Stress recognition	–	15.9±4.4	–	14.3±3.9	0.41	0.040**
Working conditions	–	20.0±3.8	–	20.07±3.6	0.010	0.949**
Total score	–	148.3±23.8	–	146.3±24.3	0.08	0.660**
Qualitative variables	n	%	n	%		
OR nurses/Nurse anesthetists	42/34	55.3/44.7	18/23	43.9/56.1	0.108	0.328***
Marital status (married/single)	45/31	59.2/40.8	28/13	68.3/31.7	0.089	0.443***
Child (yes/no)	42/34	55.3/44.7	27/14	65.9/34.1	0.103	0.361***
Smoking (yes/no)	12/64	15.8/84.2	15/26	36.6/63.4	0.235	0.020***
Alcohol (yes/no)	5/71	6.6/93.4	3/38	7.3/92.7	0.014	1.000****
Anxiety-depression (yes/no)	7/69	9.2/90.8	2/39	4.9/95.1	0.078	0.491****
Chronic disease (yes/no)	13/63	17.1/82.9	7/34	17.1/82.9	0.0	1.000***
Educational level						
Health vocation high school	1	1.3	2	4.9	0.117	0.658*****
Associate's degree	25	32.9	13	31.7		
Bachelor's degree	46	60.5	23	56.1		
Master's or Doctorate degree	4	5.3	3	7.3		

*: Mann-Whitney U-test; **: Independent sample t-test; ***: Continuity Correction chi-square test; ****: Fisher exact chi-square test; *****: Pearson chi-square test; ES: Effect size; IQR: Interquartile range; SD: Standard deviation; OR: Operating room

relationship was found between and based on the gender categories and also the categories of nurses and nurse anesthetists, marital status, child, smoking, alcohol use, history of anxiety-depression, chronic disease, and educational level variables. It has been found that the perceptions of job satisfaction, teamwork climate, safety climate, perceptions of management, working conditions, and total score of women and men are at similar levels.

Table 4 shows no statistically significant difference in job satisfaction, teamwork climate, safety climate, perceptions of management, working conditions, and total score variables compared to age categories group (≤ 32 vs. ≥ 33 years), where there is no statistically significant difference in OR experience (≤ 10 vs. ≥ 11 years) in job satisfaction, teamwork climate, safety climate, management attitudes, working conditions, and total score factors compared to age categories group variables. Finally, there is no statistically significant difference in job satisfaction, teamwork climate, safety climate, perceptions of management, working conditions, and total score vari-

ables compared to educational levels (high school+associate degree vs. undergraduate+graduate), and, accordingly, the levels of patient safety perceptions were similar according to age categories OR experience categories and the education level of the participants.

Spearman's rho correlation coefficient was utilized to test the relationship between the sub-dimensions of patient safety perceptions of healthcare professionals participating in the current study. According to the results of the correlation analysis of the relationship between the sub-dimensions given in Table 5, although no statistically significant relationship was found between job satisfaction and stress recognition sub-dimensions ($r=0.038$; $p=0.682$), there is a moderately positive relationship between job satisfaction and teamwork climate sub-dimensions ($r=0.607$; $p<0.001$), a weak positive correlation ($r=0.483$; $p<0.001$) with the safety climate sub-dimension, a moderately positive correlation with the perceptions of management sub-dimension ($r=0.663$; $p<0.001$), and a weak positive correlation with working conditions sub-dimension ($r=0.413$; $p<0.001$).

Table 4. The analysis of the participants' perceptions of patient safety according to their age, operating room experience and education level

By Age categories	≤32 years (n=57)		≥33 years(n=60)		ES	p
Quantitative variables	Median (IQR)	Mean±SD	Median (IQR)	Mean±SD		
Job satisfaction	–	28.04±7.3	–	30.3±8.2	0.29	0.116*
Teamwork climate	–	41.8±7.9	–	42.0±7.3	0.03	0.872*
Stress recognition	–	15.4±4.7	–	15.4±4.0	0.02	0.935*
Working conditions	–	19.8±3.4	–	20.1±4.0	0.11	0.539*
Safety climate	–	145.9±22.9	–	149.2±24.9	0.14	0.455*
Perceptions of management	23 (7)	–	24.5 (8)	–	0.013	0.943**
Total score	146 (28)	–	152 (31)	–	0.013	0.454**
By OR experience	≤10 years (n=71)		≥11 years (n=46)			
Quantitative variables	Median (IQR)	Mean±SD	Median (IQR)	Mean±SD		
Job satisfaction	–	28.3±8.7	–	30.7±6.2	0.31	0.085*
Teamwork climate	–	41.8±7.8	–	42.2±7.2	0.05	0.793*
Stress recognition	–	15.5±4.3	–	15.2±4.4	0.08	0.643*
Working conditions	–	20.2±3.6	–	19.9±3.9	0.08	0.651*
Total score	–	146±25.7	–	149.9±20.9	0.16	0.406*
Safety climate	17 (5)	–	18 (4)	–	0.13	0.480**
Perceptions of management	23 (8)	–	26 (8)	–	0.142	0.443**
By Educational levels	High school+Assoc. (n=41)		Bachelor's+Master's (n=76)			
Quantitative variables	Median (IQR)	Mean±SD	Median (IQR)	Mean±SD		
Job satisfaction	–	27.4±7.4	–	30.2±7.9	0.36	0.079*
Teamwork climate	–	42.4±8.3	–	41.7±7.1	0.08	0.461*
Stress recognition	–	15.7±5.2	–	15.2±3.8	0.12	0.566*
Total score	–	146.4±26.3	–	148.3±22.7	0.07	0.703*
Safety climate	19 (5)	–	17 (5)	–	0.067	0.717**
Perceptions of management	24 (8)	–	23 (7)	–	0.136	0.464**
Working conditions	20 (4)	–	20 (5)	–	0.131	0.477**

*: Independent sample t-test; **: Mann-Whitney U-test. ES: Effect size; IQR: Interquartile range; SD: Standart deviation; OR: Operating room

There is a weak positive correlation between perceptions of management and working conditions sub-dimensions ($r=0.422$; $p<0.001$). However, no statistically significant relationship was found between the teamwork climate and the stress recognition sub-dimensions ($r=0.102$; $p=0.274$). There is a highly positive relationship between the safety climate and the perceptions of management sub-dimensions ($r=0.722$; $p<0.001$) and a very weak positive correlation between the working conditions sub-dimension ($r=0.184$; $p=0.048$). There is a highly positive relationship between the safety climate and the teamwork climate sub-dimensions ($r=0.733$; $p<0.001$). However, no statistically significant relationship was found between the safety climate and the stress recognition sub-dimensions ($r=-0.122$; $p=0.191$). There is a weak positive correlation between the sub-dimension of safety climate and the sub-dimension of perceptions of management ($r=0.317$;

$p<0.001$). However, no statistically significant relationship was determined between the safety climate sub-dimension and the stress recognition sub-dimension ($r=-0.057$; $p=0.542$). There is a weak positive correlation between the sub-dimensions of safety climate and the working conditions ($r=0.471$; $p<0.001$).

Cronbach alpha reliability coefficients for the total score, job satisfaction, teamwork climate, safety climate, perceptions of management, stress recognition, and working conditions sub-dimensions of patient safety perceptions in the study were 0.791, 0.883, 0.856, 0.864, 0.881, 0.791, and 0.530, respectively. When the Cronbach alpha (α) coefficients were examined, it was seen that, although the scale reliability level of the working conditions sub-dimension was low, the scale reliability levels of the total score, Job satisfaction, Teamwork climate, safety climate, perceptions of management, and stress recognition sub-dimensions are high.

Table 5. Total and sub-dimensional reliability analysis of patient safety attitude questionnaire that used to healthcare workers participating in the study

	Mean	SD		JS	TC	SC	PM	SR	WC	α
Job satisfaction (JS)	29.2	7.8	r	1.000						0.791
			p	–						
			α	0.883						
Teamwork climate (TC)	41.9	7.5	r	0.607	1.000					0.856
			p	<0.001	–					
			α	–						
Safety climate (SC)	17.4	3.8	r	0.483	0.733	1.000				0.864
			p	<0.001	<0.001	–				
			α	–	–					
Perceptions of management (PM)	23.6	5.6	r	0.663	0.711	0.722	1.000			0.881
			p	<0.001	<0.001	<0.001	–			
			α	–	–	–				
Stress recognition (SR)	15.4	4.3	r	0.038	0.102	-0.122	-0.057	1.000		0.791
			p	0.682	0.274	0.191	0.542	–		
			α	–	–	–	–			
Working conditions (WC)	20.0	3.7	r	0.413	0.422	0.184	0.317	0.471	1.000	0.530
			p	<0.001	<0.001	0.048	<0.001	<0.001	–	
			α	–	–	–	–	–		

α : Cronbach's alpha reliability coefficient; p: Probability value; r: Spearman's rho correlation coefficient. SD: Standart deviation

DISCUSSION

Health services are provided to protect and improve people's physical, mental, and social health, ensuring the continuity of well-being and improving the welfare level of society, with individuals demanding health services to protect and improve their current health status or regain their lost health (16). The priority in health service delivery is to provide health care without harming the patient with institutions providing health care services being full of potential and unpredictable risks and dangers. It is one of the most fundamental rights of patients to receive health services in a safe environment.

Therefore, the concept of "patient safety" was developed to ensure that patients are not harmed in any way that might have been avoided by medical professionals and to reduce the risks connected with medical care (7). Patient safety aims to provide safety by forming an environment that positively affects patients, their relatives, and hospital staff physically and psychologically. Here attention is drawn to establishing a system that will prevent errors during service delivery, protect the patient from possible harm due to errors, and eliminate the possibility of error (17).

This study aims to determine the attitude and perception of OR nurses and nurse anesthetists toward patient safety and the factors affecting their perception levels. In the current study, while it was seen that safety climate, stress recognition, working conditions, teamwork climate, and perceptions of management scores were similar in both OR nurses and nurse anesthetists, it was observed that job satisfaction and the total scores were significantly higher in OR nurses compared to nurse anesthetists.

While it was seen that "stress recognition" scores are higher in women than in men, in addition to all sub-dimensions of patient safety perceptions being similar according to age categories, surgical experience categories, and education level, it was observed that the scores obtained in other sub-groups were similar. A significant difference was found between OR nurses and nurse anesthetists regarding education level.

Health institutions need to create a culture of patient safety to increase quality and ensure continuity. Patient safety culture is the product of the individual or group's value judgments, beliefs, attitudes, perceptions, and behavioral patterns that determine the institution's image and competence in healthcare delivery (18). According to the results of many national and international studies which have been published on patients' safety in recent years, it has been reported that there are positive changes in patient care results, surgical site infections, adverse events, and medical errors in institutions where a safety culture is established and adopted. It was observed that there was a decrease in the morbidity and mortality rates as well as the length of stay (8).

The OR is a particularly difficult place to work in the medical field. While planning patient safety practices in the OR, it is crucial to get the opinions of the health personnel on the subject and determine their approaches. For this reason, OR nurses and nurse anesthetists have a great responsibility for patient safety (19).

In this study, the attitudes of the OR staff toward patient safety and the affecting factors were determined, and were found to be moderate. In addition, regarding the affecting factors, the team col-

laboration score was the highest, and the stress recognition score was the lowest (20). When the results of the patient safety attitude scale were examined between the OR nurses who received and did not receive training on patient safety, and while nurses' patient safety attitudes were examined in another study, in this study their relationship with occupational accidents revealed that statistically significant differences were found, and it was determined that the nurses who received training had higher attitude scores (7). Regarding the relationship between safety attitude and occupational accidents, it was concluded that nurses' awareness of finding the effective causes of patient safety was increased (21). In another study, variables related to nurses' safety attitudes were examined, and it was found that the most critical factors were education and training on the subject (17). In another study, the surgical department nurses were examined, and nurses in the OR, intensive care unit (ICU), and surgical services had their scores on collaboration and safety atmosphere assessed. The scores of the OR nurses were higher than the nurses of the other two departments (18). In another study, safety attitudes and inter-professional relationships that may affect safety attitudes were assessed based on the OR personnel's personal and professional attributes. OR staff, colleagues, and nurses were found to exhibit higher levels of team collaboration and communication than other OR staff (19). In one study, nurses were found to have a higher attitude toward safety culture (22), where it showed that there is a significant difference between nurses and other professionals' perceptions of safety culture. In the study of Elsous et al. (23), a significant difference was found between the years of experience in the sub-dimensions of job satisfaction, teamwork, and mentality of hospital management. Accordingly, the scores of people with 12 years or more of work experience are higher than those with less than these years of work experience.

Limitations

This research has limitations on some issues. First, the study sample consists of nurses and nurse anesthetists working in a public hospital in a city in Türkiye. Therefore, the problem of generalizing the results to all OR nurses and nurse anesthetists arises. We believe that a more representative result will emerge from multi-center studies addressing this issue. Secondly, during the survey conducted to evaluate the perceptions of patient safety, healthcare professionals participating in this study may have been institutionally affected and answered the questions in the survey accordingly. Third, the internal consistency and reliability of the sub-dimension named "working conditions" in the last part of the survey were low (α : 0.530). The reason may be that the questions about the working conditions were included in the last part of the questionnaire, and the respondents lacked concentration toward the end while giving their answers.

CONCLUSION

To sum up, it is recommended that comparative studies can be conducted with different hospitals to assess the patient safety perception of OR health professionals, identify areas that need improvement, and produce solutions, where it is needed to evaluate the joint suggestions of the hospital management, plan intervention studies on these issues, and organize training programs in order to increase the patient safety perception of the OR health workers.

Ethics Committee Approval: The İnönü University Non-interventional Clinical Research Ethics Committee granted approval for this study (date: 22.02.2022, number: 2022/3155).

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