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Research Article

Patient Safety Culture in a Tertiary Referral Hospital: Evidence from a Main Criterion in Accreditation

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Abstract

Objectives: In Iran's accreditation program, the patient safety dimension is one of the main dimensions, holding the highest weight among the accreditation criteria. The purpose of this study was to identify the patient safety culture (PSC) in a tertiary referral hospital.

Methods: The current study was conducted between March and April 2021 in a tertiary hospital in Iran. The sample size was 628 participants, selected through simple random sampling. The hospital survey on patient safety culture (HSOPSC) was used to assess provider and staff perceptions about patient safety issues, medical errors, and event reporting. The survey included 32 items that measure 10 dimensions of PSC. Normality tests, along with non-parametric Mann-Whitney and Kruskal-Wallis tests, were used to examine the relationship between PSC and demographic variables using SPSS 22 software.

Results: Based on current findings, among the 10 dimensions of PSC, teamwork and organizational learning-continuous improvement received the highest scores (83% positive response), which were higher than these variables in the Agency for Healthcare Research and Quality (AHRQ) data. Conversely, staffing and work pace, as well as hospital management support for patient safety, received the lowest positive scores (43% and 55% positive response, respectively), which were lower than these variables in the AHRQ data. There was a significant positive relationship between dimensions of PSC and older age, female gender, staff with longer working experience, and longer work hours per week ($P < 0.05$).

Conclusions: The majority of our participants felt that patient safety needs to be enhanced. Based on the findings of this study, it is recommended to emphasize the dimensions of "staffing and work pace" and "hospital management support for patient safety" more in the accreditation criteria to strengthen these dimensions in hospitals. Additionally, we have introduced a comprehensive guide for using an international tool to measure PSC, which hospitals can use to succeed in annual accreditation.

Keywords: Patient Safety, HSOPSC, Accreditation, Iran

1. Background

The quality of hospital services means providing care to the patient with the least possible error (1). Errors that affect patient safety can be costly for both patients and the health system (2, 3). To improve patient safety, one of the first steps is to assess the safety culture among healthcare providers (4). Strengthening patient safety and continuously improving the quality of services are the goals of accreditation, and it is used in more than 70 countries (5). In Iran, the hospital accreditation program was first implemented in 2012 using 8140 criteria, and the number of criteria was reduced in the following periods (6). Improving safety and creating a culture of patient safety in the hospital is one of the main dimensions, so it has the highest weight among the accreditation dimensions (7).

The term safety culture was first created after the Chernobyl nuclear accident and since then it has been used as a way to understand accidents in various industries, including aviation, oil, gas, and recently healthcare (8). Safety culture is a subset of organizational culture, which is subdivided into leadership, teamwork, evidence-based practices, communication, learning, fairness, and patient-centered care (9). The patient safety culture (PSC) reflects the values, beliefs, and organizational norms in the path of growth and improvement of patient safety in

healthcare organizations (10).

Key features of a PSC that improve organizational performance include confirming high-risk activities, willingness to achieve continuity of patient safety, a blame-free environment for reporting errors or near-miss without fear of punishment, encouraging cooperation at all organization levels to find solutions to problems, and organizational commitment to allocate resources in line with patient safety (11). The development of a safety culture can prevent the side effects of errors or quickly correct the occurrence of errors before harm occurs (9).

Investigations conducted by researchers through a systematic review study in 2023 on hospitals in Iran show that the overall scores of the PSC in most hospitals before the emergence of the COVID-19 pandemic are at a low and average level (12). Therefore, paying attention to patient safety through identifying factors affecting PSC can be effective in the development and progress of hospitals in this country in order to improve PSC.

Studies indicate the effect of some factors on PSC. For example, the results of some studies showed that demographic and organizational factors such as age, marriage, gender, employees' work experience, job position, education, shift work, employment status, fatigue, personal accomplishment, burnout, work environment, and job satisfaction have a significant effect on PSC (13-16).

It is important to try to identify factors affecting PSC in order to improve and promote this culture in hospitals. This evidence can help health policymakers and hospital managers to understand related challenges and develop strategies to improve PSC in hospitals (13).

Assessment of PSC in hospitals is used as a management tool and has several applications: Creating awareness among employees about patient safety, assessing the current state of PSC in the organization, identifying strengths and areas that can be improved, analyzing safety culture trends over time, evaluating the impact of interventions on safety culture to improve patient safety, and comparing safety culture between different healthcare organizations (11, 17).

These evaluations are obtained through valid questionnaires that measure the service providers' perception of patient safety at their workplace (18). There are several tools for assessing PSC. The most well-known tools are the Safety Attitude Questionnaire (SAQ), Patient Safety Culture in Healthcare Organizations (PSYCHO), and the hospital survey on patient safety culture (HSOPSC) (9). The HSOPSC is one of the most common tools for measuring PSC in hospitals and primary care centers because it allows comparisons between sectors and the evaluation of national patient safety improvement programs (19).

In March 2020, with the announcement of the sixth public health emergency and the coronavirus pandemic by the World Health Organization (20, 21), conditions in hospitals became more difficult. With the multiple peaks of the COVID-19 pandemic, the challenges for health systems and healthcare service providers were unprecedented. Uncertainty about the diagnosis and treatment, unfamiliarity with new tasks, increased workload, and time constraints caused stress and confusion among employees. At the same time, the care team had to protect themselves against infection and prevent their family members from getting infected. In such conditions, the ability of hospital staff to provide safe and effective care was affected (22, 23).

To prevent and minimize the complications of unsafe services and, as a result, improve the quality of medical services and the ranking of hospitals in accreditation, it is necessary to emphasize creating a positive safety culture. Hospital managers must first have a correct understanding of the existing cultural situation to strengthen patient safety. Although many studies have evaluated PSC (24-26), there is little evidence in this regard during the COVID-19 pandemic in Iran. Also, the lack of use of a global standard tool in the current studies to compare the PSC in Iranian hospitals with other countries reveals the need to conduct a study to create a comprehensive understanding.

2. Objectives

A study was conducted with the aim of identifying the PSC in a COVID-19 referral hospital in Eastern Iran.

3. Methods

The current cross-sectional study was conducted between March and April 2021 in a tertiary hospital in Khorasan Razavi province in Eastern Iran. The general hospital has 960 beds and 3,800 staff, serving as a referral center for COVID-19 patients. At the peak of the COVID-19 pandemic, up to 50% of the hospital's capacity was allocated to COVID-19 patients. We used a pilot study to determine the sample size, estimated to be 785 participants (based on a 95% confidence interval, 0.81 standard deviations, and a 5% margin of error). Considering that the number of human resources (study population = 3500) was known, the following formula was used for calculation:

$$n = \frac{N.Z^2S^2}{Nd^2 + Z^2S^2}$$

Simple random sampling was used to select the participants; the questionnaire was sent electronically to all hospital employees so that each staff member had an equal chance of being selected. A total of 628 participants participated in the study (response rate = 80%).

The studied population included all clinical and non-clinical staff, and the study environment was the hospital. The participants included managers, nurses, paraclinical staff, and administrative staff. The criteria for entering the study were satisfaction with participating in the research and being employed in the study environment; thus, all staff, regardless of service nature (e.g., clinical, administrative, and rear service staff), were in-

cluded. Participation was anonymous, voluntary, and confidential. The participants were informed about the purpose of the study.

The HSOPSC released by the Agency for Healthcare Research and Quality (AHRQ) in 2019 was used to assess provider and staff perceptions about patient safety issues, medical errors, and event reporting. At the hospital, unit, and individual levels of analysis, this survey is psychometrically sound (27). The Cronbach's alpha coefficient of the questionnaire was 0.78, showing its acceptable reliability. Therefore, the internal consistency of the survey was relatively satisfied. Table 1 shows the findings of the Cronbach's alpha test related to the fields of the questionnaire.

Table 1. The Results of Cronbach's Alpha Test for the Questionnaire Fields

Dimension	Cronbach's Alpha	Standardized Cronbach's Alpha	Database Hospitals
Supervisor, manager or clinical leader support	0.70	077	0.77
Teamwork	0.58	0.62	0.76
Communication openness	0.66	0.67	0.83
Reporting patient safety events	0.75	0.75	0.75
Organizational learning- continuous improvement	0.67	0.69	0.76
Communication about error	0.79	0.79	0.89
Hospital management support for patient safety	0.73	0.73	0.77
Response to error	0.67	0.67	0.83
Handoffs and information exchange	0.72	0.70	0.72
Staffing and work pace	0.59	0.58	0.67

The survey includes 32 items that measure 10 composites of PSC. The components and ratings of patient safety composites are accessible on the AHRQ website. The AHRQ provides a survey hosting database, supplied by hospitals for comparison (28). The hospital database data is related to the year 2019 and before the emergence of the COVID-19 pandemic. Hospital Survey on PSC items use frequency ("Never" to "Always") or a 5-point response scale of agreement ("Strongly Disagree" to "Strongly Agree"). Each item's percent positive score consists of the percentage of positive responses ("Agree" or "Strongly Agree", "Most of the time" or "Always" to positively worded items) within a hospital.

In addition to the multi-item composites, the survey also includes 2 single-item measures that ask staff to give their work unit a patient safety grade and estimate the number of events they reported in the past 12 months. We translated HSOPSC using forward and backward translation to check the quality of the translation. The original and target languages were English and Farsi, respectively. The questionnaire was pilot-tested, and an expert panel deliberated on the intelligibility and applicability of the items; confusing or unclear items were improved. Thus, no item was inapplicable (29).

This panel included 10 experts in the field of patient safety, including the infection control supervisor, the patient safety officer, and the nursing manager, and 7 selected supervisors. Because inpatient ward visits by staff were limited during the COVID-19 pandemic, the hospital directorate facilitated the survey conduct, and an electronic continuous evaluation system (CES) was used to collect data using the finalized questionnaire. Percentages of positive responses were calculated for each item and each dimension. The collected data were entered and analyzed using the hospital data entry and analysis tool that works with Microsoft Excel® developed by AHRQ. Permission to obtain and use this tool was given by a company that provides technical assistance to the AHRQ survey on PSC. The AHRQ coordinated the data reception.

The demographic characteristics (sex, age), professional experience at the current ward and at this hospital (precedent-ward, precedent-hospital), number of working hours per week, direct interaction with patients, and staff position were documented. Normality tests, nonparametric Mann-Whitney and Kruskal-Wallis tests were used to examine the relationship between PSC composites and demographic variables using SPSS 22 software. A P-value ≤ 0.05 was considered statistically significant.

Agency for Healthcare Research and Quality HSOPSC composites and number of survey items include: Communication openness (4 items), communication about error (3 items), reporting patient safety events (2 items), handoffs and information exchange (3 items), hospital management support for patient safety (3 items), response to error (4 items), organizational learning-continuous improvement (3 items), staffing and work pace (4 items), supervisor, manager, or clinical leader support for patient safety (3 items), and teamwork (3 items).

4. Results

Based on the findings of the study, 390 (62%) of the study participants were females. The average age of the participants was 37 ± 4.7 years. 49.4% of the participants

had more than 11 years of hospital working experience. About half of the participants (45.4%) worked between 30 and 40 hours per week, and clinical staff (80.3%) who had direct contact with the patient were more involved in the study compared to non-clinical staff (15%). The majority of participants were nurses (54%). Table 2 shows the participants' characteristics in the study.

Table 2. Participant Characteristics

Demographic Characteristics	Number (%)
Organizational position	
Head of the unit	33 (5.3)
Nurse	339 (54.0)
Official	104 (16.6)
Paraclinic	50 (8.0)
Missing	102 (16.2)
Unit/department	
Administrative unit	62 (9.9)
Emergency department	3 (0.5)
Inpatient department	352 (56.1)
Operating room	61 (9.7)
Outpatient department	100 (15.9)
Paraclinic	50 (8.0)
Percedent-ward, (y)	
Below 1	85 (13.5)
1 - 5	223 (35.5)
6 - 10	116 (18.5)
Above 11	172 (27.4)
Missing	32 (5.1)
Percedent-ward, (y)	
Below 1	20 (3.2)
1 - 5	158 (25.2)
6 - 10	109 (17.4)
Above 11	310 (49.4)
Missing	31 (4.9)
Precedent-hospital, (y)	
Below 1	20 (3.2)
1 - 5	158 (25.2)
6 - 10	109 (17.4)
Above 11	310 (49.4)
Missing	31 (4.9)
Work hours at the week, (h)	
Below 30	25 (4.0)
30 - 40	285 (45.4)
Above 40	282 (44.9)
Missing	36 (5.7)
Direct patient contact	
Yes	504 (80.3)
No	90 (15.0)
Missing	34 (5.4)

32% of the participants described the condition of their departments as very good, 17% as excellent, and 2% as poor in terms of patient safety. Overall, the patient safety score was 70 (out of 100 points). Fifty five percent of the participants reported 1 to 5 cases of patient safety events in the last year. As shown in Figure 1, HSOPSC scores ranged from 43% positive response (staffing and work pace) to 83% positive response (teamwork; organizational learning-continuous improvement). The database hospitals are derived from AHRQ. The data of the database hospi-

tals is related to the year 2020 and during the COVID-19 pandemic. Positive response rates in 4 dimensions (teamwork, organizational learning-continuous improvement, communication about errors, information transfer) were higher than these variables in the AHRQ data.

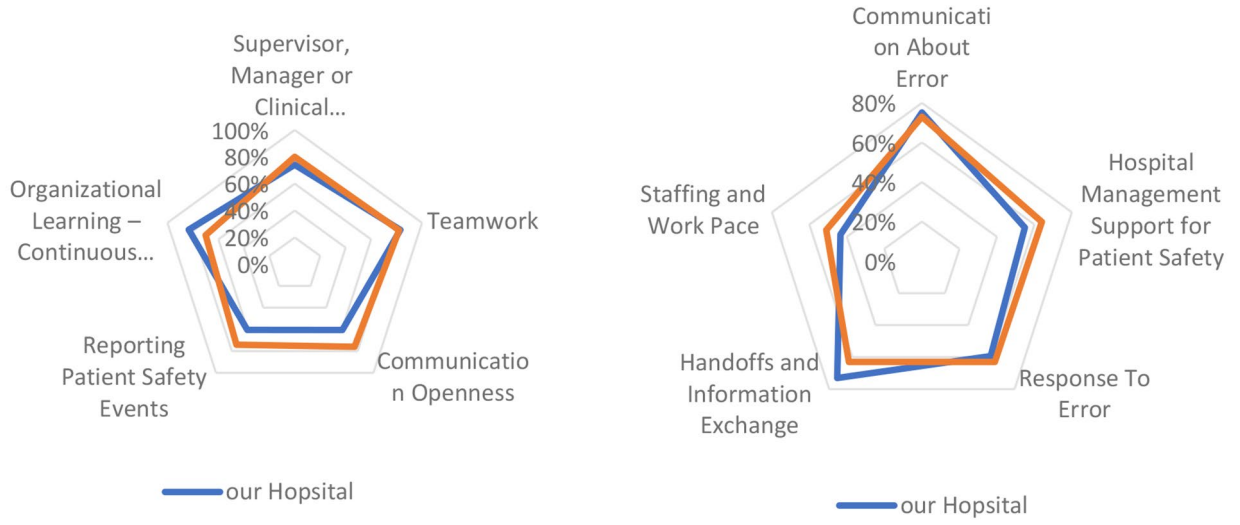

Figure 1. Descriptive statistics in the analysis dataset

Besides, in this study, the items "In this unit, we work together as an effective team" scored 95% and "During busy times, staff in this unit help each other" scored 93% related to Teamwork, and the item "This unit regularly reviews work processes to determine if changes are needed to improve patient safety" scored 84% related to organizational learning-continuous improvement respectively, which are the most positive scores. The items "Staff in this unit work longer hours than is best for patient care" scored 4% related to staffing and work pace and "In this unit, the staff is afraid to ask questions when something does not seem right" scored 35% related to communication openness, which received the lowest positive scores (Figure 1).

The results of the Shapiro-Wilk and Kolmogorov-Smirnov tests rejected the hypothesis of normality of the data distribution of the present study at a significance level of 0.05. Cronbach's alpha values (Table 1) were 0.66 or higher for all dimensions, except for staffing and work pace ($\alpha = 0.59$) and teamwork ($\alpha = 0.58$).

Tables 3 and 4 show the findings related to measuring the relationship between participants' variables and PSC. We reported statistically significant relationships between age and dimensions of "Response to Error" ($P = 0.031$), and "Staffing and Work Pace" ($P = 0.023$). Relationships are higher among participants aged 50 and above. There also was a significant relationship between Precedent-Hospital and dimensions of "Handoffs and Information Exchange" ($P = 0.048$), and "Staffing and Work Pace" ($P = 0.049$).

Table 3. Kruskal-Wallis Test Results

Variables and Dimension a	Chi-square	P-Value
Age		
1	1.098	0.777
2	4.961	0.175
3	2.276	0.517
4	1.260	0.739
5	3.098	0.377
6	6.811	0.078
7	0.989	0.804
8	8.868	0.031
9	1.162	0.762
10	9.576	0.023
Precedent-hospital		
1	3.017	0.389
2	2.243	0.523

3	1.268	0.737
4	2.296	0.513
5	4.787	0.188
6	5.781	0.123
7	6.122	0.106
8	4.339	0.227
9	7.422	0.048
10	7.870	0.049
Precedent-ward		
1	10.604	0.014
2	0.963	0.810
3	4.626	0.201
4	5.413	0.144
5	5.393	0.145
6	8.080	0.044
7	8.231	0.041
8	4.940	0.176
9	9.168	0.027
10	22.771	0. 000
Work hours at the week		
1	1.556	0.459
2	0.402	0.818
3	12.786	0.002
4	1.855	0.396
5	6.102	0.047
6	7.687	0.021
7	3.033	0.219
8	3.214	0.200
9	3.021	0.221
10	4.833	0.089

[a] Dimensions: (1) supervisor, manager, or clinical leader support for patient safety; (2) teamwork; (3) communication openness; (4) reporting patient safety events; (5) organizational learning-continuous improvement; (6) communication about error; (7) hospital management support for patient safety; (8) response to error; (9) handoffs and information exchange; (10) staffing and work pace.

Table 4. Mann-Whitney Test Results

Dimension And Variables	Mann-Whitney U Test	Z	P-Value
Supervisor, manager, or clinical leader support for patient safety			
Gender	27470. 500	-0.218	0.827
Direct patient contact	14525. 000	-0.013	0.990
Teamwork			
Gender	32027. 000	-0.718	0.473
Direct patient contact	20209. 000	-0.598	0.550
Communication openness			
Gender	22516. 000	-0.705	0.481
Direct patient contact	10236. 000	-0.807	0.420
Reporting patient safety events			
Gender	20474. 500	-1.868	0.062
Direct patient contact	8070. 500	-2.565	0.010
Organizational learning-continuous improvement			
Gender	25082. 500	-1.251	0.211
Direct patient contact	12302. 000	-2.130	0.033
Communication about error			

Gender	27031. 000	-0.904	0.366
Direct patient contact	17865. 500	-0.333	0.739
Hospital management support for patient safety			
Gender	26606. 000	-1.425	0.154
Direct patient contact	13639. 000	-1.804	0.071
Response to error			
Gender	30488. 000	-0.889	0.374
Direct patient contact	17338. 500	-0.821	0.412
Handoffs and information exchange			
Gender	25446. 500	-1.355	0.175
Direct patient contact	7705. 500	-4.669	0.000
Staffing and work pace			
Gender	27000. 500	-2.170	0.030
Direct patient contact	14046. 500	-1.570	0.116

People who had more than eleven years of work experience in the hospital had given higher scores to the staff and work environment (mean rank = 288.51). On the other hand, employees with a work experience between 1 and 5 years had given higher scores in the field of information transfer (mean rank = 295.08).

Further, a significant statistical relationship was observed between Precedent-Ward and the dimensions of "Hospital Management Support for Patient Safety" (P = 0.041), "Communication About the Error" (P = 0.044), "Handoffs and Information Exchange" (P = 0.027), "Staffing and Work Pace" (P < 0.001).

Working hours per week also had a significant positive relationship with "Communication Openness" (P = 0.002), "Organizational Learning-Continuous Improvement" (P = 0.047), and a significant negative relationship with "Communication About the Error" (P = 0.021). Employees who worked more than 40 hours a week scored higher in the areas of "Organizational Learning-Continuous Improvement" and "Communication About the Error", and those who worked less than 30 hours a week scored more in the field of "Communication Openness".

There was a significant relationship between gender and "Reporting Patient Safety Events" (P = 0.062) and "Staffing and Work Pace" (P = 0.03). In the field of "Staffing and Work Pace", women's scores were higher than men's and there was a significant difference. There also was a significant relationship between "Direct Patient Contact" and the dimensions of "Reporting Patient Safety Events" (P = 0.010), "Organizational Learning-Continuous Improvement" (P = 0.033), "Handoffs and Information Exchange" (P < 0.001). Those who usually have direct contact with patients reported a higher score in the fields of "Organizational Learning-Continuous Improvement" and "Handoffs and Information Exchange". Employees who usually did not have direct contact with patients reported a higher score in the field of "Reporting Patient Safety Events", which was also statistically significant. Also, in the field of "Error Report", men had given higher scores than women (P = 0.062).

5. Discussion

This study determined the PSC during the COVID-19 pandemic in one of the largest hospitals in Eastern Iran. As Zebrak et al.'s study (30) gave us this assurance, we used the HSOPSC tool to conduct a study to identify the hospital's strengths and opportunities for improvement to advance the level of PSC. The majority of participants were nurses (54%). As in a review study, this group accounted for the largest share of participants in 80% of the studies under review (11). This issue indicates the high desire of nurses to cooperate and participate, while all professional groups should be encouraged to participate in safety culture evaluation.

In the current study, less than half of the hospital staff (49%) described the patient's safety status as very good and excellent, while this percentage is not comparable to the percentage found in the 2018 AHRQ database, where 67% of respondents rated their work unit as excellent or very good (30). Reported values for different regions of the world include 74% in the United States of America (31), 87% in Pakistan (Ahmed et al., 2023), 73% in China (32), 70% in Lebanon (33), and 69.3% in Croatia (22). However, a study in Iran (2016) described this percentage as 17.6% before the COVID-19 era (34). These findings indicate the weakness of the PSC in Iranian hospitals before and after the coronavirus, and this issue requires more attention due to the importance and impact of the safety culture on improving hospital performance. Including topics related to patient safety in the curriculum of all medical sciences is one of the solutions that will lead to the improvement of PSC in the long term.

The spread of COVID-19 and various treatment procedures, uncertainty about the effectiveness of various interventions, the increase in the need of patients to be admitted to the hospital and special departments, the infection of hospital staff, especially nurses, with COVID-19,

and the increase in workload were some of the factors affecting the safety of patients during the pandemic. Perhaps the lack of pre-designed structures to prevent the occurrence of errors in this era has been one of the effective factors in reducing the hospital's safety culture. So, paying attention to effective communication and interactions to prevent the occurrence of errors and designing response mechanisms for errors is effective as one of the main tools to improve the PSC.

Among the 10 dimensions of PSC, teamwork and organizational learning-continuous improvement got the most (83%). Similarly, studies conducted in other countries (29, 32, 33, 35, 36) have shown that teamwork had the highest score in PSC. The long-term communication of employees within the departments and the strengthening of cooperation and empathy (14, 37, 38) are among the crucial solutions affecting the spirit of teamwork and improving the level of PSC.

A study in Brazil during the COVID-19 epidemic (39) reported that "teamwork" (81%) and "organizational learning-continuous improvement" (76%), along with the dimensions of "supervisor, manager, or clinical support for patient safety" (82%) and "patient safety event report" (77%), were among the four dimensions with the highest percentage of positive responses (22). A previous study in Iran (34) also reported that organizational learning had the most positive responses.

In the current study, staffing and work pace (43%) and hospital management support for patient safety (55%) had the lowest scores, and it had the biggest difference with AHRQ's data. The results indicate that "Staff in this unit work longer hours than is best for patient care." These factors were identified as the most important opportunities for improving PSC. Other studies reported similar findings (22, 38).

In addition, studies in China (32), Taiwan (29), Brazil (54%) (39), the United States (56%) (10), and AHRQ data, among all dimensions, "staffing and work pace" have the lowest percentage of positive responses. This suggests that staff feel overburdened for staff-related reasons, even during the COVID-19 pandemic (at the time of data collection for this study) with high demand for acute patient admissions. Therefore, creating suitable working conditions, including sufficient manpower, appropriate working hours, institutionalizing the culture of error reporting, non-punitive policies in hospitals, and the quality of health services are solutions to improve the PSC.

Based on our findings during the COVID-19 pandemic, in addition to the dimension of staffing and work pace, lack of support from supervisors/managers is a patient safety issue that may discourage staff from reporting errors. Similarly, research in Croatian hospitals before and during the COVID-19 pandemic also indicated poor management support for the expectations of medical staff. Perhaps the pandemic has exacerbated this issue (22, 40).

Healthcare workers experience a lack of support from managers. They need their supervisors to be available, visible on the front line, and they need them to create an environment of trust and psychological safety (40). Managers can play an effective role by providing feedback regarding errors and laying the groundwork for the frequency of error reporting (41). Internationally, there are various initiatives to support employees during the COVID-19 pandemic, such as access to free meals, employee counseling services, transportation allowances, the "clap for carers" campaign, trade discounts, and social media initiatives (42). During our study period, we discovered initiatives such as corona hardship incentive payments to employees and business discounts.

On the other hand, according to the findings of Smith et al. (10), the attention and allocation of resources with priority to patient safety by hospital managers can indirectly affect the rating of the hospital by customers. Perhaps, in the conditions of the COVID-19 pandemic and the urgency of patients to be admitted to the hospital, they have faced a limited choice, but the perception of patients about the provision of safe services can be effective in their loyalty to the hospital and possible future referrals.

Employees' experience in their current department (experience-department) also had a statistically significant relationship with increased "error communication". Experienced employees, due to the wide communication network in the department, are easily informed about the errors that have occurred, and also due to the feeling of greater responsibility, they give feedback on the resulting changes and are experts and participate in the discussions related to ways to prevent errors.

Working hours per week also had a statistically significant relationship with communication openness, organizational learning-continuous improvement, and communication about errors. Employees who worked more than 40 hours a week scored higher in the areas of organizational learning-continuous improvement and communication about errors, and those who worked less than 30 hours a week scored more in the field of communication openness. Perhaps more working hours in the hospital increased the level of organizational belonging among the employees, which improved the PSC. Also, increasing working hours among employees has been associated with increasing levels of organizational learning and intra-organizational communication.

Studies conducted in Iran before the COVID-19 epidemic also showed this statistically significant difference in the way respondents evaluate PSC in different average weekly working hours (43, 44). Communication openness means that staff will freely speak up if they see something that may negatively affect patient care, and feel free to question those with more authority. Therefore, it is usual that employees who have lower average weekly working hours have more time and energy to react to possible risks for the patient and follow it up through communi-

cation with superiors.

Patient safety culture should be considered one of the most important organizational values by hospital managers and decision-makers. The evaluation mechanisms of hospital managers and planners based on measuring their understanding and recognition of the dimensions and components of PSC can be a way to improve the safety culture. Also, holding international meetings or designing mechanisms such as web platforms to transfer experiences and provide corrective measures and report their effectiveness can be very effective. The AHRQ organization plays a cardinal role in promoting the PSC evaluation traditions. Policymakers of health systems should pay attention to the culture of patient safety as one of the main tools for improving the quality of hospital services and reducing the costs of treating patients around the world. Institutionalizing the culture of patient safety and paying attention to all its dimensions and components can act as the key preventive measure against unsafe and ineffective patient management.

5.1. Limitations

In this study, physicians did not participate, which is perhaps the most important limitation of our study. Due to the lack of proper division at the time of data collection, we could not compare the safety culture between departments involved and not involved with COVID-19 patients. We do not have previous data from the hospital to compare our findings. Non-clinical staff had a low response, likely due to a lack of institutionalization of patient safety philosophy among clinical and non-clinical hospital staff.

5.2. Conclusions

In the current study, we had a 70% patient safety score, with overall positive responses ranging from 43% to 83%. This good score is related to older respondents; staff with longer working experience, who display a greater sense of responsibility; female gender, where women score higher; non-clinical staff, who reported higher patient safety events. Besides, staffing and work pace and hospital management support for patient safety were poor. The majority of our participants felt patients' safety needs to be enhanced. This study can help executive teams of Iranian hospitals as a guide to measure PSC for accreditation. We expect future researchers to identify new patient safety issues during the current pandemic.

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Authors' Contribution:

S M, project administration, conceptualization and methodology, writing-review and editing; T Sh, writing-review and editing; M H, writing-review and editing; Z E, investigation, writing-review and editing; M Y, writing-review and editing; A R, data curation, writing original draft.

Conflict of Interests:

The authors declared no potential conflict of interests with respect to the research, authorship, and/or publication of this article.

Data Reproducibility:

IThe data set presented in the study is available on request from the corresponding author after publication. The data are not publicly available.

Ethical Approval:

This study was approved by the Ethics Committee of Tehran University of medical sciences, Tehran, IRAN (Ethical code: IR.TUMS.NIHR.REC.1400.012 https://ethics.research.ac.ir/ProposalCertificateEn.php?id = 225517).

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Informed Consent:

The participants were informed about the purpose of the study.

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