



## Investigation of Healthcare Professionals' Viewpoints Towards Patient Safety Culture in Abu-Ali Sina Organ Transplantation Center, Shiraz, Iran

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### Abstract

**Introduction:** Patient safety is one of the main challenges in the field of healthcare. The increase in patient safety and care quality are now amongst the main priorities of hospitals. Patient safety culture is directly associated with the incidence of adverse events. Hence, the present study aimed to investigate patient safety culture from the perspective of healthcare staff in Abu-Ali Sina Organ Transplantation Center, Shiraz, Iran.

**Methods:** This cross-sectional study was conducted on 763 healthcare staff in Abu-Ali Sina Organ Transplantation Center in 2019. The study data were collected using the Hospital Survey on Patient Safety Culture Questionnaire (HSPSCQ) whose reliability and validity were approved. The data were analyzed using the SPSS software and  $P < 0.05$  was considered statistically significant.

**Results:** The majority of the participants were female (65.66%), aged 20-30 years (79.4%). Scores 50-70% were for 'supervisor/manager expectations and actions promoting patient safety', 'organizational learning-continuous improvement', and 'teamwork within units'. However, scores below 50% were to 'the frequency of events reported', 'overall perceptions of patient safety', 'communication openness', 'feedback & communication about errors', 'non-punitive response to errors', 'staffing', 'management support for patient safety', 'teamwork across units', and 'handoffs and transitions'.

**Conclusion:** Patient safety culture was scored low to moderate in Abu-Ali Sina Organ Transplant Center. Therefore, authorities are recommended to train the employees and hold workshops for promoting patient safety culture in this center.

**Keywords:** Culture, Safety, Hospital, Organ transplantation

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### Introduction

Patient safety is the hospitals' main mission and one of the main indices of patient care quality. In fact, guaranteeing patient safety and care quality are amongst the priorities of healthcare centers all over the world. In this context, health centers make their best attempts to enhance patient safety (1). The American Medical Institute has defined patient safety as prevention of any damage to patients (2). The incidence of adverse events resulting

from unsafe care services is also among the ten major causes of morbidity and mortality around the world (3). Annually, 134 million adverse events occur in the hospitals of low- and middle-income countries, which lead to 2,600,000 deaths (3). In addition, evidence indicated that two-thirds of adverse events resulting from unsafe care services reduced the functional years of life in these countries (4). Hence, the American Medical Institute has put emphasis on the prevention of error, learning from errors, and

creation of patient safety culture with the cooperation of health centers, healthcare staff, and patients (5). In fact, one way to enhance patient safety is to promote patient safety culture in healthcare centers.

A previous review study demonstrated that patient safety culture included seven subcategories, namely leadership, teamwork, evidence-based decision-making, communication, learning, justice, and patient-orientation (6). Besides, a significant relationship was found between the rate of adverse events in hospitals and patient safety culture (7). Improvement of patient safety culture, particularly the communication openness dimension, could in turn decline the prevalence of pressure ulcer and falling. In addition, the improvement of teamwork could decrease the rate of ventilator-associated pneumonia (8). Overall, the effective factors in improving patient safety quality included providing feedback to errors, reporting errors, and patient information exchange (9).

The results of systematic reviews and meta-analyses on patient safety culture in Iran have revealed various rates of patient safety culture depending on the type of studied medical university and the specialty of the hospital (10, 11). Generally, patient safety culture is directly associated with clinical outcomes and patient satisfaction. Thus, the identification of strengths and weak points of patient safety is of paramount importance in hospitals. In this regard, study results can play a critical role in prioritization of patient safety culture and planning for the improvement of safety culture in hospitals. Nonetheless, since healthcare staff's viewpoints about patient safety culture are affected by the type and location of the hospital (10), the results of other studies cannot be generalized to special hospitals such as organ transplantation centers.

Nowadays, the rate of adverse events is increasing in organ transplant centers (12). In fact, adverse events are more probable to occur in such centers due to their higher levels of stress and teamwork (13). The results of the previous studies revealed undesirable patient safety culture in organ transplant centers. Therefore, there is a gap between the present status of patient safety culture and the expected status in these centers (14, 15). Abu-Ali Sina Organ Transplantation Center is a hospital care center for transplant recipients who need liver, kidney, intestine, heart, and pancreas transplantations, in the South of Iran. It is also a referral center for patients from neighboring countries. This 700-bed hospital was established in 2017. To the best of our knowledge, no studies have been conducted on patient safety culture in Abu-Ali Sina Organ transplant center in Shiraz. Abuosi

and their colleagues measured patient safety culture among healthcare providers in the Upper East Region of Ghana in 2020. Finding of this study indicate that patient safety culture was low (16). In addition, Tlili and their colleagues studied patient safety culture in intensive care units of the Tunisian center in 2020 and showed that patient safety culture was unsatisfactory (17). Therefore, the present study aims to explore the patient safety culture status in Abu-Ali Sina Organ transplant center in 2019.

## Materials and Methods

This cross-sectional study aimed to assess the viewpoints of the staff at Abu-Ali Sina Organ Transplantation Center about patient safety culture from October to December 2019. The sampling method was the census. All staff at this center participated the study. Being employed in Abu-Ali Sina organ transplant Center, having work experience longer than 6 months, and the individual interest in answering the questionnaires were inclusion criteria. The questionnaires with data missing were excluded. Explanation on the survey and Hospital Survey on Patient Safety Culture questionnaire (HSPSCQ) was electronically available on hospital webpage. Participant answered this questionnaire by hospital's user name and password which is used to access other activities in hospital. Staff were given three months to participate in the study. Each month, a reminder was sent to those staff who did not complete the questionnaire.

The study data were collected using HSPSCQ which measures twelve dimensions of patient safety culture (18). It was translated to Persian and its reliability and validity were confirmed previously (19). In this survey, clinical staff's attitudes towards patient safety culture were explored. This questionnaire contained 9 questions about personal characteristics and 42 questions about patient safety. One question reports an overall grade on patient safety from the perspective of staff and another shows how many event have reported over the past 12 months.

the questions about patient safety culture were classified into 12 categories, namely 'teamwork within units' (4 question), 'supervisor/manager expectations & actions promoting patient safety' (4 question), 'organizational learning-continuous improvement' (3 question), 'management support for patient safety' (3 question), 'overall perception of patient safety' (4 question), 'feedback & communication about error' (3 question), 'communication openness' (3 question), 'frequency of events reported' (3 question), 'teamwork across units' (4 question), 'staffing' (4 question),

'handoffs & transitions' (4 question), and 'non-punitive response to error' (3 question). The items were scored by a five-point Likert scale (1 to 5 values). Scores below 50% were considered as unacceptable safety culture, while those equal to or above 50% were considered acceptable (19). Phaghihzadeh et al. evaluated the reliability of the questionnaire with Cronbach's alpha of 0.89 in their study (19).

The study data were analyzed using descriptive statistics. One of the simplest ways to present results is to calculate the frequency of response for each survey item. To make the results easier to understand, we combined the two lowest response categories (e.g., strongly disagree/disagree and never/rarely) and the two highest response categories (e.g., strongly agree/agree and most of the time/always). The midpoints of the scales are reported as a separate category (neither or sometimes). The percentage of positive responses to each question was determined, and then the average percentage of positive responses for each of the twelve dimensions of the questionnaire was calculated (18). To determine the relationship between participant's characteristics and patient safety dimensions, independent t-test and ANOVA were used. All data

analyses were carried out using the SPSS 24 software, and  $P < 0.05$  was considered statistically significant.

## Results

This study was conducted on 763 participants. The majority of them were female (65.66%), aged 20-30 years (79.4%), working as clinical staff (75.1%), had BSc and higher degrees (73.3%), worked in clinical units (76.8%), had less than 5 years of work experience in the unit (93.32%), and less than 5 years of work experience in the hospital (84.67%), worked 36-45 hours per week (55.04%), and had rotating shifts (83.1%) (Table 1).

The mean score of the 12 dimensions of patient safety culture was 38.86%. The means of positive responses ranged from 15.15% to 57.83%. In this regard, the highest and lowest scores were related to 'organizational learning-continuous improvement' (57.83%) and 'non-punitive response to error' (15.15%), respectively. In addition, scores 50-70% were allocated to 'supervisor/manager expectations & actions promoting patient safety', 'organizational learning-continuous improvement', and 'teamwork within units'. However, scores below 50% were

**Table 1:** The participants' demographic characteristics

General characteristics		Frequency (%)
Sex	Male	262 (34.34)
	Female	501 (65.66)
Age group	20-30 years	606 (79.4)
	31-40 years	141 (18.5)
	>40 years	16 (2.1)
Job category	Clinical staff	573 (75.1)
	para clinical staff	68 (8.9)
	Administrative-supportive staff	122 (16)
Level of Education	High school	126 (23.9)
	College Degree	15 (2.8)
	Bachelor and higher	386 (73.3)
Work setting	Medical departments	586 (76.8)
	Paramedical departments	89 (11.7)
	Administrative-supportive departments	88 (11.5)
Years of experience in ward	<5 years	712 (93.32)
	6-15 years	46 (6.03)
	>15 years	5 (0.65)
Years of experience in hospital	<5 years	646 (84.67)
	6-15 years	107 (14.02)
	>15 years	10 (1.31)
Working hours/week	≤35 Hrs	44 (5.77)
	36-45 Hrs	420 (55.04)
	>45 Hrs	299 (39.19)
Type of work shift	Morning work	106 (13.9)
	Afternoon work	9 (1.2)
	Night work	14 (1.8)
	Shifts in circulation	634 (83.1)

allocated to ‘frequency of events reported’, ‘overall perceptions of patient safety’, ‘communication openness’, ‘feedback & communication about error’, ‘non-punitive response to error’, ‘staffing’, ‘management support for patient safety’, ‘teamwork across units’, and ‘handoffs & transitions’ (Table 2). In response to question number 43, 23.5%, 51.9%, and 24.6% of the participants believed that the overall patient safety status in the hospital was excellent or very good, acceptable, and weak or very weak, respectively. In response to question number 44 about the reporting of adverse events in the past year, 41%, 31.6%, 15.5%, 6.7%, 3.1%, and 2.1% of the participants

reported 0, 1-2, 3-5, 6-10, 11-20, and 21 or more cases, respectively.

The results of independent t-test revealed a significant difference between males and females with respect to ‘organizational learning-continuous improvement’ (10.6+2.36 vs. 10.94+2.09, P=0.04). In other words, females gave higher scores to this dimension.

The results of ANOVA revealed a significant difference among the three age groups concerning ‘management support for patient safety’ (P=0.00). Accordingly, the staff aged 31-40 years gave higher scores to this dimension in comparison to those aged

**Table 2:** The frequency and percentage of positive responses to each question and each dimension

Domain	Questions	Most of the time and Always N (%)	Sometimes N (%)	Never and Rarely N (%)	Positive Response (%)
Frequency of Events Reported	When a mistake is made, but is caught and corrected before affecting the patient, how often is this reported?	331 (43.4)	207 (27.1)	225 (29.5)	43.38
	When a mistake is made, but has no potential to harm the patient, how often is this reported?	302 (39.6)	214 (28)	247 (32.4)	39.58
	When a mistake is made that could harm the patient, but does not, how often is this reported?	387 (50.7)	178 (23.3)	198 (26)	50.72
	Average percent positive response across the 4 items				44.56
Communication Openness	Staff will freely speak up if they see something that may negatively affect patient care.	254 (33.3)	266 (34.9)	243 (31.8)	33.28
	Staff feel free to question the decisions or actions of those with more authority.	137 (18)	238 (31.2)	388 (50.9)	17.95
	Staff are afraid to ask questions when something does not seem right. (negatively worded)	129 (16.9)	250 (32.8)	384 (50.3)	50.32
	Average percent positive response across the 3 items				33.85
Feedback & Communication About Error	We are given feedback about changes put into place based on event reports.	233 (30.5)	296 (38.8)	234 (30.7)	30.53
	We are informed about errors that happen in this unit.	296 (38.8)	255 (33.4)	212 (27.8)	38.79
	In this unit, we discuss ways to prevent errors from happening again.	77 (10.3)	230 (30.7)	442 (59)	10.28
	Average percent positive response across the 3 items				26.53
Domain	Questions	Agree and Strongly Agree N (%)	Neither Agree nor Disagree N (%)	Strongly Disagree and Disagree N (%)	Positive Response (%)
Overall Perceptions of Patient Safety	It is just by chance that more serious mistakes don't happen around here. (negatively worded)	160 (21)	204 (26.7)	399 (52.3)	52.29
	Patient safety is never sacrificed to get more work done.	455 (59.6)	186 (24.4)	122 (16)	59.63
	We have patient safety problems in this unit. (negatively worded)	345 (45.2)	230 (30.2)	188 (24.6)	24.63
	Our procedures and systems are good at preventing errors from happening.	468 (61.3)	211 (27.7)	84 (11)	61.33
	Average percent positive response across the 4 items				49.47
Supervisor/Manager Expectations & Actions Promoting Patient Safety	My supervisor/manager says a good word when he/she sees a job done according to established patient safety procedures.	421 (55.2)	224 (29.4)	118 (15.4)	55.17
	My supervisor/manager seriously considers staff suggestions for improving patient safety.	472 (61.9)	220 (28.8)	71 (9.3)	61.86
	Whenever pressure builds up, my supervisor/manager wants us to work faster, even if it means taking shortcuts. (negatively worded)	210 (27.5)	217 (28.5)	336 (44)	44.03
	My supervisor/manager overlooks patient safety problems that happen over and over. (negatively worded)	144 (18.9)	212 (27.8)	407 (53.3)	53.34
	Average percent positive response across the 4 items				53.6

Organizational Learning-Continuous Improvement	We are actively doing things to improve patient safety.	507 (66.5)	197 (25.8)	59 (7.7)	66.44
	Mistakes have led to positive changes here.	359 (47)	296 (38.8)	108 (14.2)	47.05
	After we make changes to improve patient safety, we evaluate their effectiveness.	458 (60)	252 (33)	53 (7)	60.02
	Average percent positive response across the 3 item				57.83
Teamwork Within Units	People support one another in this unit.	399 (52.3)	215 (28.2)	149 (19.5)	52.29
	When a lot of work needs to be done quickly, we work together as a team to get the work done.	461 (60.4)	203 (26.6)	99 (13)	60.41
	In this unit, people treat each other with respect.	469 (61.5)	187 (24.5)	107 (14)	61.46
	When one area in this unit gets really busy, others help out.	357 (46.8)	240 (31.4)	166 (21.8)	46.78
	Average percent positive response across the 4 items				55.23
Nonpunitive Response to Errors	Staff feel like their mistakes are held against them. (negatively worded)	355 (46.5)	282 (37)	126 (16.5)	16.51
	When an event is reported, it feels like the person is being written up, not the problem. (negatively worded)	349 (45.7)	293 (38.4)	121 (15.9)	15.85
	Staff worry that mistakes they make are kept in their personnel file. (negatively worded)	390 (51.1)	273 (35.8)	100 (13.1)	13.10
	Average percent positive response across the 3 items				15.15
Staffing	We have enough staff to handle the workload.	216 (28.3)	222 (29.1)	325 (42.6)	28.30
	Staff in this unit work longer hours than is best for patient care. (negatively worded)	399 (52.3)	266 (34.9)	98 (12.8)	12.84
	We use more agency/temporary staff than is best for patient care. (negatively worded)	264 (34.6)	368 (48.2)	131 (17.2)	17.16
	We work in "crisis mode" trying to do too much, too quickly. (negatively worded)	420 (55.1)	239 (31.3)	104 (13.6)	13.63
	Average percent positive response across the 4 items				17.98
Management Support for Patient Safety	Hospital management provides a work climate that promotes patient safety.	404 (53)	287 (37.6)	72 (9.4)	52.94
	The actions of hospital management show that patient safety is a top priority.	441 (57.8)	254 (33.3)	68 (8.9)	57.79
	Hospital management seems interested in patient safety only after an adverse event happens. (negatively worded)	234 (30.7)	311 (40.7)	218 (28.6)	28.57
	Average percent positive response across the 3 items				46.43
Teamwork Across Units	Hospital units do not coordinate well with each other. (negatively worded)	291 (38.1)	315 (41.3)	157 (20.6)	20.57
	There is good cooperation among hospital units that need to work together.	312 (40.9)	290 (38)	161 (21.1)	40.89
	It is often unpleasant to work with staff from other hospital units. (negatively worded)	218 (28.6)	315 (41.3)	230 (30.1)	30.14
	Hospital units work well together to provide the best care for patients.	366 (48)	294 (38.5)	103 (13.5)	47.96
	Average percent positive response across the 4 items				34.89
Handoffs & Transitions	Things "fall between the cracks" when transferring patients from one unit to another. (negatively worded)	284 (37.2)	309 (40.5)	170 (22.3)	22.28
	Important patient care information is often lost during shift changes. (negatively worded)	162 (21.2)	305 (40)	296 (38.8)	38.79
	Problems often occur in the exchange of information across hospital units. (negatively worded)	219 (28.7)	360 (47.2)	184 (24.1)	24.11
	Shift changes are problematic for patients in this hospital. (negatively worded)	170 (22.3)	302 (39.6)	291 (38.1)	38.13
	Average percent positive response across the 4 items				30.82
All domains	Average percent positive response across the 42 items				38.86



20-30 years. Furthermore, a significant difference was observed among the three occupational groups regarding the ‘overall perception of patient safety’ (P=0.00), ‘management support for patient safety’ (P=0.00), and ‘handoffs & transitions’ (P=0.04). Accordingly, para clinical staff gave higher scores to the ‘overall perception of patient safety’ dimension compared to administrative-support and clinical staff. Additionally, administrative-support staff gained higher scores in the ‘management support for patient safety’ dimension in comparison to clinical staff. Finally, para clinical staff gave higher scores to the ‘handoffs & transitions’ dimension compared to administrative-support staff. The results also showed a significant difference among the three educational groups with regard to ‘supervisor/manager expectations & actions promoting patient safety’ (P=0.01). In this respect, the staff having below diploma degrees as well as those with BSc and higher degrees gave significantly higher scores compared to

those with college degrees (Table 3).

Furthermore, the results indicated a significant difference among the three work environments regarding the total score of patient safety culture (P=0.00). The results also showed a significant difference among the three sort of work environments with respect to ‘frequency of events reported’ (P=0.03), ‘overall perception of patient safety’ (P=0.00), ‘organizational learning-continuous improvement’ (P=0.02), ‘teamwork across units’ (P=0.03), and ‘handoffs & transitions’ (P=0.02). Accordingly, the mean scores of ‘frequency of events reported’, ‘teamwork across units’, and ‘handoffs & transitions’ and the total score of patient safety culture were significantly higher in para clinical units compared to administrative-support units. Additionally, the mean score of ‘overall perception of patient safety’ was significantly higher in para clinical units compared to clinical and administrative-support units. Moreover, the mean score of ‘organizational learning-continuous

**Table 3:** The results of ANOVA for the investigation of the relationship between safety culture dimensions and polytomous variables

Patient Safety Culture Dimensions	Age group	20-30 years (1)	31-40 years (2)	>40 years (3)	P value	Post-Hoc
		Mean (SD)	Mean (SD)	Mean (SD)		
Management Support for Patient Safety		10.04 (1.98)	10.64 (2.06)	9.62 (2.5)	0.00	2>1
Patient Safety Culture Dimensions	Job category	Clinical staff (1)	Technician staff (2)	Administrative-supportive staff (3)	P value	Post-Hoc
	Overall Perceptions of Patient Safety	13.42 (2.36)	14.36 (2.71)	13.47 (2.22)		
	Management Support for Patient Safety	10.04 (1.96)	10.14 (1.94)	10.66 (2.23)	0.00	3>1
	Handoffs & Transitions	12.21 (3.24)	12.8 (2.65)	11.65 (2.62)	0.04	2>3
Patient Safety Culture Dimensions	Level of Education	High school (1)	College Degree (2)	Bachelor and higher (3)	P value	Post-Hoc
	Supervisor/Manager Expectations & Actions Promoting Patient Safety	13.7 (2.99)	11.6 (2.29)	13.91 (2.97)		
Patient Safety Culture Dimensions	Work setting	Medical departments (1)	Paramedical departments (2)	Administrative-supportive departments (3)	P value	Post-Hoc
	Frequency of Events Reported	9.88 (3.27)	10.2 (3.28)	9.03 (3.22)		
	Overall Perceptions of Patient Safety	13.45 (2.33)	14.43 (2.58)	13 (2.32)	0.00	2>1,3
	Organizational Learning-Continuous Improvement	10.9 (2.15)	10.96 (2.2)	10.22 (2.36)	0.02	1>3
	Teamwork Across Units	12.39 (2.33)	12.88 (2.48)	11.97 (2.31)	0.03	2>3
	Handoffs & Transitions	12.19 (3.23)	12.73 (2.54)	11.46 (2.69)	0.02	2>3
	All domains	132.84 (16.55)	136.2 (15.58)	128.39 (15.12)	0.00	1>3; 2>3
	Patient Safety Culture Dimensions	Years of experience in ward	<=5 years (1)	6-15 years (2)	> 15 years (3)	P value
Handoffs & Transitions		12.2 (3.1)	12.06 (2.87)	8.4 (4.27)	0.02	
Patient Safety Culture Dimension	Working hours/week	<=35 Hrs (1)	36-45 Hrs (2)	> 45 Hrs (3)	P value	Post-Hoc
	Frequency of Events Reported	7.61 (3.32)	10.02 (3.25)	9.86 (3.19)		
	Staffing	11.38 (2.72)	10.68 (2.72)	9.71 (2.9)	0.00	1>3; 2>3
	Handoffs & Transitions	10.54 (3.75)	12.35 (2.99)	12.16 (3.11)	0.00	2>1; 3>1

**Table 4:** The results of ANOVA for investigation of the relationship between the dimensions of patient safety culture and type of shift work

Patient Safety Culture Dimension	Type of work shift				P value	Post-Hoc
	Morning work (1)	Afternoon work (2)	Night work (3)	Shifts in circulation (4)		
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)		
Staffing	11.31 (2.68)	10.55 (2.18)	9.57 (3.36)	10.19 (2.83)	0.00	1>4
Handoffs & Transitions	12.23 (3)	9.11 (3.48)	9.78 (3.68)	12.26 (3.07)	0.00	4>3,2; 1>2,3

improvement' and the total score of patient safety culture were significantly higher in clinical units in comparison to administrative-support units (Table 3).

The results showed a significant difference among the groups with different years of experience in ward regarding 'handoffs & transitions' ( $P=0.02$ ). In other words, the staff with less than five years of work experience as well as those with 6-15 years of work experience gave higher scores to this dimension in comparison to those with more than 15 years of work experience. Furthermore, the results revealed a significant difference among the staff with different numbers of working hours per week concerning 'frequency of events reported' ( $P=0.00$ ), 'staffing' ( $P=0.00$ ), and 'handoffs & transitions' ( $P=0.00$ ). In this respect, the staff who worked 36-45 hours or more than 45 hours per week gave higher scores to 'frequency of events reported' in comparison to those who worked less than 35 hours a week. Besides, the staff who worked less than 35 hours a week as well as those who worked 36-45 hours a week gained higher scores in 'staffing' in comparison to those who worked more than 45 hours per week. Finally, the staff who worked 36-45 hours or more than 45 hours per week gained higher scores in 'handoffs & transitions' compared to those who worked less than 35 hours a week (Table 3).

The results indicated a significant difference among the four work shifts regarding 'staffing' ( $P=0.00$ ) and 'handoffs & transitions' ( $P=0.00$ ). This implied that people with different work shifts had various viewpoints towards patient safety culture in the abovementioned dimensions. Based on the results, the staff working in the morning shift gave higher scores to 'staffing' in comparison to those working in rotating shifts. Additionally, the staff working in the morning or rotating shifts gained higher scores in 'handoffs & transitions' in comparison to those working in evening and night shifts (Table 4).

## Discussion

Abu-Ali Sina Organ Transplantation Center is one of the largest and well-equipped organ transplantation centers in Iran and the Middle East. It was

established in Shiraz in 2017. A large number of rare transplantations are done in this center annually. Considering the importance of patient safety culture in hospitals, particularly in organ transplant centers, and regarding the fact that before interventions have been performed for changing the safety culture, the present status of organizational safety culture should be evaluated (20). Therefore, the present study aimed to assess patient safety culture in Abu-Ali Sina Organ Transplantation Center in Shiraz, Iran.

The study results revealed a low patient safety culture in Abu-Ali Sina Organ Transplantation Center. The study by Behzadifar et al. (2019) showed a low patient safety culture in Iranian hospitals (10). Additionally, Willmott and Mould (2018) conducted a systematic review and demonstrated that nurses and paramedics had weak attitudes towards patient safety culture (21). Our findings were not unexpected since our hospital was established recently, 80% of the staff aged 20-30 years, and more than 80% of the staff had less than five years of work experience. In order to promote patient safety culture, training and retraining classes have to be held frequently that aim to make the personnel familiar with this issue.

Among the dimensions of patient safety culture, the highest score was related to 'organizational learning-continuous improvement', while the lowest score was related to 'non-punitive response to error'. In line with the present study, the research conducted by Arshadi Bostanabad et al. (2015) in neonatal intensive care units in Iran (22), the one performed by Abdelhai et al. (2012) in Cairo educational hospitals (23), and a study conducted in 519 hospitals in the USA (2008) (24) demonstrated that the lowest percentage of positive responses was related to 'non-punitive response to error'. Considering the fact that our center was established recently, and newly graduated workforce were employed, hospital authorities have made attempts to actively encourage the staff to promote patient safety, evaluate novel changes for improving patient safety, learn lessons from their errors, and use them for making positive changes in the organization. That is why the highest score was for 'organizational learning-continuous improvement'.

Organizations with safety culture provide the ground for their staff to report errors and near misses without the fear of punishment. In this way, all organizational categories cooperate to find a solution (25). In other words, building a positive safety culture helps healthcare providers develop the ability to discuss, analyze, and report errors as well as near misses, which is considered a great step towards the improvement of healthcare quality (26). Nonetheless, unfortunately, managers in many organizations blame individuals in the event of errors, which results in the loss of learning opportunities. On the other hand, training the staff regarding opportunities and performances as well as promotion of systems and processes can help prevent errors in future. Blaming individuals leads to the loss of motivation for reporting errors as well as distraction from focusing on the weaknesses in systems and work processes. In case no errors are reported, the value of information in the core of errors remains undiscovered, thereby limiting the ability to analyze the reasons for errors and causing inability in preventing the recurrence of errors. Overall, building the patient safety culture requires the eradication of blame, fear, and silence in organizations. Errors should not remain hidden; rather, they have to be used for learning, and eliminating the resultant damages, and progressing in patient safety. This goal can be achieved through the utilization of managerial capacities, communication openness, and continuous organizational learning and training.

In the current study, 51.9% of the participants believed that the patient safety culture was acceptable in their units. Moreover, 41% and 31.6% of the participants had reported zero and 1-2 adverse events, respectively during the past year. Safety culture was acceptable (59.6%) in a neonatal intensive care unit in Tabriz, and 53.5% of the participants had reported zero adverse events (22). The low rate of reporting errors might be attributed to the fear of punishment. In fact, the participants could not report errors freely and fearlessly. This was confirmed by the fact that the majority of the personnel had not reported any errors during the past 12 months. In case errors are not reported and identified, their causes cannot be determined to prevent their recurrence. Blaming individuals would result in the loss of learning opportunities and the lack of caution in situations with a high probability of errors. It may also prevent the creation and improvement of efficient systems and processes for avoiding similar errors in future. Hence, blaming and punishing individuals for their errors are among the main obstacles against the

prevention of errors (27).

Errors are in fact more likely to occur in units with lower-than-standard patient safety cultures. In other words, an appropriate patient safety culture in a unit can reduce the number of errors as well as their impacts in a hospital (28). According to Edmonson (2004), the low frequency of errors reporting can result from the closed cultural atmosphere ruling an organization (29). The American Medical Institute has recommended that attributing errors to individual failures must be stopped, and errors have to be considered learning opportunities (30). Yet, progress in patient safety in hospitals requires changes in systems. For instance, the common blame culture has to be eradicated.

The present study results revealed that the mean score of 'organizational learning-continuous improvement' was significantly higher among females than males. In addition, the mean score of 'management support for patient safety' was higher among the staff who aged 31-40 years compared to those aged 20-30 years. The results showed a significant difference among the three occupational groups with respect to 'the overall perception of patient safety', 'management support for patient safety', and 'shift change and patient transfer'. These results were in agreement with the studies conducted by Abbas et al. (2008) (31) and Abdelhai et al. (2012) (23) but not with Carayon et al. (2005) (32).

There are various strategies for the promotion of patient safety culture, including management rounds, structured educational programs, team-based strategies, simulation-based educational programs, and organizational interventions such as reporting events, which can be executed in particular units or the entire organization. Reduction of medication errors and the improving relationships for decreasing adverse events are also among the strategies for the improvement of patient safety culture (33).

Key limitation of this research are focusing on a single center, the data collection approach which is self-reported, and using participants perception. Current study method is quantitative. Clearly, further qualitative research will be required to understand patient safety culture challenges.

Generally, the gap between management and performance levels in clinical units is one of the main reasons for low safety culture scores in hospitals.

## Conclusion

Patient safety culture was low and moderate in Abu-Ali Sina Organ Transplantation Center. Since improving patient safety can help save costs and



provide patients with better outcomes, the findings of the present research can provide evidence that can be employed by policymakers, managers, and decision-makers who can build the proper culture and commitment for identifying patient safety issues and solving the related basic, and systemic causes.

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### Ethical Issue

This study was approved by the Ethics Committee of Shiraz University of Medical Sciences (Approval ID: IR.SUMS.REC.1399.384). Moreover, written informed consent was obtained from all participants.

### Authors' Contribution

All the authors met the standards of authorship based on the recommendations of the International Committee of Medical Journal Editors.

**Conflict of Interest:** None declared.

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