AJMAS
https://alqalam.utripoli.edu.ly/science/ eISSN 2707-7179

Original article

Assessment of Patient Safety Culture at Intensive Care Units in Public Hospitals in Benghazi from The Health Care Professional`s Perspective

Eman Alaqeli*, Ainas Altarhuni

Health Services Administration, Faculty of Public Health, University of Benghazi, Libya

ARTICLE INFO

Corresponding Email. eman.alaqeli@uob.edu.ly
Received: 19-08-2021 **Accepted:** 26-08-2021 **Published:** 27-08-2021
Keywords: Patient Safety, ICUs, Patient Safety Culture, Hospitals

ABSTRACT

***Background**: Patient Safety Culture (PSC) is a major parameter for the improvement of patient safety in the healthcare system and is considered a challenge for health professionals especially at ICUs due to the nature of their work. This study aimed to assess patient safety culture at intensive care units in public hospitals in Benghazi from a healthcare professional`s perspective. **Method**: This was a cross-sectional descriptive study, comprised 73 healthcare professionals working in ICUs. For data gathering, a Hospital Survey of Patient Safety Culture (HSOPSC) questionnaire was used. This questionnaire was designed by the Agency of Health Research and Quality (AHRQ) in 2004. Data analysis was performed by SPSS (version 21) using descriptive statistics. **Result**: The study reported 38.5% average score of patient safety culture at ICUs. Among dimensions of patient safety culture, the highest rate of positive response rate was observed in ''Teamwork within units'' (60.4%), whereas the lowest rate was for ''non-punitive response to error'' (21.06%). Concerning patient safety grades, most healthcare professionals were rated as "accept" or "very good" grades at their units, and 72.6% did not report any events in the previous year. **Conclusions**: The finding of this study indicated that patient safety culture was fragile in ICUs and required significant changes in various aspects of PSC in the included hospitals.*

***Cite this article:** Alaqeli E, Altarhuni A. Assessment of Patient Safety Culture at Intensive Care Units in Public Hospitals in Benghazi from The Health Care Professional`s Perspective. Alq J Med App Sci. 2021;4(2):191-199. https://doi.org/10.5281/zenodo.5289541*

INTRODUCTION

Patient safety is a global concern of public health in the whole healthcare system, and the fundamental role of patient safety culture is the reduction of medical errors included and the enhancement of patient safety at all levels of healthcare services delivery. Therefore, World Health Organization (WHO) has encouraged its member states to improve patient safety culture and healthcare quality through a systematic improvement [1-3]. According to the Institute of Medicine (IOM) number of deaths caused by medical errors is ranked as the eighth, which is followed by Acquired Immune Deficiency Syndrome (AIDS), breast cancer, and traffic accidents. Although that most deaths from medical errors could have been prevented [4, 5]. Therefore, the release of (To err is human) helps to establish a landmark of patient safety to build a safer health care system [4, 6].

The term of error is defined as “the failure of a planned action to be completed as intended” or “the use of a wrong plan to achieve an aim” [3, 6]. In health systems, medical error is a preventable adverse effect of medical

care, whether or not it is evident or harmful to the patient [7]. Errors can happen in all stages in the process of care, and to prevent errors means designing the healthcare system at all levels to make it safer. Therefore, building patient safety into the care processes is a more effective way to reduce errors [3, 6].

WHO defined patient safety as "the reduction risk of unnecessary harm associated with healthcare to an acceptable minimum" [8], the reduction or elimination of the possible adverse effects and harm during the process of providing health assistance and assurance that a course of medical treatment will proceed correctly to achieve an ideal and desired outcome [5, 9-11].

In an organization, safety culture refers to the common values and beliefs among members about what is important and how things work. Safety culture among healthcare providers is the values, attitudes, and commitment of health professionals to an organization's health and safety management for all in all levels with interactions with work facilities, structures, and organizational systems, which together produce behavior standards that promote safety [9, 12-15].

According to the IOM report, the highest error rates with serious consequences occurred most often in intensive care units, operation theatres, and emergency rooms [3]. Intensive care units (ICUs) are known to be more vulnerable to adverse events, because of the complexity of procedures and medical conditions handled in ICUs. Patients in ICU are critically ill and more likely to be exposed to injuries as a result of their condition. Therefore, they need the care of advanced life support. Consequently, the ICU poses a risk to patient safety. Health care professionals whether it was a physician, technician, or nurse; are the core component of the health system and their awareness of patient safety can affect directly the patients' health [5, 9-11].

In that perspective, one of the first steps to improve patient safety in healthcare organizations is the assessment of safety culture among health care professionals by motivating them in their work environment, to understand what the teams think and how they act about patient safety [3, 11]. In that context, the aim of this study was to assess patient safety culture at intensive care units in public hospitals in Benghazi from a health care professional`s perspective.

METHODS

Study design and setting

A cross-sectional study was carried out in four intensive care units (ICUs) from four public hospitals in Benghazi. The population of the study consisted of all healthcare professionals working at ICUs who were invited to participate in the study. Inclusion criteria were physicians, nurses, and technicians in the ICUs who had worked at least three months of work experience in the ICUs, voluntarily agree to participate in the study, and willingness to complete the questionnaires.

The following were adopted as exclusion criteria: healthcare professionals on vacation, sick leave, maternity leave, or sabbatical during the period of data collection and healthcare professionals who were not worked in ICUs or worked less than three months in ICUs; or questionnaires being less than half filled out.

According to these criteria, 102 questionnaires were distributed, of which 73 were returned and completed. The returned questionnaires were distributed as follows: 41 nurses, 26 physicians, and 6 technicians.

Data collection procedure

Data collection took place between January and March 2020, utilizing the Hospital Survey of Patient Safety Culture (HSOPSC) developed by the Agency for Healthcare Research and Quality (AHRQ) in 2004 [16].

The questionnaires gathered information on the following areas; the first part included questions regarding socio-demographic data and the second part was related to 12 dimensions of patient safety culture, patient

safety grade, and the number of events reported in the last year. Most of the questionnaire items require healthcare professionals to answer on a five-point Likert scale, ranging from "Strongly disagree" to "Strongly agree" and from "Never" to "Always". The questionnaire consisted of positive and negative worded statements. Positive responses for each item were calculated and negatively worded items were reversed to ensure that positive answers indicated a high score.

The score of positive response higher than 75% was considered as strength, from 50% to 75% was average safety culture and lower than 50% was considered as the poor score of patient safety culture and need improvement. [17]. Questionnaires were distributed in the morning, evening, and night shift and collected in the same shift or the next shift if they did not have enough time.

The validity of this survey has been confirmed in numerous studies on national and international levels. Internal consistency of the questionnaire and its items was measured by Cronbach's alpha coefficient; Reliability in this study was considered good (.743)

Ethical approval was obtained from the director of each target hospital and sent to intensive care units to carry out the study. The following steps were utilized to protect healthcare professionals' rights: verbal informed consent was obtained from all the participants before they were enrolled in the study, the purpose of the study was fully explained to the participants, and confidentiality of responses, and right to withdraw from the study at any time were emphasized. The anonymity of participants was maintained at all times.

In the data analysis, a statistical package for the social sciences, version 22 was used. The strengths and weaknesses of items were identified by calculating the frequency and percentage of positive responses.

RESULTS

The study participants were 73 healthcare professionals, including 26 physicians, 41 nurses, and 6 technicians. More than half of the healthcare professionals were nurses (56.2%) and more than one-third (35.6%) were physicians then technicians were (8.2%). The majority of them (92.7%) had direct contact with a patient.

Most of the healthcare professionals had experienced less than 10 years at the hospital and in the profession (at ICU). About weekly working hours, the majority had worked less than 40 hours weekly. More details are in the table (1).

Patient safety culture dimensions

The results did not show any dimension with positive response scores above 75% to be classified as an area of strength, however, the dimension with the highest percentage of positive responses can be highlighted. As indicated in the table (2), the highest percentage among 12 dimensions was teamwork within units (60.4%) followed by organization learning continuous improvement (52.6). Nurses had the highest positive response in these dimensions

Concerning other dimensions, all the remaining were under 50% which ranked under poor levels of PSC. These dimensions are: supervisor/ manager expectations and action promoting safety (45.2%) Management support for patient safety (43.4%); Frequency of event reported (43.4%); Feedback and communication about error (41.1%); handoffs and transition (40.1%); communication openness (31.06%); teamwork across units (29.7%); staffing (29.2%); overall perception of patient safety (27.4%); and the dimension "non-punitive response to error" had the lowest percentages (21.06%). Regarding the professional category, technicians had the lowest positive response in this dimension (12.2%).

The findings of this study demonstrated that the average score of all PSC dimensions in ICUs at the selected hospitals was 38.5%.

Table 1. Distribution of Healthcare Professionals According to Work Experience and Weekly Hours

Variables	Nurses (N= 41)	Physicians (N= 26)	Technicians (N= 6)
Work experience (years)			
< 1	9 (22%)	7 (26.9%)	-
1-5	13(31.7%)	9 (34.6%)	5(83.3%)
6-10	2 (4.9%)	6 (23.1%)	-
11-15	9 (22%)	3 (11.5%)	1 (16.7%)
16-20	3 (7.3%)	1 (3.8%)	-
More than 20	5(12.2%)	-	-
Experience at ICU (years)			
< 1	9 (22%)	9 (34.6%)	-
1-5	14 (34.1%)	6 (23.1%)	4 (66.7%)
6-10	9 (22%)	4 (15.4%)	1 (16.7%)
11-15	2 (4.9%)	5 (19.2%)	1 (16.7%)
16-20	3 (7.3%)	1 (3.8%)	-
More than 20	4 (9.8%)	1 (3.8%)	-
Weekly hours			
< 20 hours	6 (14.6%)	4 (15.4%)	-
20- 39	22 (53.7%)	16 (61.5%)	4 (66.7%)
40- 59	12(29.3%)	4 (15.4%)	-
60- 79	1 (2.4%)	1 (3.8%)	1 (16.7%)
More than 80 hours	-	1 (3.8%)	1 (16.7%)

Table 2: Percentage of Positive Responses According to Dimensions of Patient Safety Culture

Dimensions	Professional Category			Positive Response%
	Nurses n=41	Physicians n=26	Technicians n=6	
Teamwork within Units	62.1	61.3	58.2	60.4
Organizational Learning Continuous Improvement	60.9	46.9	50.3	52.6
Supervisor/Manager Expectations and Actions Promoting Safety	47	47.1	41.7	45.2
Feedback and Communication about Error	36.6	42.3	44.4	41.1
Communication Openness	29.2	30.7	33.3	31.06
Staffing	34.2	28.5	25.2	29.2
Non-Punitive Response to Error	29.3	21.7	12.2	21.06

Teamwork across Units	33.5	30.7	25.0	29.7
Management Support for Patient Safety	34.9	46.1	33.3	41.1
Handoffs and Transition	32.3	42.3	45.8	40.1
Overall Perceptions of Patient Safety	38.4	23.2	20.9	27.4
Frequency of Event Reported	34.9	56.4	38.9	43.3

Patient Safety Grade and Events Reported

Figure 1 illustrated the degree of patient safety, as assessed by the healthcare professional's category. Most of the healthcare professionals indicated "accept" or "very good" patient safety grade; while technicians had the highest percentage responded to very good grades.

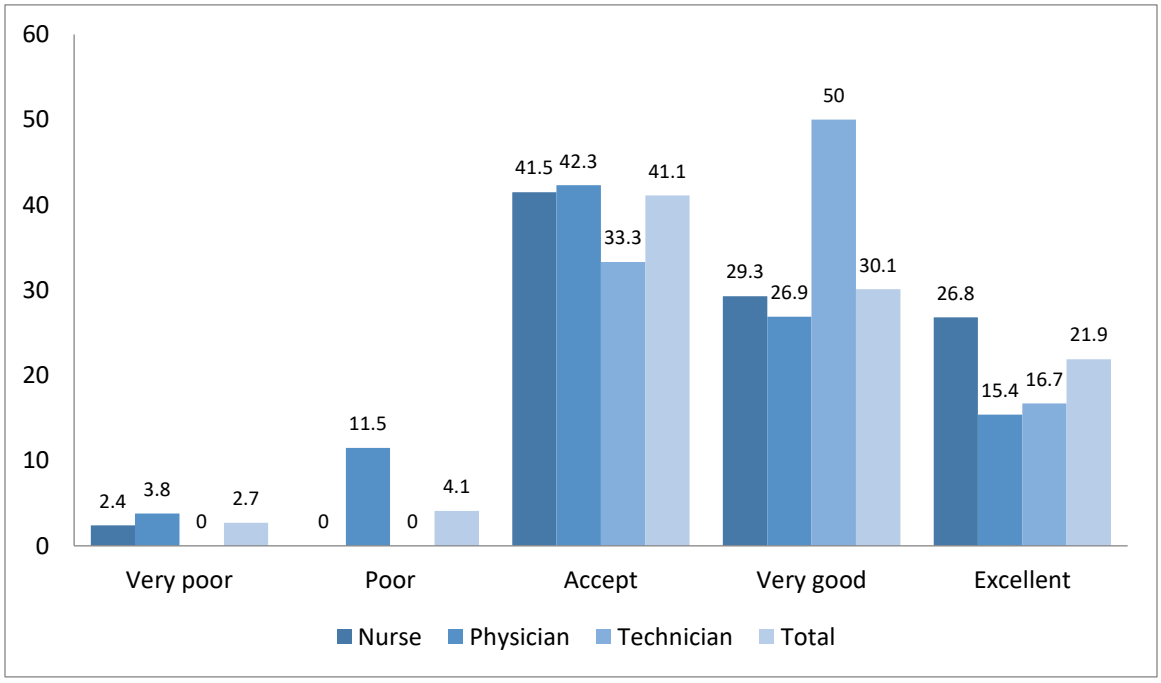

Figure 1. assessment of the degree of patient safety grade by healthcare professionals at ICUs.

Concerning the number of the reported events within the past 12 months, the majority of participants (72.6%) had not reported any event during the previous year. Nurses had not reported any events with 80.5% (Figure 2).

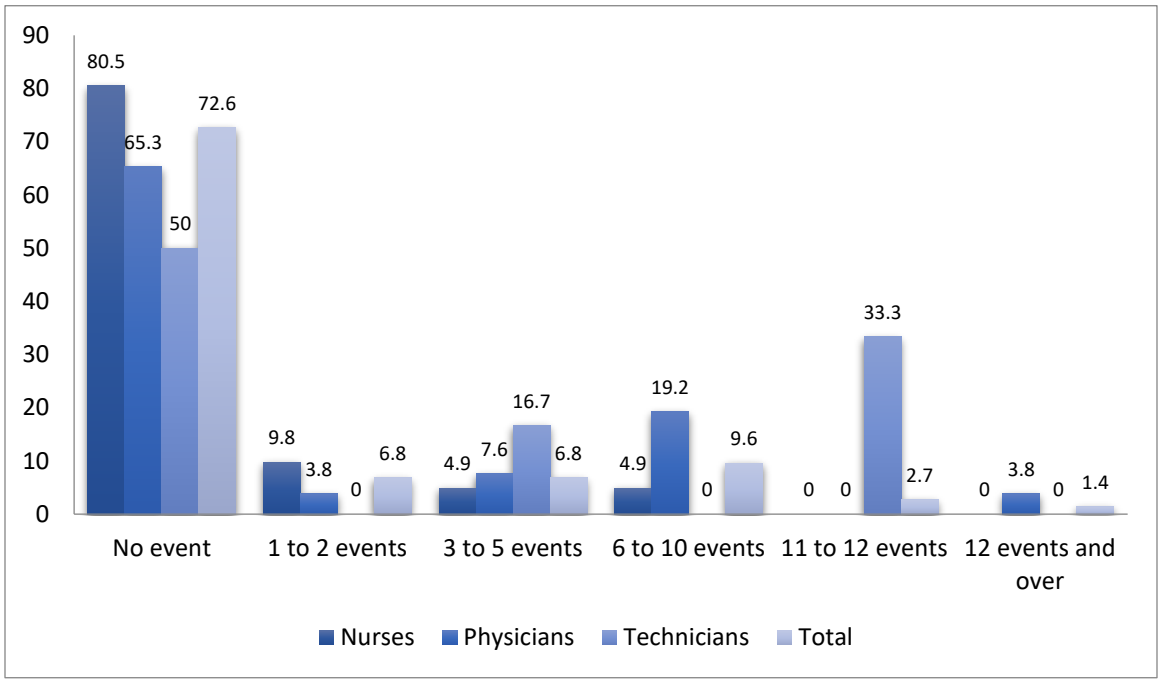

Figure 2. Number of events reported in the last 12 months by a healthcare professional at ICUs.

DISCUSSION

The present study aimed to assess the perspective of healthcare professionals toward the patient safety culture at intensive care units in public hospitals in Benghazi. In view of these results, the percentage of the total 12 dimensions of the PSC in ICUs was 38.5% which indicated a low average level of the patient safety culture. Consistent with other studies conducted by Mello and Barbosa (2017), presented a similar result [13]; in contrast with these finding Farizi et al (2017), Ballangrud et al (2012) displayed higher scores of the PSC than the current study, with 61.3% and 55.2% respectively [18,19].

In this study, the highest scores among 12 dimensions were observed in the 'teamwork within units' and the lowest scores were belonged 'non-punitive response to error' which was consistent with previous studies [5,13,20]. The dimension of 'teamwork within units' was the highest one with 60.4% supported by previous studies [21, 22]. Dissimilar with a study conducted in Egypt, with dimension of 24% [23].

A Collaborative effort between individuals in a team enhances effective teamwork and safety subsequently providing good patient care; where an uncooperative team has the potential for error more than effective teamwork [24]. As Reason (2004) point out, the system will be better able to prevent the negative effects of errors if defenses are strengthened by focusing on teamwork and team training in the ICU [25]. In addition, Mello and Barbosa (2017) recommended that teamwork is effective in providing ideal care to patients, and that leadership is vital in guiding how ICU team members must interact, coordinate among themselves and safely carry out activities [13].

The dimension non-punitive response to error scored 21.06%, which means health care workers are working in an environment that critically judges the staff and lacks openness and friendliness. Workers feel that they might threaten by their mistakes. Moreover, errors occur when a person is unfocused, tired, disturbed, or negligent which led subsequently to deviate from safe operating procedures [25]. This indication reinforces the importance of promoting a non-punitive work environment where staff is held to professional accountability in admitting errors, including their errors, to improve systems and prevent further errors. Hence, the blame-and-punishment

orientation of our society drives errors underground. Therefore, the creation of a blame-free environment encouraged those errors to be reported learned from, and not punished [26].

Previous studies demonstrated similar results, with 13.9% in Brazil [11] and 21.5% in Iran [18]. From another perspective, a study in Brazil showed a higher score for this dimension 47% [21]. Within the context of the present study, the Staffing dimension scored 29.2% closed with Minuzzi et al 29.04 % [11]. Personnel numbers are another critical indicator for patient safety. As noted by Hamdan (2013) in his study on NICUs; reasoned that the insufficiency of employees, heavy workloads, and consequent exertion weaken staff accomplishment in the NICUs [27]. Another two dimensions had also a low percentage of "teamwork across units and communication openness" 29.7% and 31.06% respectively.

Communication is considered as basic of a team working to providing the best service to the benefit of the patient. Lack of communication may lead to dissatisfaction between healthcare professionals, whereas cooperation between healthcare professionals and good relationships between units encouraging the appropriate communication process [18].

Moreover, the patient safety culture was found to be poor in the dimension of "handoffs and transitions" in the present study (40.1%), when transferring patients from ICU to other wards requires exchange of the clinical information of patients to other healthcare providers at the time of transfer. Lack of this information may lead to increased occurrence of errors in the treatment procedures and threaten patient safety [18]. One of the most common problems that occur within health care units and institutions is inaccurate information exchange between health care personnel which could happen for a variety of reasons such as heavy workload or lack of knowledge and inefficient communication. Frazi et al., highlighted those necessary measures should be taken by healthcare managers for the accurate distributing of their workforce and adopted appropriate approaches such as transport, inter-sectoral and cross-sectoral handoffs, also providing transition checklists to prevent errors during patient transfer, handoffs, and transition [18].

Regarding management support for patient safety, this dimension also recorded a low percentage of 41.1%. This finding highlighting that the administration did not provide a suitable environment that encourages safety [13]. Similar results were found in other studies in Turkey 38.7% [5], Libya 35% [28], and in Iran 67.5% [18]. Although the present study showed a good degree of safety grade (accept/very good), the dimension overall perception of patient safety showed a low score (27.4%). Similar to the study conducted by Mello and Barbosa (27%) [22], and contrary with a study in Turkey was (64.9%) [5]. Additionally, a low score in this dimension indicated the staff lacked enough knowledge of what patient safety is, and how it could help in error and adverse event reduction processes.

In view of the number of the events reported in the last 12 months, a difference was found according to professional categories. It was observed that nurses had not reported any events with 80.5%. Ballangrud (2013) mentioned that errors were strongly underreported and ICU nurses felt uncomfortable about reporting errors [29].

In the present study, nurses estimated safety culture significantly higher than physician and technician among 7 dimensions: teamwork within units, organizational learning continuous improvement, supervisor/manager expectations and actions promoting safety, staffing, non-punitive response to error, teamwork across units, and overall perceptions of patient safety. This finding agrees with most of the data in the literature that shows the predominance of nursing than other healthcare professionals [15].

CONCLUSION

The results of this study indicated that patient safety is fragile in ICUs and required significant changes in various aspects of PSC. Such aspects can be prioritized according to the dimensions with the lowest scores. Further efforts

are recommended by healthcare organizations management to improve the awareness of healthcare professionals for patient safety culture needs. This improvement needs to adapting strategies to report and correct errors without punishing them. Additionally, more attention should be paid during the transfer of patients, reducing work overloads, and creates a satisfactory climate environment.

Disclaimer

The article has not been previously presented or published, and is not part of a thesis project.

Conflict of Interest

There are no financial, personal, or professional conflicts of interest to declare.

REFERENCES

1. World Health Organization. Global priorities for research in patient safety. World Health Organization; 2008. Available from: https://apps.who.int/iris/bitstream/handle/10665/330056/WHO-IER-PSP-2008.13-eng.pdf [Last access on Apr 09 2021]
2. World Health Organization. Quality of care: patient safety "Fifty-Fifth World Health Assembly. WHA55. 2002; 18:18.WHA 55.18. Agenda Item 13.9 (2002). Available from: http://apps.who.int/iris/bitstream/handle/10665/259364/WHA55-2002-REC1-eng.pdf? [Last access on Apr 09 2021]
3. Ricklin ME, Hess F, Hautz WE. Patient safety culture in a university hospital emergency department in Switzerland - a survey study. GMS J Med Educ. 2019 Mar 15;36(2): doi: 10.3205/zma001222.
4. Kohn LT, Corrigan JM, Donaldson MS. Institute of Medicine: To Err is Human: Building a safer health system, The National Academy Press, Washington, DC 2000;26-27.
5. Yilmaz Z. Goris S. Determination of the patient safety culture among nurses working at intensive care units. Pakistan journal of medical sciences. 2015; 31(3): 597.
6. De Mello J. Barbosa S. Patient safety culture in intensive care: nursing contributions. Texto & Contexto-Enfermagem 2013;22(4):1124-1133.
7. Carver N, Gupta V, Hipskind JE. Medical error. StatPearls [Internet]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK430763/ [last access Jul 10 2021].
8. Safety WP, World Health Organization. A conceptual framework for the international classification for patient safety version 1.1: final technical report January 2009. World Health Organization; 2010.
9. El-Sayed R. Nurses' perception about patient safety culture in neonatal intensive care units: A comparative study. J Nursing Edu Prac. 2018;8(12):3667–3672.
10. Valentin A, Capuzzo M, Guidet B, Moreno RP, Dolanski L, Bauer P, et al. Patient safety in intensive care: results from the multinational Sentinel Events Evaluation (SEE) study. Intensive care medicine. 2006;32(10):1591-8.
11. Minuzzi AP, Salum NC, Locks MO. Assessment of patient safety culture in intensive care from the health team's perspective. Texto & Contexto-Enfermagem. 2016;25(2).
12. Weaver SJ, Lubomksi LH, Wilson RF, Pfoh ER, Martinez KA, Dy SM. Promoting a culture of safety as a patient safety strategy: a systematic review. Annals of internal medicine. 2013 Mar 5;158(5_Part_2):369-74.
13. Mello, J. F. and S. F. F. Barbosa. "Patient safety culture in an intensive care unit: the perspective of the nursing team." Rev Eletr Enf. 2017; 19: a07.
14. Singer S, Lin S, Falwell A, Gaba D, Baker L. Relationship of safety climate and safety performance in hospitals. Health services research. 2009; 44(2p1):399-421.
15. Gomides MD, de Souza Fontes AM, Silveira AO, Sadoyama G. Patient safety culture in the intensive care unit: cross-study. The Journal of Infection in Developing Countries. 2019 Jun 30;13(06):496-503.
16. Rockville W, Sorra J, Gray L, Streagle S, Famolaro T, Yount N, Behm J. AHRQ hospital survey on patient safety culture: User's guide. Rockville, MD: Agency for Healthcare Research and Quality. 2016

17. Wami SD, Demssie AF, Wassie MM, Ahmed AN. Patient safety culture and associated factors: A quantitative and qualitative study of healthcare workers' view in Jimma zone Hospitals, Southwest Ethiopia. BMC health services research. 2016; 16(1):1-0.
18. Farzi S, Farzi S, Taheri S, Ehsani M, Moladoost A. Perspective of nurses toward the patient safety culture in neonatal intensive care units. Iranian Journal of Neonatology IJN. 2017; 8(4):89-94.
19. Ballangrud R, Hedelin B, Hall-Lord ML. Nurses' perceptions of patient safety climate in intensive care units: a cross-sectional study. Intensive and Critical Care Nursing. 2012; 28(6):344-54.
20. Bodur S, Filiz E. Validity and reliability of Turkish version of" Hospital Survey on Patient Safety Culture" and perception of patient safety in public hospitals in Turkey. BMC health services research. 2010; 10(1):1-9.
21. Tomazoni A, Rocha PK, Ribeiro MB, Serapião LS, Souza S, Manzo BF. Perception of nursing and medical professionals on patient safety in neonatal intensive care units. Rev Gaúcha Enferm. 2017; 38(1):e64996. doi: http://dx.doi. org/10.1590/1983-1447.2017.01.64996
22. Mello J. Barbosa S. Patient safety culture in an intensive care: nursing contribution. 2013;22(4);1124-33.
23. Salem M, Labib J, Mahmoud A, Shalaby S. Nurses' perceptions of patient safety culture in intensive care units: a cross-sectional study. Open access Macedonian journal of medical sciences. 2019; 7(21):3667.
24. Kaufman G, McCaughan D. The effect of organizational culture on patient safety. Nurs Stand. 2013 2;27(43):50-6. DOI: 10.7748/ns2013.06.27.43.50.e7280.
25. Reason J. Human error: Models and management. BMJ. 2000;320(7237):768-70.
26. Medical Mistakes: Joint Hearings Before the Subcommittee on Departments of Labor, Health and Human Services, Education, and Related Agencies, United States. Congress. Senate. Committee on Veterans' Affairs - Electronic government information. 2001. Available from: www.access.gpo.gov/congress/senate. 214 page-pp179 [Last access on Jul 01 2021]
27. Hamdan M. Measuring safety culture in Palestinian neonatal intensive care units using the Safety Attitudes Questionnaire. Journal of critical care. 2013 Oct 1; 28(5):886-e7.
28. Eltarhuni AS, Tawfeeq HO, El-Abidi JS. Assessment of patient safety culture in Benghazi children's hospital from the viewpoint of nursing staff. Libyan J Med Sci 2020; 4:179-83.
29. Ballangrud R. Building patient safety in intensive care nursing. Patient safety culture, team performance, and simulation-based training. Dissertation Karlstad University Studies. 2013:46. ISBN 978-91-7063-524-3.