

# Exploring Strength Areas of Patient Safety Culture Improvement in KAMC, Makkah, Saudi Arabia

Mohammed Ahmed Hazazi<sup>1,\*</sup>, Ameerah Mohamed Noor Qattan<sup>2</sup>

<sup>1</sup>Nursing Services Administration, King Abdullah Medical City, Makkah, Saudi Arabia

<sup>2</sup>Faculty of Economics and Administration, King Abdulaziz University, Jeddah- Saudi Arabia

\*Corresponding author: [hazzazicpr@gmail.com](mailto:hazzazicpr@gmail.com)

Received October 19, 2020; Revised November 20, 2020; Accepted November 29, 2020

**Abstract** Background: Patient safety culture is an extremely important aspect and a crucial issue in health services. Assessing patient safety culture is a fundamental in obtaining first-hand information on healthcare settings that will help to identify positive areas and shortcomings in patient safety practices that require future improvement. Objective: This study aims to investigate the strengths area of patient safety culture improvement. Also, this study evaluates employees' perceptions concerning patient safety culture. Subjects and Methods: A mixed methodology and cross-sectional design was used to achieve the aim of the study. Hospital Survey on Patient Safety Culture questionnaire was used to collect data from 350 front line health care providers at specialized hospital, Makkah, Saudi Arabia. Results: The highest rated Patient safety culture dimensions from health care staff perspective was teamwork within units and across the unit, supervisor/ manager expectations and actions promoting patient safety and over all perception of patient safety. The lowest rated dimension was non punitive response to errors, Communication openness, and frequency of events reported. The most of the participants given excellent or very good score in overall patient safety grade, and the majority of the respondents never reported any events during last 12 months. The study statistically proved the relationship between patient safety culture and area of work and number of events reported. In this study result showed that there is significantly difference exist between 12 dimensions of composite items with patient's safety culture. Conclusion and Recommendations: This study found the strengths and areas of improvements of patient safety culture in the hospital. The good leadership support, effective communication, sufficient staffing, team work, open communication about errors and adequate working hours can improve patient safety culture. This study recommends the health care leaders to create an institutional strategic plan to improve patient safety programs in hospital settings.

**Keywords:** culture, improvement, patient safety

**Cite This Article:** Mohammed Ahmed Hazazi, and Ameerah Mohamed Noor Qattan, "Exploring Strength Areas of Patient Safety Culture Improvement in KAMC, Makkah, Saudi Arabia." *American Journal of Nursing Research*, vol. 9, no. 1 (2021): 20-28. doi: 10.12691/ajnr-9-1-4.

## 1. Introduction

Over the centuries, healthcare organizations have anchored their services on the golden rule, which states that "do not do harm". However, despite this rule of thumb, the literature agrees that, on some occasions, harm does occur when delivering care within the hospital environment, a move that can potentially compromise optimal care delivery [1]. Abdou and Saber [2] pointed out that although to err is human, healthcare providers need to embrace ethical approaches in their service delivery to avoid preventable harm when delivering care. Over the decades, there has been a growing consensus in the patient safety research that one of the key determinants of patient safety culture (PSC) in hospitals is attributed to organizational culture [3]. Studies in various countries such as Yemen, Taiwan, and Saudi Arabia confirm that safety culture within the hospitals influences patient

satisfaction, medication errors, patients' perceptions about caregiver competency, and healthcare provider satisfaction in their working environment [4,5,6].

Patient safety problems have been attributed to care providers' mistakes, unintentional errors, and safety violations [7]. The most adverse events and errors within the hospitals stem from multiple events that work to jointly trigger safety failures rather than as a result of single human error. In efforts to reduce the potential injuries resulting within the healthcare sector, researchers have advocated the need by care providers such as doctors, nurses, and management to initiate and promote a patient-focused safety environment [8].

According to Mitchell [9], the definition of patient safety is widely agreed to be associated with any efforts intended to reduce and prevent injuries or adverse outcomes that stem from healthcare processes. As applies to this research, surveying and assessing patient safety culture is fundamental in obtaining first-hand information on healthcare areas that require enhancement while

helping to assess any potential changes in PSC over time. Health care sector need to identify positive areas and shortcomings in patient safety practices that require future improvement. Not much research available to explore the care provider's insight on how their facilities are performing in terms of promoting PSC while identifying potential shortcomings that need to be improved on to deliver optimum care and realize patient satisfaction.

### 1.1. Significance of the Research

Patient Safety is a health care discipline that emerged with the evolving complexity in health care systems. It aims to prevent and reduce risks, errors and harm that occur to patients during provision of health care. This has led to the wider recognition of the importance of patient safety, the incorporation of patient safety approaches into the strategic plans of health care organizations and a growing body of research in this field.

Culture is not a small thing to build or change, it is a good starting point for hospital's leadership to truly embrace patient safety and provide positive reinforcement for behaviors that further it. Measurement of patient safety culture enables the identification of strengths and areas for improvement. This information can be used to develop appropriate interventions.

Australian Commission on Safety and Quality in Health Care reported [10] that surveys of hospital staff are the most common way of measuring patient safety culture. Hospital staff is often the first to notice patterns of unsafe practice and the conditions which increase or decrease the likelihood of such practice. This study is aimed to explore the strength and weakness of safety practices that can be used by the health care leaders to create new policies and make strategic plan to improve patient safety program in hospital settings.

### 1.2. Aim of the Study

The aim of the study is to investigate the strengths area of patient safety culture improvement. This aim is achieved through the following objectives:

1. To explore strengths areas of patient safety culture improvement in King Abdullah Medical City (KAMC), Makkah, Saudi Arabia,
2. To evaluate KAMC employees' perceptions concerning PSC when delivering care, thereby helping to identify strengths displayed by healthcare providers across KAMC,
3. To identify areas of concern that requires further improvement in terms of achieving patient safety culture.

### 1.3. Research Hypothesis

1. There is a significant relationship exist between patient safety culture and staff area of work.
2. There is a significant relationship between patient safety culture and staff position.
3. There is a significant relationship between patient safety culture and Tenure within the hospital.
4. There is a significant relationship between patient safety culture and incidents report.

## 1.4. Subjects and Methods

### 1.4.1. Research Design, Setting, and Participants

Cross sectional research design was used in the current study. Simple random sample of 350 participants from physicians, nurses, allied health staff was proportionally allocated from all departments at KAMC, makkah, Saudi Arabia.

### 1.4.2. Sample Size

The sample size included permanent front-line health care providers and total number was 2857 including [Doctors = 1061, Nurses 1020 and Other allied health staff 776]. The minimum sample size by total number of health care providers is 350 assuming a minimum response rate of 50% and a confidence interval of +/-5%. The sample number in each category as follow:

Statement	Doctors	Nurses	Allied health staff
Total population	1061	1020	776
Minimum sample	130	126	94
Percentage	37%	36%	27%

### 1.4.3. Tool of Data Collection

The survey questionnaire designed by AHRQ specifically for hospital staff and asks for their opinion about the culture of patient safety from their perspective [11]. The survey questions consist of 12 dimensions and 42 items. In the survey items, two questions that ask the respondents to provide an overall grade on patient safety for their work area/unit and to indicate the number of events they reported in the year of 2019. In addition, respondents are also asked to provide limited background demographic information about themselves (their work are/unit, staff position, whether they have direct interaction with patients, etc.). Respondents are given the opportunity to provide written comments about patient safety, error, or event reporting in the hospital at the end of the survey.

## 1.5. Validity and Reliability

The Agency for Healthcare Research and Quality (AHRQ) examines patient safety culture from a hospital staff perspective. The survey can be completed by all interdisciplinary team members. It has been validated through pilot tests and assessments of its reliability and factor structure. In addition to the study of Sorra and Dyer that assesses multilevel psychometric properties of the AHRQ hospital survey on patient safety culture, it also supports reliability and validity of the utilized patient safety culture survey.

## 1.6. Ethical Considerations

IRB approval was obtained from the KAMC research Center letter 20-675, dated 20/07/2020. After getting official permission from IRB, the online survey was distributed to the health care workers. For ethical consideration, the aim of the study and an information part explaining the study details was included in survey to obtain their cooperation. Participants were not identified on questions. In this way the researcher was maintained

anonymity and confidentiality of the participants. All data files are secured and only used by researcher

### 1.7. Data Collection

The investigator collected data from the participants by using online survey questionnaires. The data was collected from 05/08/2020 to 09/09/2020. The survey link was closed when the need number of respondents is achieved. An invitation part was included in the survey to understand the aim of the study to the participants and to obtain their cooperation. An information sheet was provided before starting to answer the questionnaires, which included meaning of patient safety issues. The study samples were selected by using simple random method. The survey questionnaire designed by AHRQ specifically for hospital staff and asks for their opinion about the culture of patient safety from their perspective. The survey questions consist of 12 dimensions and 42 items. In the survey items, two questions that ask the respondents to provide an overall grade on patient safety for their work area/unit and to indicate the number of events they reported over the past 12 months. In addition, respondents are also asked to provide limited background demographic information about themselves (their work area/unit, staff position, whether they have direct interaction with patients, etc.). Respondents are given the opportunity to provide written comments about patient safety, error, or event reporting in the hospital at the end of the survey.

### 1.8. Statistical Analysis

The obtained data was be analyzed qualitatively and quantitatively. Qualitative analysis was conducted by manually coding the obtained data to identify the main themes from the study in terms of healthcare provider's perceptions or attitudes towards PSC. In contrast, Statistical Package for Social Sciences (SPSS) version 25 was used to analyze quantitative data to identify the main trends and statistics from the data. Descriptive statistics was used to examine demographic data of the participants, while a t-test will be performed to examine possible differences in means between groups [12]. Analysis of variance (ANOVA) was employed to examine statistical relationship between patient safety cultures dimensions and variables being studied. The level of significance was set to a 95% CI, where p-values  $\leq 0.05$  was considered significant.

## 2. Results

Table 1 shows total of 350 participants were enrolled in the study. As presented on table No.1, one hundred thirty (37.1%) were physicians and one hundred twenty six (36%) were Registered nurses and remaining 94 (26.9%) were allied health staff. Most of the participants in the study from Intensive care unit (42.9%) remaining from Medical (15.7%), Emergency (11.4%), Surgical (9.7%), Pharmacy (8.3%), Laboratory (4.6%), Radiology (4%), and Anesthesiology (3.4%) respectively. In regards to work experience most of the staff have experience in

between 6-10 years 164 (46.9 %) and 150 (42.9%) staff have experience between 1-5 years. The majority of the staff who were worked in 40- 59 hours per week that is 293 (83.7%).

Figure 1 shows that, 317 (90.6%) have direct contact or interaction with patients and remaining 33 (9.4%) have no direct contact or interact with patients.

Figure 2 shows that overall grade on patient safety in the participants work area. Most of the participants given very good grade 137 (39.1%) and 110 (31.4%) responded as excellent grade and 90 (25.7%) participants responded as acceptable grade and 12 (3.4%) respondent given safety grade as poor.

Figure 3 illustrates 42.6% of respondents never reported any event in their hospital over the past 12 months and 32.3% respondents reported 1-2 events in past 12 months.

Table 2, and Figure 4 show the total composite positive perception of patient safety culture among the health care workers in relation with staff position shows that the highest rated patient safety culture dimensions were "teamwork within units" (mean, 15.62), "Team work across the unit" (13.70) "supervisor/ manager expectations and actions promoting patient safety" (13.40) and "overall perception of patient safety" (13.30). Lowest rated patient safety culture dimensions were "Non punitive response to errors" (9.06) "Communication openness" (10.26) and "frequency of events reported" (10.3). This P Value ( $<0.001$ ) indicates that there is significance difference between the 12 dimensions with patient's safety culture. Patient safety culture was rated significantly different between the staff positions. The Nurses scored the highest patient safety culture in most of the dimensions comparing to physicians and allied health staff. There is significance difference exist between area of work and patient safety culture. The mean score of overall patient safety was high in radiology, medical and surgical than intensive care department and Emergency department. There is no significance difference between staff position and patient safety culture. The mean score rating for patient Safety culture was also indicating not much difference. There is significance difference between experience in the hospital and patient safety culture. The longest professional experience (11 to15years) participant has higher patient safety culture. There is significant relationship with patient safety culture. The mean score indicate that no events reported have high mean score than compare to other parameters.

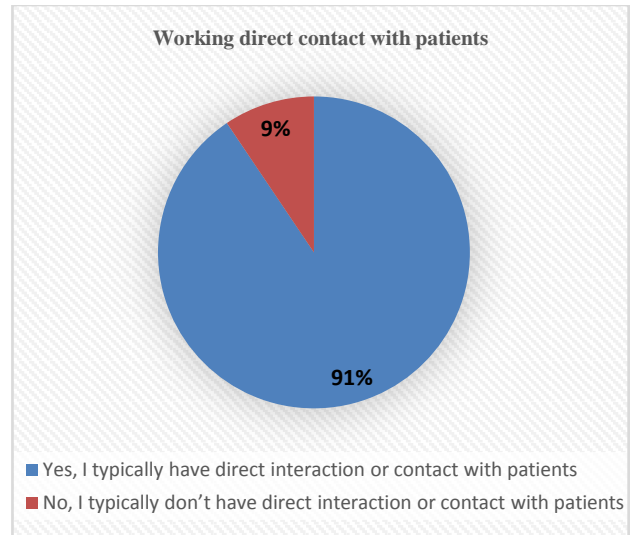
Table 3 illustrates there is statistically significant difference of patient safety culture of the studied sample related to their area of work, experience, and frequency of reporting events

Table 4 illustrates the most of the participants identified that patient safety culture is the first priority in any organization. The participants stressed the role of managers and supervisors on implementing patient safety culture in the hospitals. The responses are more concerned on staffing, events reporting, perceptions of patient safety and communication openness. They recommended that the availability of patient coordinator can reduce the safety issues. Staffing issues and lack of medical equipment's are some patient safety factors which need to consider by management support for patient safety. The respondents stated to a large extent that communication among health care practitioners was also identified as a critical factor for

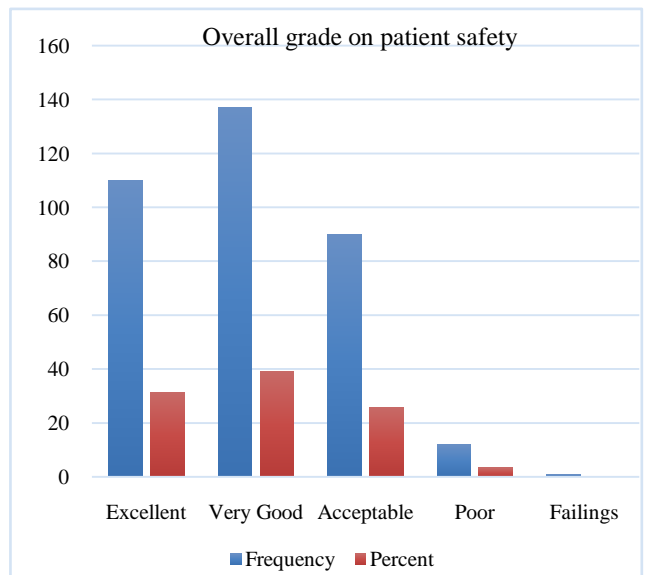
achieving enhanced patient safety culture in the study. Open communication based on mutual trust is considered an integral aspect of a beneficial patient safety culture. The participants recommended that the management should be committed to patient safety culture and the following factors should consider for improving patient safety culture included effective leadership support, effective communication, sufficient staffing, teamwork, open communication about errors and adequate working hours.

**Table 1. Socio-demographic characteristics of responses (n=350)**

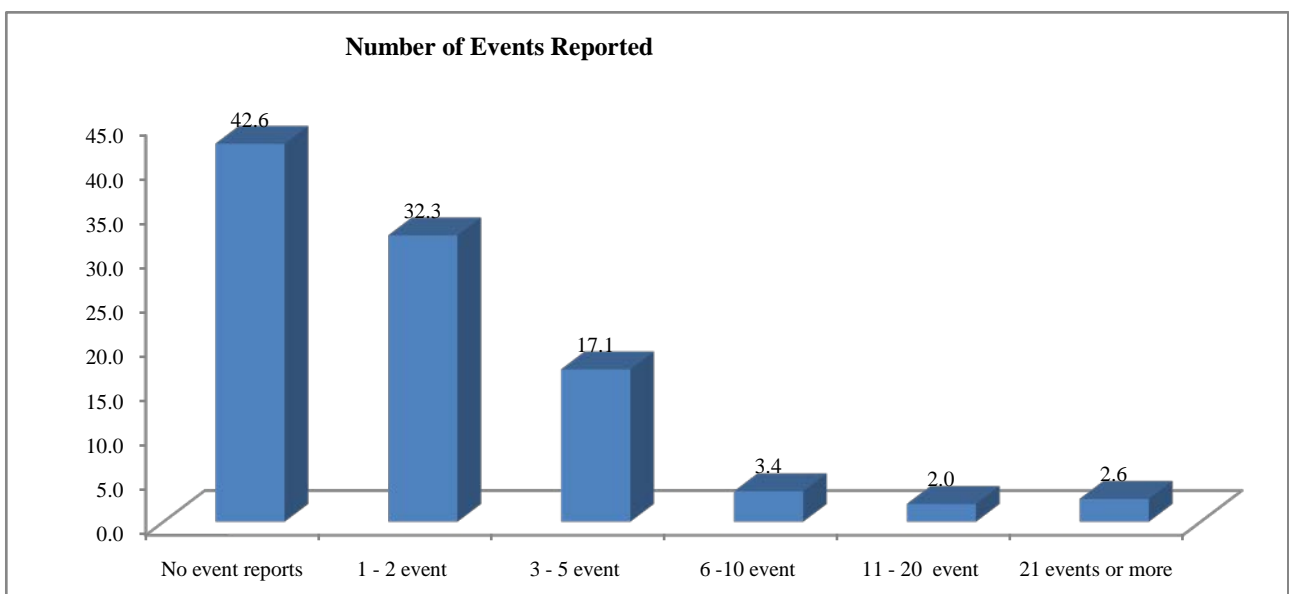
Characteristics	Categories	No	%
Staff position in the hospital	Physicians	130	37.1
	Registered Nurse	126	36
	Allied health staff	94	26.9
Primary work area	Emergency	40	11.4
	Intensive care unit	150	42.9
	Medicine	55	15.7
	Pharmacy	29	8.3
	Radiology	14	4
	Laboratory	16	4.6
	Surgery	34	9.7
	Anesthesiology	12	3.4
	Work experience in same hospital	Less than 1 year	18
1 to 5 years		150	42.9
6 to 10 years		164	46.9
11 to 15 years		17	4.9
16 to 20 years		1	0.3
Working hours per week	< 20 hours / week	3	0.9
	20 to 39 hours / week	25	7.1
	40 to 59 hours / week	293	83.7
	60 to 79 hours / week	26	7.4
	80 to 99 hours / week	1	0.3
	100 hours / week or more	2	0.6



**Figure 1.** Participants working with patients



**Figure 2.** Percentage of respondents giving their work unit a patient safety grade



**Figure 3.** Percentage of respondents reporting event in the past 12 months

Table 2. Mean and Standard deviation of patient safety culture dimensions

Patient safety culture dimensions	Mean	SD	p Value
Non-Punitive Response to Errors	9.06	2.33	<0.001
Team Work With in Units	15.62	2.70	
Supervisor/Manager Expectations & Actions Promoting Patient Safety	13.40	2.51	
Organizational Learning-Continuous Improvement	11.58	2.13	
Management Support for Patient Safety	10.90	1.66	
Overall Perception of Patient Safety	13.30	2.06	
Feedback and Communication About Error	11.62	1.69	
Communication Openness	10.26	1.94	
Frequency of Events Reported	10.38	3.26	
Teamwork Across Unit	13.70	2.28	
Staffing	11.52	2.63	
Handoffs & Transitions	11.81	2.75	

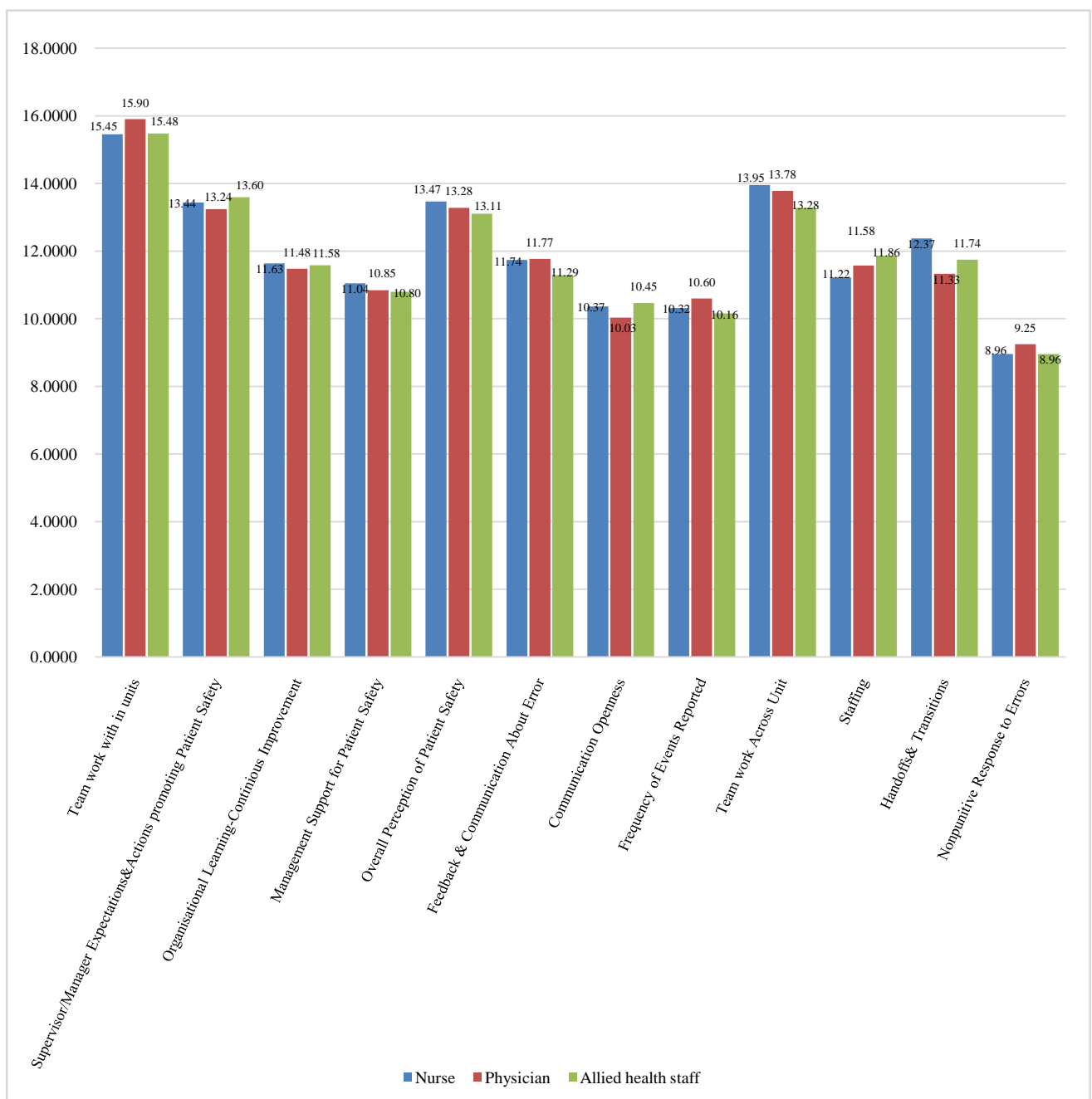


Figure 4. Descriptive Analysis for Staff position and average scores for the patient safety culture dimensions

**Table 3. Relationship between a patient safety culture, area of work, position, experience, and frequency of reporting events**

Characteristics	Categories	Mean (SD)	P
Area of work	Emergency Department	143.15 (11.88)	<0.001
	Intensive Care Unit	143.16(15.58)	
	Medicine	152.21(15.21)	
	Pharmacy	148.48(9.96)	
	Radiology	153.86(16.44)	
	Laboratory	144.37(13.02)	
	Surgery	150.47(10.26)	
	Anesthesiology	149(16.06)	
position	Registered Nurse	146.71(13.96)	0.865
	Physician	145.87(15.96)	
	Allied health staff	146.78(13.71)	
Experience	Less than 1 Year	140.33(9.27.53)	0.027
	1 to 5 Years	148.27(15.56)	
	6 to 10 Years	144.66(14.26)	
	11 to 15 Years	154.06(22.41)	
	16 to 20 Years	131	
Frequency of Events Reported	No Event Reports	149.97(12.1)	<0.001
	1 to 2 Event Reports	146.5(17.47)	
	3 to 5 Event Reports	139.21(13.53)	
	6 to 10 Event Reports	140.5(11.52)	
	11 to 20 Event Reports	141.29(10.16)	
	21 Events Reports or More	146.44(7.82)	

**Table 4. Description from respondents regarding patient safety, error or events reporting**

Comments regarding patient safety, error, or event reporting in the hospital.
<ul style="list-style-type: none"> <li>· Patient safety is the first priority of any successful facility</li> <li>· We have to create a healthy, safe, and quite environment for all (patients &amp; health care workers).</li> <li>· We have to improve more on patient safety culture and quality of care.</li> <li>· Limited supply effect on patient and staff safety</li> <li>· Understaffed in a unit/department may lead to patient's safety error. To provide holistic patient care, the nurse-patient ratio should be at least 1:3.</li> <li>· Staff ratio and acuity, although it does not happen all the time.</li> <li>· Errors are reported always to avoid it from happening again, Patient safety is a priority in our department.</li> <li>· Our policy and procedures totally supported patient safety and if the staff aware about this policy I think rarely will happen any errors or mistake.</li> <li>· It should be a good communication with the superior and the staff regarding patient safety and other healthcare provider to work better together and implement that patient safety procedure that is existing in the policies.</li> <li>· To achieve higher quality of patient safety, high quality of equipment and supplies should be provided. Also, staff satisfaction must be met; happy staff leads to great effort leads to good quality of care.</li> <li>· All events should be reported or handled the same regardless of the staff involved.</li> <li>· Must enforce common knowledge between different units to ease the communication especially in the lack of (coordinator) position</li> <li>· This survey will hopefully will improve our patient Safety improvement here in KAMC.</li> </ul>

### 3. Discussion

This study was aimed to explore the strengths areas of patient safety culture improvement in KAMC. This survey was applied to identify positive areas and shortcoming in patient safety practice that required future improvement and also the health care leaders can create new strategic plan to improve patient safety program in hospital settings. The results showed that patient safety culture from staff perspective is perceived as an area of strength whereas those areas in need of improvement were scattered on several levels.

Result regarding the total composite positive perception of patient safety culture among the health care workers in relation with staff position shows that the highest rated patient safety culture dimensions were "teamwork within

units", "Team work across the unit" "supervisor/ manger expectations and actions promoting patient safety" and "over all perception of patient safety". These results are consistent with those of the previous studies where in patient safety culture was good in the dimensions of work area/unit and supervisor/manager [13]. Another study identified that healthcare professionals demonstrated a positive perception on the aspects of work area/unit, supervisor/manager, and patient safety guide of patient safety culture [4], the highest positive response was reported in the dimension of "teamwork within the unit [14]. A result similar to many other patient safety culture measurement studies teamwork is a strengthening part in developing patient safety [15], and also in other studies staff scored the dimension "Teamwork Within Units" highest score [7], a good team functioning is important

when aiming at patient safety improvements. The lowest rated patient safety culture dimensions were "Non punitive response to errors", "Communication openness", and "frequency of events reported". These results also consistent with those of previous studies, where in aspects such as "communication openness," and "a number of events reported had scope for further improvement in India [16]. When considering patient safety systematic approach of open communication between the health care professional should follow continuous two directional interactions [17]. Similarly, [18] has found that the number of reported events filed was significantly associated with composite questions measuring communication openness. One of the research review found that communication openness seems to be a concerning issue for healthcare professionals in the Arab countries [19]. Based on this findings effective communication and events reporting culture need to be concentrated by health care leaders

In this study result showed that there is significantly difference exist between 12 dimensions of composite items with patient's safety culture. This result was not consistent with other studies. This might be due to the differences in the study settings and time. In this study nurses scored the highest patient safety culture in most of the dimensions comparing to physicians and allied health staff. Similar results evaluated the culture of safety have shown contrasting perceptions regarding patient safety in different professionals and physicians showed a less positive perception compared to nurses [20]. For instance, one study found that nurses had a higher perception than physicians of the positive safety climate in their organization [21]. Moreover, nurses, who comprise the greatest number of health care professionals in the hospital involved in providing nursing services to patients, are extremely important to maintain the safety culture. Based on previous studies in Arab countries, further efforts by the hospital management is essential to enhance nurses' perception regarding the aspects of patient safety culture [22], although accreditation improved the perception of registered nurses' on awareness of patient safety and quality of patient care [23]. Therefore more efforts needed to make all health care staff to be aware about patient safety culture improvements.

The results regarding that overall grade on patient safety culture in the participants work area most of the participants given very good or excellent grade and might be due to the participant's awareness. As a supporting study Swedish hospital survey on patient safety culture showing almost 60% of the respondents gave their unit a very good or excellent grade. [7]. Some other studies reported the overall patient safety grade as rated by the participants was acceptable and poor [24]. In this study the majority, 42.6% of respondents never reported any event in their hospital over the past 12 months and 32.3% respondents reported 1-2 events. This finding is lower than reports from Amhara region hospitals, according to them two-thirds of health care staffs reported at least one event, Jimma zone [25]. Al-Ahmadi [26] reported that most respondents showing "no events" in the twelve months preceding the survey, with the percentage of not reporting being higher in private sector compared to public hospitals. Based on a study done at Cairo University Hospitals, only

48.5% of the study participants reported the occurrence of patient safety events in their corresponding departments and two third (77.90%) of respondents reported no adverse events during the last 6 months. [27]. Leape [28] affirmed that patient safety reporting systems helps healthcare organizations to improve patient safety which is very significant to Arab countries as reported by Elmontsri [19]. This finding concluded that the health care leaders should focus on their employee's perception on reporting events.

This study revealed that almost all patient safety culture dimensions suggesting areas with potential for improvements. The finding shows that there is significant difference exist between patient safety culture and area of work, and the number of events reported. There is no relationship exist between staff position and the experience of the participants. Similar result supported by some other studies that there is significant association between an intention to report errors and patient safety culture [29] and also Falco [30] found that number of events reported was significantly associated with some composite items. Similar findings were not reported from previous studies but some studies reported the association of professional experience with high overall patient safety. More over experienced staff is probably more familiar with the error reporting system or are more aware of the errors occurring within the unit [31]. Similarly other studies revealed that working hours, level of staffing, teamwork, communication openness, reporting an event, and exchange of feedback about error were associated with patient safety culture [25].

Finally, the participants commented regarding patient safety, error or events reporting that communication among health care practitioners was also identified as a critical factor for achieving enhanced patient safety culture in the study. The participants stressed the role of managers and supervisors on implementing patient safety culture in the hospitals. The responses are more concerned on staffing, events reporting, perceptions of patient safety and communication openness. They recommended that the effective leadership support, effective communication, sufficient staffing, team work, open communication about errors and adequate working hours can improve patient safety culture. One of the study also supporting this recommendation that ineffective leadership, a blame culture, workload/inadequate staffing and poor communication are reported as the main factors hindering a positive patient safety culture in Saudi Arabia [32]. A also supporting by another study and their factor analysis indicated that hours worked per week, participation in a patient safety program, reporting of adverse events, communication openness, teamwork within hospital, organizational learning and exchange of feedback about error were among factors that were significantly associated with the patient safety culture [33]. Training programs on teamwork and communication are provided to all staff, so the different discipline in medicine are connected to improve team performance [20].

The result showed in this research will leads to get first-hand information on health care settings that can improve patient safety culture. This result indicated health care workers insights on how their institutions performing in promoting and improving patient safety culture.

Healthcare institutions should instill a culture of patient safety among all staff involved in the provision of health services for ongoing quality improvement efforts [34]. Furthermore, advancements in patient safety require the development of a patient safety culture that would support healthcare institutions [35]. By identifying the areas of improvement the stakeholders develop acceptable standards for patient safety system and implement interventions targeted to reduce the impact of these factors on the quality of hospital care are needed. Considering such context, continuing education for healthcare professionals has become a requisite for patient safety culture as well as a means of supporting organizational policies, governance, and methods of reporting [18]. Another study recommending that to keep pace with international standards, healthcare managers must employ modern methods of management in order to overcome the challenges faced by the institutionalization of safety culture and to make a difference in the healthcare system [36]. In order to institutionalize improvement of patient safety culture in health systems, hospital leaders should be trained for assessment of patient safety culture and participate in different activities to communicate and build awareness of the staff on all dimensions of patient safety culture.

#### 4. Conclusion and Recommendations

The relationship between patient safety culture and area of work and number of events reported. The highest rated Patient safety culture dimensions from health care staff perspective was teamwork within units and across the unit, supervisor/ manager expectations and actions promoting patient safety and over all perception of patient safety. The lowest rated dimension was non punitive response to errors, Communication openness, and frequency of events reported. Although most of the participants given excellent or very good score in overall patient safety grade and majority of the respondents never reported any events during last 12 months. Finally the respondents recommended the effective leadership support, effective communication, sufficient staffing, team work, open communication about errors and adequate working hours can improve patient safety culture.

#### 5. Implications and Recommendations

This study finding will help the hospital leaders to make changes towards patient safety culture improvements. The result of the study showing the strongest and weakest part of patient safety culture dimensions that will help the leaders to prepare improvement programs. We are recommending the health care leaders to create an institutional strategic plan to improve patient safety programs in hospital settings.

This study strongly recommends to for further multicenter comparative study level, which can include primary health center, general hospitals and specialist hospitals. These finding can contribute to implement the national level health care policy across the Kingdom of Saudi Arabia regarding patient safety culture improvements.

#### 6. Strengths and Limitations of the Study

The contributions of this study will helps the health care leaders as base to implement patient safety culture initiatives and help them to develop protocols and policies for patient safety improvements and can make standards to aware all employees to participate in patient safety programs that will help to make a patient safety culture in the hospital settings. In order to institutionalize improvement of patient safety culture in health systems, it is critical to ensure that policies, organizations, procedures, and resources for health service quality improvement and patient safety are aligned and integrated. The strength of this study was used cross - sectional in addition to mixed methods that helped the researcher to analysis through quantitatively and qualitatively. A limitation of this study was that the perceptions of all health care employees were not included. So the result cannot be represented as a whole organizational level. The study relies on self-reported online survey and if using participant's direct interview may help to get more ideas and recommendation for improving patient's safety culture.

#### Acknowledgments

We thank all the nurses who helped us conduct this research. The authors appreciate Prof. Dr.Omar Alsharqi, Dr. Dlishaad Ali W1 KAMC CEO, Dr.Ali Alahmari KAMC CMO for their assistance and support with this research.

#### References

- [1] Alshammari, F. (2019). 'A survey of hospital healthcare professionals' perceptions toward patient safety culture in Saudi Arabia', *International Journal of Africa Nursing Sciences*, 11, p. undefined-undefined.
- [2] Abdou, H. A. and Saber, K. M. (2010). *A Baseline Assessment of Patient Safety Culture among Nurses at Student University Hospital*.
- [3] Hughes, C. M. and Lapane, K. L. (2006). 'Nurses' and nursing assistants' perceptions of patient safety culture in nursing homes', *International Journal for Quality in Health Care*, 18(4), pp. 281-286.
- [4] Alshammari, F. (2019). 'A survey of hospital healthcare professionals' perceptions toward patient safety culture in Saudi Arabia', *International Journal of Africa Nursing Sciences*, 11, p. undefined-undefined.
- [5] Anbori, A. (2010). 'Patient satisfaction and loyalty to the private hospitals in Sana'a, Yemen', *International Journal for Quality in Health Care: Journal of the International Society for Quality in Health Care*, 22(4), pp. 310-315.
- [6] Chen, I.-C. and Li, H.-H. (2010). 'Measuring patient safety culture in Taiwan using the Hospital Survey on Patient Safety Culture (HSOPSC)', *BMC health services research*, 10, p. 152.
- [7] Nordin, A. (2013). 'Health care staffs' perception of patient safety culture in hospital settings and factors of importance for this', 28-40.
- [8] Skagerström, J. (2017). 'Patient involvement for improved patient safety: A qualitative study of nurses' perceptions and experiences', *Nursing Open*, 4(4), pp. 230-239.
- [9] Mitchell, P. H. (2008). 'Defining Patient Safety and Quality Care', in Hughes, R. G. (ed.) *Patient Safety and Quality: An Evidence-Based Handbook for Nurses*. Rockville (MD): Agency for Healthcare Research and Quality (US) (Advances in Patient Safety). Available at: <http://www.ncbi.nlm.nih.gov/books/NBK2681/> (Accessed: 30 August 2020).



- [10] *Patient safety culture | Australian Commission on Safety and Quality in Health Care* (2017). Available at: <https://www.safetyandquality.gov.au/our-work/indicators-measurement-and-reporting/patient-safety-culture> (Accessed: 31 August 2020).
- [11] Sorra, J. S., Nieva, V. F. (2004). 'Pilot study *reliability and validity of the hospital survey on patient safety*'. In Technical report prepared by Westat under Contract No. 290-96-004 Rockville, MD: Agency for Healthcare Research and Quality.
- [12] Saunders, M. N. K., Lewis, P. and Thornhill, A. (2009) *Research methods for business students*. 5th ed. New York: Prentice Hall.
- [13] Eiras, M. (2014). 'The hospital survey on patient safety culture in Portuguese hospitals: instrument validity and reliability', *International Journal of Health Care Quality Assurance*, 27(2), pp. 111-122.
- [14] Rao, M., Thota, D. and Srinivas, P. (2014). 'A Study to Assess Patient Safety Culture amongst a Category of Hospital Staff of a Teaching Hospital'.
- [15] Hellings, J. (2007). 'Challenging patient safety culture: survey results', *International Journal of Health Care Quality Assurance*, 20(7), pp. 620-632.
- [16] Rajalatchumi, A., Ravikumar, T. S., Muruganandham, K., Thulasingham, M., Selvaraj, K., & Reddy, M. M. (2018). Perception of patient safety culture among healthcare providers in a tertiary care hospital, South India. *Journal of Natural Science, Biology and Medicine*, 9, 14-18.
- [17] Ghobashi, M. M. (2014). 'Assessment of Patient Safety Culture in Primary Health Care Settings in Kuwait', *Epidemiology, Biostatistics and Public Health*, 11(3).
- [18] El-Jardali, F. (2014). 'Patient safety culture in a large teaching hospital in Riyadh: baseline assessment, comparative analysis and opportunities for improvement', *BMC health services research*, 14, p. 122.
- [19] Elmotsri, M. et al. (2017). 'Status of patient safety culture in Arab countries: a systematic review', *BMJ Open*, 7(2), p. e013487.
- [20] Pronovost, P. J. (2003). 'Evaluation of the culture of safety: survey of clinicians and managers in an academic medical center', *Quality & Safety in Health Care*, 12(6), pp. 405-410.
- [21] Taher, S. et al. (2014). 'Safety climate in dialysis centers in Saudi Arabia: a multicenter study', *Journal of Patient Safety*, 10(2), pp. 101-104.
- [22] Aljadhey, H., Al-Babtain, B., Mahmoud, M. A., Alaqeel, S., & Ahmed, Y. (2016). *Culture of Safety among Nurses in a Tertiary Teaching Hospital in Saudi Arabia | Tropical Journal of Pharmaceutical Research*. Available at: <https://www.ajol.info/index.php/tjpr/article/view/133752> (Accessed: 14 October 2020).
- [23] Al-Awa, B., Jacquery, A., Almazrooa, A., Habib, H., Al-Noury, K., El Deek, B., et al. (2011). *Benchmarking the post-accreditation patient safety culture at King Abdulaziz University Hospital*. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6086642/> (Accessed: 14 October 2020).
- [24] Mekonnen, A. B. (2017). 'Hospital survey on patient safety culture in Ethiopian public hospitals: a cross-sectional study', *Safety in Health*, 3(1), p. 11.
- [25] Wami, S. D. (2016). '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*, 16, p. 495.
- [26] Al-Ahmadi, T. A. (2009). 'Measuring Patient Safety Culture in Riyadh's Hospitals: A Comparison between Public and Private Hospitals', *The Journal of the Egyptian Public Health Association*, 84(5-6), pp. 479-500.
- [27] Abdelhai, R., Abdelaziz, S. and Ghanem, N. (2012). *Assessing Patient Safety Culture and Factors Affecting It among Health Care Providers at Cairo University Hospitals*. Available at: [/paper/Assessing-Patient-Safety-Culture-and-Factors-It-at-Abdelhai-Abdelaziz/10b42a94dfa551ba919f238a51549b839673aa6a](https://www.researchgate.net/publication/310106422) (Accessed: 14 October 2020).
- [28] Leape, L. L. (2002). 'Reporting of adverse events', *The New England Journal of Medicine*, 347(20), pp. 1633-1638.
- [29] Chegini, Z. et al. (2020). 'The impact of patient safety culture and the leader coaching behaviour of nurses on the intention to report errors: a cross-sectional survey', *BMC nursing*, 19, p. 89.
- [30] Falco, K. (2013). 'Perceptions of Hospital Patient Safety Culture in Department of Veterans Affairs Station 593 Southern Nevada', p. 89.
- [31] Agharahimi, Z. (2012). 'Evaluation of staff attitudes about patients' safety culture in Noor & Ali Asghar hospitals in Isfahan-2011', *Journal of Hospital*, 11(3), pp. 17-26.
- [32] Albalawi, A., Kidd, L. and Cowey, E. (2020). 'Factors contributing to the patient safety culture in Saudi Arabia: a systematic review', *BMJ open*, 10(10), p. e037875.
- [33] Kumbi, M. et al. (2020). *Patient Safety Culture and Associated Factors Among Health Care Providers in Bale Zone Hospitals, Southeast Ethiopia: An Institutional Based Cross-Sectional Study, Drug, Healthcare and Patient Safety*. Dove Press.
- [34] Siddharth, V., Koushal, V. K. and Goyal, V. (2017). 'Patient Safety is the Need of the Hour: A Study in Nursing Department of a Tertiary Care Teaching Hospital', *International Journal of Research Foundation of Hospital and Healthcare Administration*, 5(2), pp. 55-59.
- [35] Stavrianopoulos. (2014). *The development of patient safety culture | Insight Medical Publishing*. Available at: <https://www.hsj.gr/medicine/the-development-of-patient-safety-culture.php?aid=3262> (Accessed: 14 October 2020).
- [36] Farokhzadian, J., Dehghan Nayeri, N. and Borhani, F. (2018). 'The long way ahead to achieve an effective patient safety culture: challenges perceived by nurses', *BMC Health Services Research*, 18.

