International Journal of
AFRICA NURSING SCIENCES

IJANS

IJANS

FEATURE ARTICLE

INTERNATIONAL JOURNAL OF AFRICA NURSING SCIENCES

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DESCRIPTION

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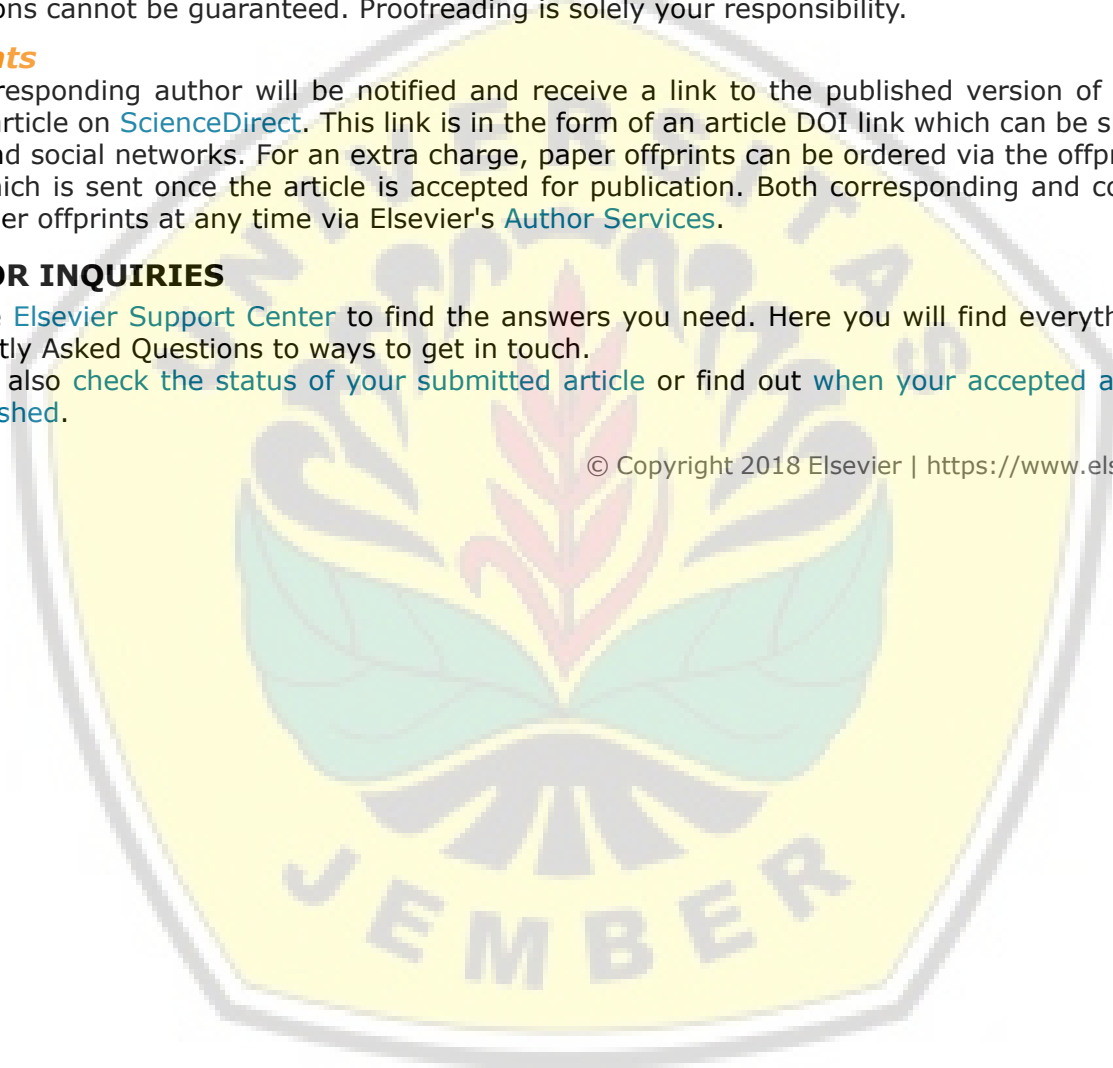
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A survey of hospital healthcare professionals' perceptions toward patient safety culture in Saudi Arabia

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ABSTRACT

Background: Medical and allied health professionals should adopt error reduction as a key strategic priority and make patient safety improvement an ongoing, active process within their organization.

Objective: The present study investigates the perceptions of healthcare professionals toward patient safety culture in hospitals throughout Hail Region, Kingdom of Saudi Arabia.

Methods: This research, which uses a descriptive cross-sectional approach to evaluate the perceptions of healthcare professionals toward patient safety culture, was conducted at four major hospitals in Hail Region, Kingdom of Saudi Arabia and involved 255 healthcare professionals, who served as respondents based on systematic random sampling. Standard deviation and the chi-square test of independence were used for statistical analysis. This study was approved by the Ethics Review Committee (H-2016-057) of the University of Hail.

Results: Among the patient safety aspects, patient safety grade received the highest mean value (3.56 ± 0.72), whereas handoffs and transitions received the least consensus (3.00 ± 0.34). Interestingly, hospital work experience significantly correlated to work area (p = 0.026), communications (p = 0.037), and the number of events reported (p = 0.019) in the patient safety dimension. Moreover, the number of years in the area/unit significantly related to the work area (p = 0.047) and supervisor/manager (p = 0.009). Only the number of events reported showed a significant relationship with specialty or profession (p = 0.007).

Conclusion: Healthcare professionals have an affirmative view toward patient safety culture aspects, and positive relationships were found between the patient safety dimensions and study participants' profile. The findings presented herein suggest that healthcare professionals affirm the practice of patient safety culture. However, further research is required to continuously appraise the significance of healthcare-based quality indicators. Overall, the assessment results suggest a platform for better intervention and transformation procedures targeting the promotion of patient safety culture.

1. Introduction

Patient safety culture is an extremely important aspect and a crucial issue in health service management (Ebrahimzadeh, Saravani, & Bazzi, 2017). Moreover, this concept is imperative for every organization aiming to realign the objectives of health professionals toward patient welfare and quality outcomes. Indeed, healthcare organizations must prioritize patient safety culture and make decisive changes resulting from their assessments (El-Jardali, Sheikh, Garcia, Jamal, & Abdo, 2014). According to a report from the Institute of Medicine "To Err Is Human: Building a Safer Health System" (Kohn, Corrigan, & Donaldson,

1999), which contains consequences if an event occurs in a health service, it will be regulated who is to blame and if mistakes happen, a solution can be found (Nie et al., 2013). Therefore, health services should strive to improve patient safety practiced by various healthcare professionals (HCPs), such as doctors, nurses, pharmacists, nutritionists, who are associated with patient safety culture.

Patient safety in healthcare includes the safety of both patients (clients) and HCPs (Rajalatchumi et al., 2018), and patient safety cultures have emerged to advance healthcare practices and served as baseline data for further improvement (Siddharth, Koushal, & Goyal, 2017). Furthermore, studies have demonstrated that healthcare

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institutions worldwide are focused on patient safety. The study of Chen and Li (2010) in Taiwan and Nie et al. (2013) in China demonstrated that hospital staffs are affirmative toward patient safety culture within their organization. Another study has reported that patient safety culture among the healthcare professionals in hospitals of Iran is moderate and weak (Ebrahimzadeh et al., 2017). On the other hand, patient safety has been the primary consideration in Arabs' agenda for health policy (Elmontsri, Almashrafi, Banarsee, & Majeed, 2017). Studies on patient safety have reported that with regard to patient safety culture, there exists further areas of improvement in hospitals (Alswat et al., 2017) in Riyadh, Saudi Arabia. As such, there is a need for healthcare organizations to overcome the fear of blame and build a climate of open communication and continuous education (Alahmadi, 2010). However, previous studies conducted in Arab countries have identified the existence of a commonly anticipated low standard with regard to affirmative patient safety culture among pharmacists (Alwabel, Bawazir, & Al-Surimi, 2015) and weak progress with regard to ensuring healthcare safety among patients (Ghobashi, El-ragehy, Mosleh, & Al-Doseri, 2014). This indicates that patient safety culture in Saudi Arabia exists and somehow health care professionals continue to experience challenges in ensuring the safety of patients in hospitals based on patient safety standards.

Based on the standard guidelines for monitoring patient safety culture in hospitals, the Hospital Survey on Patient Safety Culture (HSPSC), which includes 12 dimensions such as "Supervisor/manager expectations and actions promoting safety," "Organizational Learning and Continuous Improvement," and "Teamwork within Hospital Unit" (Agency for Healthcare Research and Quality (AHRQ), 2004), is commonly used. Therefore, healthcare institutions should instill a culture of patient safety among all staff involved in the provision of health services for ongoing quality improvement efforts (Siddharth et al., 2017). 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 (Aljadhey, Al-Babtain, Mahmoud, Alaqeel, & Ahmed, 2016), although accreditation improved the perception of registered nurses' on awareness of patient safety and quality of patient care (Al-Awa et al., 2011). Furthermore, advancements in patient safety require the development of a patient safety culture that would support healthcare institutions (Stavrianopoulos, 2014). In fact, there exists a pronounced need to account for and learn from medical errors to prevent their recurrence in the future (Elmontsri et al., 2017). Therefore, authorities themselves have been required to support the workforce via the integration of continuing education and prioritization of patient safety practices. 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 (El-Jardali et al., 2014). This development has highlighted the efforts HCPs have invested in observing and maintaining safe and quality healthcare practices. However, although patient safety culture is becoming prevalent within every healthcare organization, there remains a need for further efforts, such as investing in healthcare provider education to advance and eventually champion the culture of patient safety. Therefore, the present study aimed to investigate the perceptions of healthcare professionals toward patient safety culture in hospitals throughout Hail Region, Kingdom of Saudi Arabia. This study will provide a glimpse of the present landscape of healthcare organizations with regard to patient safety culture in Saudi Arabia.

2. Method

2.1. Study design

This research utilized a descriptive, cross-sectional approach in determining the perceptions of healthcare professionals toward patient safety culture.

2.2. Participants

The present study involved the participation of 255 hospital staff comprising nurses, physicians, and administrators/managers and included all hospitals within Hail Region, Kingdom of Saudi Arabia, that have a reputation of practicing quality and patient safety initiatives. The required sample was determined using the Lynch formula (Hulley & Cummings, 2001) with a 95% confidence interval. Of the 770 healthcare professionals, there were 257 who were eligible to participate. However, two of them have not consented, hence excluded from the total number.

The study participants were selected using systematic random sampling to ensure an equal probability of being chosen. Regardless of age, gender, and hospital affiliations, the participants were listed according to their profession, thereafter, numbering them individually. From the computed sampling interval of 3, the researchers selected number 2 which served as the basis to arrive at the sample size. These study participants have been involved in day-to-day activities in the hospital. Moreover, they have regularly interacted with the working staff of the participating hospitals. The participants had voluntarily agreed to participate. Students and trainees serving at the hospitals were excluded from the study.

2.3. Data collection

A self-administered questionnaire was used to measure the characteristics of participants, period of employment at the hospital, period of employment at the current unit of hospital, duration of working hours per week, staff position in hospital, direct interaction with patients in care, and, period of employment in the current specialty in the hospital.

A modified version of the HSPSC developed by the Agency for Healthcare Research and Quality was adopted with the developer's permission. These include the work area/unit (18 items), their relations to supervisor/manager (4 items), communications (6 items), frequency of events reported (3 items), patient safety guide (1 item), and about their hospital (11 items). The tool was subjected for assessment of face validity by the five experts in the patient safety department, and it was found to be of high validity. Thereafter, it was tested for its reliability by involving 20 healthcare professionals. The Cronbach's Alpha resulted in to.97, thereby indicating that the instrument is highly reliable.

Data collection started on 25th May 2018 and concluded on 15th August 2018. A total of 257 questionnaires were distributed but, two of the eligible participants have not consented resulted in a 99.22% response rate. Four of the researchers have distributed the questionnaires from one hospital to another hospital following the protocol set forth by the hospital institution. Data collection were on a scheduled basis with the assurance to the participants that ample time is given to them in answering the questionnaire. The participants were requested to return the questionnaire in a designated drop box provided in their unit.

The tool is focused on patient safety and error and event reporting. It comprises 42 items that are grouped into 12 composite measures. Moreover, the tool requests the participants to provide an overall grade on patient safety for their work area/unit and to simply report the number of events that had occurred over the past 12 months.

2.4. Ethical consideration

This study had been approved by the Ethics Review Committee (H-2016-057) of the University of Hail, as well as the authorities from the participating hospitals. Prior to data collection, an informed consent form was provided to the participants that presents a brief description of the study, its significance, explanation on the rights of the participants, such as the right to withdraw at any stage, confidentiality, and protection of their anonymity.

2.5. Data analysis

Collected data were statistically analyzed using the Statistical Package for Social Sciences version 21 (SPSS v. 21). Categorical data was presented as a percentage, and numerical data was presented as mean ± standard deviations.

To determine the relationship between participants' characteristics and patient safety dimensions, Mann–Whitney U test and Kruskal–Wallis test were used. A *p*-value of < 0.05 was considered significant.

3. Result

3.1. Health professionals' background information

Among the participants, 84.71% were nurses, 8.23% were administrators/managers, and 7.06% were physicians (Table 1). Most health professionals had between one and five years of work experience (58.04%), whereas a few had between 11 and 15 years of experience (13.73%). Only a slight difference was observed between the number of health professionals who had been working at the same unit for 1–5 years (54.12%) and 6–10 years (42.75%). Most of the respondents worked for 40–59 h per week (87.45%), whereas 90.98% expressed that

Table 1
Characteristic of participants (n = 255).

Variable	n (%)
Health professionals	
Nurse	216 (84.71)
Physicians	18 (7.06)
Administrators/managers	21 (8.23)
Length worked at hospital	
1–5 years	148 (58.04)
6–10 years	72 (28.24)
11–15 years	35 (13.73)
Length current worked at unit of hospital	
< 1 years	8 (3.14)
1–5 years	138 (54.12)
6–10 years	109 (42.75)
Number time of worked (Hours per weeks)	
40–59 h	223 (87.45)
60–79 h	19 (7.45)
80–99 h	13 (5.10)
Staff position in hospital	
Registered nurse	216 (84.71)
Physician	18 (7.06)
Administrators/managers	21 (8.23)
Directly contact with patients in care	
Yes	232 (90.98)
No	23 (9.02)
Length worked current speciality in hospital	
1–5 years	106 (41.57)
6–10 years	73 (28.63)
11–15 years	35 (13.73)
16–20 years	12 (4.71)
21 years or more	29 (11.37)

they had direct interaction or contact with the patients. Moreover, the majority (41.57%) of the health professionals stated that they have worked in their current specialty or profession for one to five years.

3.2. Participants' perceptions on patient safety aspects

Among the aspects, "Patient Safety Grade" received the highest mean value (3.56 ± 0.72) (Table 2). Aspect 1 (Work Area/Unit) had an overall mean value of 3.47. Specifically, "Organizational Learning-Continuous Improvement" received the highest mean value (3.98 ± 0.62), whereas the item "we have sufficient staff to handle the workload" (Staffing) received the lowest mean value (2.49 ± 0.86).

Aspect 2 (Supervisor/Manager Expectations & Actions Promoting Patient Safety) had an overall mean value (3.49 ± 0.51). The item "*my supervisor/manager seriously considers staff suggestions for improving patient safety*" received the highest mean value (3.71 ± 0.71), whereas the item "*whenever pressure builds up, my supervisor/manager wants us to work faster, even if it means taking shortcuts*" received the lowest mean value (3.31 ± 0.90). Moreover, Aspect 3 (Communications) received an overall mean value of 3.38, whereas Aspect 4 (Frequency of Events Reported) received an overall mean value of 3.26. The item "*when a mistake is made but is caught and corrected before affecting the patient, how often is this reported?*" received the highest mean value (3.38 ± 0.99), whereas the item "*when a mistake is made that could harm the patient but does not, how often is this reported?*" received the lowest mean value (3.07 ± 1.18).

Under Aspect 6 (About their Hospital), the specific item "*hospital units work well together to provide the best care for patients*" (Teamwork Across Units) received the highest mean equivalent (3.95 ± 0.75), whereas the item "*shift changes are problematic for patients in this hospital*" (Handoff & Transitions) received the lowest mean value (2.08 ± 0.63). Finally, with regard to Aspect 7 (Number of Events Reported), most participants (63.53%) stated that they never reported any event/error.

3.3. Relationship between patient safety dimensions and respondents' background information

Table 3 illustrates the relationship between background information and patient safety dimensions. The results of the present study found that hospital work experience was significantly related to Work Area (p = 0.026), Communications (p = 0.037), and Number of Events Reported (p = 0.019) in the Patient Safety Dimension. Moreover, the number of years in the area or unit was significantly related to Work Area (p = 0.047) and Supervisor/Manager Expectations (p = 0.009). Moreover, only the Number of Events Reported showed a significant relationship with the period of employment under current specialty or profession (p = 0.007).

4. Discussion

The results of the study identified that patient safety culture is generally well accepted, particularly in the aspects of work area/unit, supervisor/manager, and patient safety guide. However, the dimensions of communication, frequency of events reported, and about the hospital were observed to be a part of the healthcare professionals' opportunities for improvement. These results illustrate that nurses, one of the health professionals in the hospital, demonstrated well-perceived patient safety culture by guaranteeing the protection of the patient on services provided in hospitals, thereby facilitating the management of quality health and nursing services in hospitals of Saudi Arabia.

4.1. Participants' perceived patient safety aspects

In this study, it has been identified that healthcare professionals demonstrated a positive perception on the aspects of work area/unit,

Table 2
Perceptions of dimension patient safety (n = 255).

Dimensions of patients safety	Mean	SD	Interpretation
Aspect 1. Work area/unit			
People support one another in this unit	3.71	1.03	Good
We have enough staff to handle the workload	2.49	0.86	Fair
When a lot of work needs to be done quickly, we work together as a team to get the work done	3.64	0.91	Good
In this unit, people treat each other with respect	3.75	1.07	Good
Staff in this unit work longer hours than is best for patient care	3.38	0.96	Moderate
We are actively doing things to improve patient safety	3.76	0.98	Good
We use more agency/temporary staff than is best for patient care	3.11	0.77	Moderate
Staff feel like their mistakes are held against them	3.45	0.97	Good
Mistakes have led to positive changes here	3.40	0.92	Moderate
It is just by chance that more serious mistakes don't happen around here	3.29	0.89	Moderate
When one area in this unit gets really busy, others help out	3.60	1.02	Good
When an event is reported, it feels like the person is being written up, not the problem	3.62	0.81	Good
After we make changes to improve patient safety, we evaluate their effectiveness	3.98	0.62	Good
We work in "crisis mode" trying to do too much, too quickly	3.47	0.88	Good
Patient safety is never sacrificed to get more work done	3.65	0.70	Good
Staff worry that mistakes they make are kept in their personnel file	3.56	0.74	Good
We have patient safety problems in this unit	2.96	0.91	Moderate
Our procedures and systems are good at preventing errors from happening	3.62	0.75	Good
Overall aspect 1	**3.47**	**0.40**	**Good**
Aspect 2. Supervisor/manager			
My supervisor/manager says a good word when he/she sees a job done according to established patient safety procedures	3.47	0.79	Good
My supervisor/manager seriously considers staff suggestions for improving patient safety	3.71	0.71	Good
Whenever pressure builds up, my supervisor/manager wants us to work faster, even if it means taking shortcuts	3.31	0.90	Moderate
My supervisor/manager overlooks patient safety problems that happen over and over	3.47	1.00	Good
Overall aspect 2	**3.49**	**0.51**	**Good**
Aspect 3. Communication			
We are given feedback about changes put into place based on event reports	3.20	0.76	Moderate
Staff will freely speak up if they see something that may negatively affect patient care	3.49	0.81	Good
We are informed about errors that happen in this unit	3.60	0.90	Good
Staff feel free to question the decisions or actions of those with more authority	3.20	1.17	Moderate
In this unit, we discuss ways to prevent errors from happening again	3.91	0.91	Good
Staff are afraid to ask questions when something does not seem right	2.89	1.01	Moderate
Overall aspect 3	**3.38**	**0.52**	**Moderate**
Aspect 4. Frequency of events reported			
When a mistake is made, but is caught and corrected before affecting the patient, how often is this reported?	3.38	0.99	Moderate
When a mistake is made, but has no potential to harm the patient, how often is this reported?	3.36	1.11	Moderate
When a mistake is made that could harm the patient, but does not, how often is this reported?	3.07	1.18	Moderate
Overall aspect 4	**3.26**	**0.98**	**Moderate**
Aspect 5. Patient safety guide			
Please give your work area/unit in this hospital an overall grade on patient safety	**3.56**	**0.72**	**Good**
Aspect 6. About the hospital			
Hospital management provides a work climate that promotes patient safety	3.63	0.66	Good
Hospital units do not coordinate well with each other	2.60	0.81	Fair
Things "fall between the cracks" when transferring patients from one unit to another	2.50	0.92	Fair
There is good cooperation among hospital units that need to work together	3.78	0.41	Good
Important patient care information is often lost during shift changes	2.67	0.94	Moderate
It is often unpleasant to work with staff from other hospital units	2.27	0.53	Fair
Problems often occur in the exchange of information across hospital units	2.59	0.78	Fair
The actions of hospital management show that patient safety is a top priority	3.76	0.68	Good
Hospital management seems interested in patient safety only after an adverse event happens	3.09	1.19	Moderate
Hospital units work well together to provide the best care for patients	3.95	0.75	Good
Shift changes are problematic for patients in this hospital	2.08	0.63	Fair
Overall aspect 6	**3.00**	**0.34**	**Moderate**
Aspect 7. Number of events reported (multiple answers) (n, %)			
No event reports	162	63.53	Rank 1
1–2 events	82	32.16	Rank 2
3–5 events	5	1.96	Rank 5
6–10 events	23	9.02	Rank 4
11–20 events	28	10.98	Rank 3
21 events or more	3	1.18	Rank 6

supervisor/manager, and patient safety guide of patient safety culture. These results are consistent with those of the previous studies wherein overall patient safety grade for the hospital was considered as outcome variable (Siddharth et al., 2017) and patient safety culture was good in the dimensions of work area/unit and supervisor/manager (Escoval, Grillo, & Silva-fortes, 2014). This could probably be attributed to healthcare professionals realizing the importance of quality health services in hospitals by prioritizing patient safety in accordance with

the area of nurse specialization and patient needs. Therefore, the study of patient safety is crucial in an effort to empower hospital staff and help them to work on quality and safety improvement strategies to achieve safer environments. Moreover, this suggests that hospital management could consider implementing strategies aiming to teach and promote supervisor behaviors that encourage the nursing staff to report information regarding safety and participate in safety initiatives.

In the present study, the aspects of communication and about the

Table 3
The relationships between characteristic of participants and dimensions of patient safety.

Characteristic of participants	Dimensions of patients safety						
	Work area/unit	Supervisor/manager	Communications	Frequency of events reported	Patients safety guide	About the hospital	Number of events reported
Length worked at hospital	56.727*	20.012	40.272*	14.395	3.903	22.322	21.268**
Length current worked at unit of hospital	53.694*	32.264**	32.248	12.050	3.608	18.476	13.598
Number time of worked (Hours per weeks)	46.362	21.482	21.447	8.466	2.247	18.145	5.234
Staff position in hospital	41.865	23.534	37.362	22.397	5.190	20.319	6.547
Directly contact with patients in care	17.419	6.918	8.389	3.132	0.410	9.049	6.007
Length worked current speciality in hospital	88.791	2.586	55.469	26.442	2.411	38.868	38.684***

Note: *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

hospital of patient safety culture and the perception of patient health is needing to progress. These results are consistent with those of previous studies, wherein aspects such as "communication openness," "staff handoffs and transitions," and "a number of events reported had scope for further improvement in India (Rajalatchumi et al., 2018). Such an outcome could be attributed to communication barriers within the healthcare team caused by differences in cultures and nationalities. Considering that patient safety is at stake, a systematic approach toward open communication should be considered because the delivery of care by healthcare professionals involves continuous, bidirectional interactions (Ghobashi et al., 2014; Nordin, 2015; Wami, Demssie, Wassie, & Ahmed, 2016). The association between feedback and error communication is most reliable with event reporting (Falco, 2013). Similarly, El-Jardali et al. (2014) have found that the number of reported events filed was significantly associated with composite questions measuring communication openness. Indeed, this highlights the critical role of effective leadership in accepting patient safety culture as a means for assuring patient safety and quality of healthcare provided.

In the present study, 63.53% of the participants responded that they never reported an event of patient safety. This finding was higher than that of a previous study wherein the prevalence of patient safety behavior in the nursing department was reported to be 52.6% (Siddharth et al., 2017) and lower that of another previous study conducted in the Netherlands which was reported as 97.49% (Gaal et al., 2011). This finding is substantiated by Aboshaiqah's (Ghobashi et al., 2014) investigations wherein half of the respondents reported no safety events in > 6 months. This practice of little or no reporting at all by healthcare professionals may be explained via the findings of a recent study on patient safety culture in Jimma Zone Hospitals. Accordingly, healthcare professionals were hesitant to report owing to their perception that their mistakes and reported events would be held against them and that such mistakes would be recorded in their file (Ghobashi et al., 2014). Therefore, patient safety culture should be promoted to prevent mistakes and reduce the incidence of such events for patients in the hospital setting.

4.2. Relationship between patient safety dimensions and participants' background information

The results of the present study interestingly revealed a significant relationship between the period of employment at the hospital and the dimension of patient safety culture (including work area/unit, communication, and a number of events reported). Then, period of employment at the current unit of hospital correlated to the aspects of work area/unit and supervisor/manager. Meanwhile, the period of employment in the current unit in the hospital correlated to the aspect of number of events reported. This finding may be linked to the fact that extensive professional experience is associated with increased probability for high overall patient safety. Experienced staff is probably more familiar with the error reporting system or are more aware of the errors occurring within the unit (Agharahimi, Mostofi, Jafari, & Ahmad, 2012). Prolonged exposure to hospital and patient care procedures must have provided healthcare professionals with more familiarity, awareness, and updated knowledge regarding patient safety and other types of work performed in the workplace (Wami et al., 2016). Regarding communications, work experience was also associated with openness to information dissemination as expressed by nurse participants with > 10 years of hospital exposure (Wami et al., 2016). Nurse managers may enhance patient safety by assessing nurse openness and assigning nurses who have proven to be highly open to communication to duties that make maximum use of such a trait. This highlights the importance of open communication regarding errors and allowing feedback on the effects of implemented intervention or changes.

The present study found a relationship between specialty or profession and the aspect of a number of events reported. This can be attributed to the approaches via which nurses, doctors, and supervisors/

managers manifest different views in certain situations. Healthcare staff may become aware of something that might negatively affect the patients or intervene when individuals in higher positions make decisions or perform in a manner that might negatively affect the patients (Nordin, 2015). On the other hand, the present research has emphasized that several healthcare professionals recede from deliberating or recording adversarial occasions, asking inquiries, or even challenging those with more authority despite the presence of conflicting views (Chen & Li, 2010). Therefore, the patient's safety should be implemented to provide patient care services in a safe environment. Moreover, patient safety culture measurements should consider the interaction between organizational and individual factors, which could provide a better understanding of group dynamics and individual attitudes of patient safety culture.

4.3. Limitations of the study

The present study solely relies on self-reported, perception-based data gathered from currently employed healthcare professionals who participated in the survey. No triangulation of findings was adopted, and the results can only be independently verified by the study. The current findings were purely based on the one-shot survey conducted. Following the given context, we suggest conducting a follow-up study on patient safety using a mixed-method design.

5. Conclusion

There is an affirmative perception of healthcare professionals toward patient safety culture aspects, observed particularly on the dimensions of "work area/unit," "supervision/manager," and "patient safety guide." However, for the dimensions of "communication" and "about the hospital," the perception toward patient safety culture need to progress. A good affirmation to patient safety culture binds 63.53% that there were no reported events in the last 12 months in the hospital. Furthermore, a relationship between the period of employment at the hospital and patient safety dimensions (including work area/unit, communication and number of events reported) was observed. Moreover, period of employment in the current unit in of hospital was associated with the aspects of "works area/unit" and "supervisor/ manager," whereas period of employment in the current specialty in the hospital correlated with the aspect of "number of events reported." The study findings suggest that healthcare professionals in hospitals throughout Hail Region, Kingdom of Saudi Arabia, affirm to practice patient safety culture. However, further studies are required to continuously appraise the significance of healthcare-based quality indicators. Overall, the assessment results suggest a platform for better intervention and transformation procedures targeting the promotion of patient safety culture.

CRediT authorship contribution statement

Farhan Alshammari: Conceptualization, Data curation, Methodology, Writing - original draft, Supervision. **Eddieson Pasayan:** Conceptualization, Data curation, Methodology, Writing - review & editing, Supervision. **Mohammad Alboliteeh:** Conceptualization, Investigation, Methodology. **Mohammed Hamdan Alshammari:** Data curation, Investigation, Resources. **Tantut Susanto:** Project administration, Formal analysis. **Sandro Villareal:** Validation. **Maria Charito Laarni Indonto:** Project administration, Formal analysis. **Ferdinand Gonzales:** Software, Resources.

Declaration of Competing Interest

The authors(s) declare no potential conflicts of interest with respect

to the research, authorship, and/or publication of this article.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ijans.2019.100149.

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