Assessment of Patient Safety Culture in Saudi Hospitals: A Baseline Study in the Eastern Region

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Abstract. Promoting a culture of safety has become one of the pillars of patient safety movement. There is growing international interest in establishing a culture of safety for healthcare quality. The study objective was to conduct a baseline assessment of the patient safety culture in two hospitals in the Eastern Region of Saudi Arabia; to identify general strengths and recognize the areas for patient safety improvements. Cross-sectional design was adopted utilizing the validated *Hospital Survey on Patient Safety Culture* questionnaire released by the Agency for Healthcare Research and Quality. The survey evaluated 12 patient safety culture dimensions, and a total of 726 healthcare staff participated giving a 61% response rate. The overall percentage of positive responses among dimensions of patient safety was 58%. The dimensions that received the highest percentage of positive responses, which was considered strengths, were organizational learning and continuous improvement (79%), and teamwork within units (77%); whereas those with the lowest percentage of positive responses, which considered areas for improvements, were non-punitive response to error (22%) and staffing (31%). Having a strong safety culture is associated with having a committed and supportive leadership, encouraging teamwork within units, adequate staff to handle the workload, proper communication mechanisms, systematic reporting, and a blame free environment.

Keywords: Assessment, Safety Culture, Healthcare Quality, Saudi Arabia.

Introduction

Promoting a culture of safety has become one of the pillars of patient safety. As healthcare organizations make every effort to improve their quality of care and provide their service in an adequate standard, focusing on patient safety has become an international priority[1,2].

Patient safety in health care organizations has received much attention to enhance patient safety culture since the Institute of Medicine (IOM) published the landmark report, "To Err Is Human: Building a Safer Health System"[3]. In fact, establishing a culture of safety for patients has a positive impact on the quality of care, and it has been determined to be a key element of high reliability organizations[4,5].

According to the Agency of Healthcare Research and Quality (AHRQ)[6], patient safety culture refers to the management and the staff values, beliefs, and norms; about what is important in a health care organization, how organization members are expected to behave, what attitudes and actions are considered appropriate and inappropriate, and what processes and procedures are rewarded and punished with regard to patient safety[7].

Assessing the safety culture is a crucial first step in developing an understanding of the hospitals' performance in patient safety. It informs about the perceptions of healthcare staff regarding safety[8]. This allows healthcare management to conduct intervention programs that, if implemented properly, elevate costs and reduce unpredicted risks[9]. Studies have shown that the best way of reducing error rates is to target the underlying systems failures, rather than to take action against individual members of staff[10]. Strong and proactive safety culture is generally thought to have a committed leadership to learn from errors[11]; systematic data collection and reporting; encouraging and practicing teamwork[12], and a blame free environment[13].

In Saudi Arabia, there is a rising concern of medical errors and an increase in media attention to improve quality and safety of healthcare services[14]. Health organizations have started to implement many projects and initiatives to improve safety, especially through certifications, and gaining accreditation from international bodies, such as the Joint Commission International (JCI), the Canadian Council on Health Services Accreditation (CCHSA), and the Australian Council on

Healthcare Standards International (ACHSI). However, patient safety culture is a new field in Saudi hospitals and few efforts have been made to measure the patient safety climate. Thus, the purpose of this study is to evaluate the overall perception of patient safety culture among healthcare professionals as well as to identify the general strengths and areas for patient safety improvements.

Materials and Methods

Study Design and Setting

This cross-sectional study was carried out between February and April 2009. Two general hospitals which have quality and patient safety initiatives, and accredited by the JCI were selected. The two settings varied in their size and location; a large hospital (245-beds) in Al-Hasa City compared with a small hospital (100-beds) in Dammam City; both in the Eastern Region of Saudi Arabia.

Measurement

The instrument used in this study is the *Hospital Survey on Patient Safety Culture* (HSOPSC) developed by the Agency of Healthcare Research and Quality (AHRQ) in 2004[6,8]. It is a valid and reliable instrument developed and used in previous literature to assess the current state of patient safety in hospitals[15]. HSOPSC has been tested on a large sample, and has good supporting documentation[16-19]. It's being increasingly used in the United States[20] and other countries such as Canada, UK, Turkey and Taiwan, and has been translated into different languages[21-23].

This instrument includes 42 items that measures 12 dimensions; seven unit-level aspects of patient safety culture, representing the perception of respondents toward their department or unit, three hospital-level aspects representing perceptions hospital wide, and two outcome variables measuring the overall perception of safety with the frequency of event reporting. In addition, the survey measures two single item outcome questions on patient safety grade and the number of events reported. The questionnaire was kept in its original language (English), as English is the main language of communication in Saudi hospitals.

Items were scored on a 5-point Likert response scale of agreement (strongly disagree, disagree, neither, agree, or strongly agree) and frequency (never, rarely, sometimes, most of the time, or always). Table 1 lists the patient safety dimensions and the number of items for each dimension.

Table 1. Table shows the Patient Safety Culture Dimensions.

Patient Safety Dimension	# of items
Unit-level aspects:	
(1) Supervisor/manager expectations and actions promoting safety	(4 items)
(2) Organizational learning-continuous improvement	(3 items)
(3) Teamwork within units	(4 items)
(4) Communication openness	(3 items)
(5) Feedback and communication about error	(3 items)
(6) Non-punitive response to error	(3 items)
(7) Staffing	(4 items)
Hospital-level aspects:	
(8) Hospital management support for patient safety	(3 items)
(9) Teamwork across units	(4 items)
(10) Hospital handoffs and transitions	(4 items)
Outcome-level aspects:	
(11) Overall perceptions of safety	(4 items)
(12) Frequency of event reporting	(3 items)

Data Collection

The survey targeted all clinical and medical staff (physicians, nurses, technicians, pharmacists and others) that has direct or indirect contact with the patients. Prior to administering the patient safety survey, staff received a formal letter *via* e-mail from the researcher signed by the director of each hospital to inform about the survey and that hospital administration fully supported the inquiry.   Then, the survey was distributed to the staff *via* e-mail with clear instructions for completing and returning the data. Hard copies were also available in each unit to ensure that every staff member had been approached. A short time after the initial distribution of the survey, a letter was sent thanking those who had already participated and reminding others to please respond. The survey was also announced and promoted in each hospital's newsletter, message boards, and flyers were designed and posted throughout the hospital. These methods had a great impact on publicizing the survey and maximizing the response rates.

To ensure privacy of participants, the survey was strictly anonymous. Participants were asked to put their completed questionnaire in a sealed

envelope. The envelopes were then collected by the researcher or sent directly to the researcher's office by internal mail. Formal consent to conduct the survey was granted by the management board of each hospital.

Data Analysis

Data were analyzed using the Statistical Package for Social Sciences, version 16 (SPSS, v16.0). Descriptive statistics were calculated for demographic data. Dimension scores were expressed in an average percentage of the positive responses towards patient safety. These were calculated by summing the positive score for each item and dividing them by the number of items of the same dimension. The positive response is defined by the percentage of respondents answering the questions by checking (strongly agree, agree; or always, most of the time) to a positively worded item, or by checking (strongly disagree, disagree; or rarely, never) to a negatively worded item. The scores of negatively worded items were reversed when computing positive percent.

The percentage of positive responses in the large and small hospitals on each of the 12 dimensions was calculated and examined for significant differences using Chi-squared (χ^2) test. A Chi-squared (χ^2) test was also used to compare the two hospitals on the two single item outcome measures; patient safety grade and number of events reported. P value of less than .05 was considered significant.

Multiple regression analysis was used to examine the impact of the unit-level and hospital-level dimensions on the outcome dimension "Overall perception of patient safety". Benchmarking was conducted by comparing the results with AHRQ comparative database from USA hospitals[24].

Results

A total of 726 respondents from the two hospitals had successfully completed the questionnaire, giving an overall response rate of 61%. Background characteristics of the study participants are shown in (Table 2). The majority (39%) of respondents were nurses. Most respondents (47%) were between 25-34 years old and had 1-3 years (30%) of experience. Sixty-one percent (61%) of the participants were female and (82%) had direct contact with patients.

The two hospitals had approximately the same average of positive responses across all 12 (58%) patient safety culture dimensions. The average percentage of positive responses in each dimension ranged from 80% to 20% in the large hospital (245-beds), and 78% to 24% in the small hospital (100-beds). However, as shown in (Table 3), the variation was not statistically significant ($p < 0.05$).

Table 2. Table shows the background characteristics of study respondents.

Demographic features	Hospital (A) 100 – bed size (n = 209)		Hospital (B) 245 – bed size (n = 517)		Overall (n = 726)
	n	**%**	**n**	**%**	**%**
Participants/Staff position					
Physicians	28	13%	49	10%	11%
Nurses	75	36%	209	40%	39%
Technicians	43	21%	61	12%	14%
Others	63	30%	198	38%	36%
Age (years)					
≤ 24	62	30%	151	29%	29%
25 - 34	85	40%	254	49%	47%
35- 44	52	25%	81	16%	18%
≥ 45	10	5%	31	6%	6%
Gender					
Male	65	31%	217	42%	39%
Female	144	69%	300	58%	61%
Interaction with patients					
Direct	186	89%	408	79%	82%
Indirect	23	11%	109	21%	18%
Work experience (years)					
< 1	23	11%	56	11%	11%
1 - 3	57	27%	164	32%	30%
4 – 6	62	30%	128	25%	26%
7 - 9	36	17%	86	16%	17%
≥ 10	31	15%	83	16%	16%

Table 3. Table shows the average percentage of positive responses to patient safety culture survey by each dimension.

Patient Safety Dimensions	Hospital (A) 100 beds n = 209	Hospital (B) 245beds n = 517	χ^2	p Value
Unit-level aspects:				
(1) Supervisor/manager expectations and actions promoting safety	140 (67%)	341 (66%)	0.07	.790
(2) Organizational learning-continuous improvement	163 (78%)	414 (80%)	0.40	.528
(3) Teamwork within units	156 (74%)	408 (79%)	1.57	.210
(4) Communication openness	104 (50%)	264 (51%)	0.10	.750
(5) Feedback and communication about error	144 (69%)	372 (72%)	0.68	.411
(6) Non-punitive response to error	50 (24%)	103 (20%)	1.43	.231

Table 3. *(Continuation)* **Table shows the average percentage of positive responses to patient safety culture survey by each dimension.**

Patient Safety Dimensions	Hospital (A) 100 beds n = 209	Hospital (B) 245beds n = 517	χ^2	p Value
(7) Staffing	69 (33%)	150 (29%)	1.13	.287
Hospital-level aspects: (8) Hospital management support for patient safety	157 (75%)	362 (70%)	1.90	.168
(9) Teamwork across hospital units	125 (60%)	305 (59%)	0.04	.839
(10) Hospital handoffs and transitions	115 (55%)	243 (47%)	3.83	.050
Outcome variables: (11) Overall perceptions of patient safety	117 (56%)	300 (58%)	0.25	.613
(12) Frequency of event reporting	113 (54%)	310 (60%)	2.13	.144
Average across dimensions	**58%**	**58%**	**0.00**	**.973**

Figure 1 exhibits the percent of respondents in the large and small hospitals who graded patient safety in their work area/unit as excellent/very good, acceptable, and poor/failing. Although there were slight differences between them, they were not significant at 5% level. Figure 2 displays the percentages of reporting the errors; more than 60% of the respondents in both hospitals, indicated that no events were reported in the last three months (67% in the large hospital and 61% in the small hospital) with any significant difference between them.
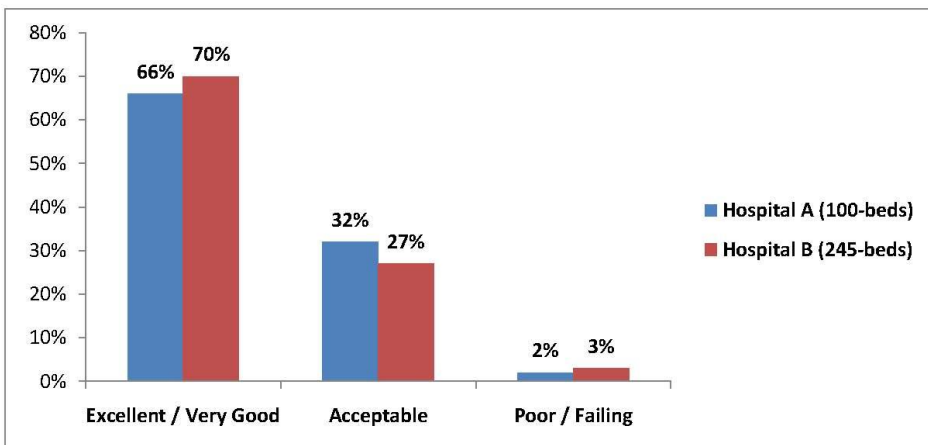

Fig. 1. Percentage of respondents giving their area/unit a patient safety grade.
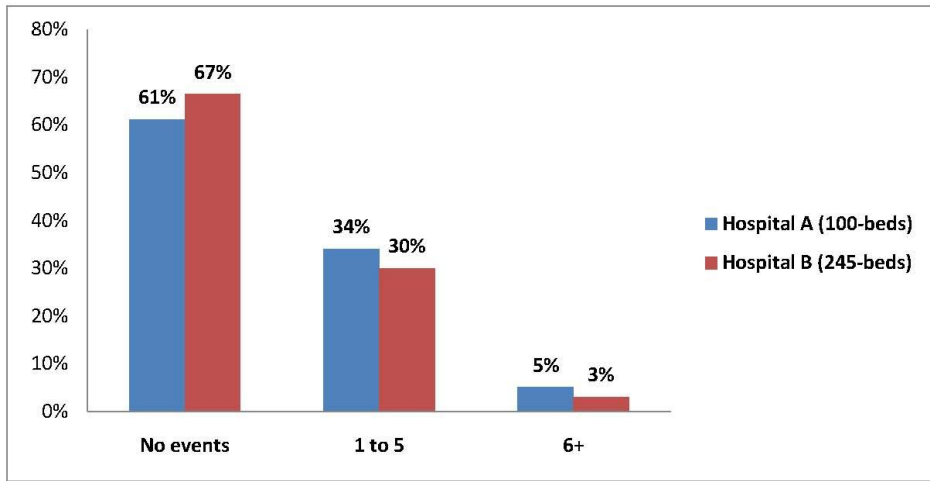
Fig. 2.   Percentage of respondents reporting events in the past 3 months.

Results of the multiple regression analysis, as shown in Table 4, indicates that the most significant factors that influence the overall perception of patient safety are manager expectations and actions promoting safety, teamwork within units, staffing, hospital management support for patient safety, and hospital handoffs and transitions. The model explained 21% of the variance in overall patient safety as measured by the adjusted R^2.   Further investigations are highly recommended to identify other factors that may have great impact on the overall perception of patient safety.

Table 4.   Shows the Multiple Regression Model.

Patient Safety Dimensions (*Predictor Variables*)	B Coefficient	SE	*t*	p Value
Constant	4.128	.724	5.70	.000
(1) Supervisor/manager expectations and actions promoting safety	.102	.037	2.73	.006
(2) Organizational learning-continuous improvement	.063	.059	1.07	.285
(3) Teamwork within units	.134	.038	3.53	.000
(4) Communication openness	.031	.046	0.68	.497
(5) Feedback and communication about error	.044	.048	0.91	.362
(6) Non-punitive response to error	.066	.038	1.73	.084
(7) Staffing	.103	.035	2.91	.004

Table 4. *(Continuation)* **Shows the Multiple Regression Model.**

Patient Safety Dimensions (predictor variables)	B Coefficient	SE	t	p Value
(8) Hospital management support for patient safety	.181	.046	3.90	.000
(9) Teamwork across hospital units	-.033	.041	-0.81	.418
(10) Hospital handoffs and transitions	.098	.034	2.89	.004

- *Dependent variable: "Overall perceptions of patient safety"*
- *Adjusted R^2 = 0.216, R = 0.47, F = 21, p < 0.001*

Discussion

The safety culture dimensions with the highest and lowest positive scores were the same in the large and the small hospitals. Dimensions with positive percentage of 75% or more and 50% or less are considered strength and areas for improvement, respectively[25].

Table 3 shows that the highest positive percentage dimensions were organizational learning and continuous improvement (79%) plus teamwork within units (77%). This indicates that both hospitals have a learning culture, which mistakes lead to positive changes; and changes are evaluated for their effectiveness. Moreover, most respondents feel supportive and respected in their work place and coordinate with their co-workers. The dimension of hospital management support for patient safety was slightly close to our cutoff point (75%); which means that the hospitals management considered patient safety as a top priority and strives to create a work environment that promotes safety. Several studies emphasized that effective leadership has a high impact in building a strong and proactive safety culture[25].

The lowest positive percentage dimensions were non-punitive response to error (22%) and staffing (31%). This may be attributed to the continuous blame of staff that are already under pressure and have high workloads. As known from the literature; medical staff in under-staffed hospitals are often faced with stress, anxiety and depression that cause an increase in risk incidents[26]. Therefore, strategies to improve working conditions are required to assist healthcare professionals in avoiding errors and ensuring patient safety. According to the Institute of Medicine, "the biggest challenge to moving toward a safer health system is changing the culture from one of blaming individuals for errors to one in which errors are treated not as personal failures, but as opportunities to

improve the system and prevent harm"[27].   Unfortunately, most respondents, in this study, have a punitive response to error; they feel that their mistakes are held against them and kept in their personnel file. This may be due to culture fear or stigma that affects their perceptions. Developing an open communication atmosphere for reporting events with a blame-free environment and implementing a well-established reporting system, which easily tackles mistakes and errors, will definitely improve the patient safety culture.

The National Patient Safety Agency implemented a circle of safety that points out on reporting an important aspect toward safer healthcare for patients[28] (Fig. 3).   Once events are reported, analysis, finding solutions, and proper implementation of the solution are naturally the next steps.   Without reporting of events, there is no opportunity in understanding of their consequences and taking wise action for preventing them in the future.
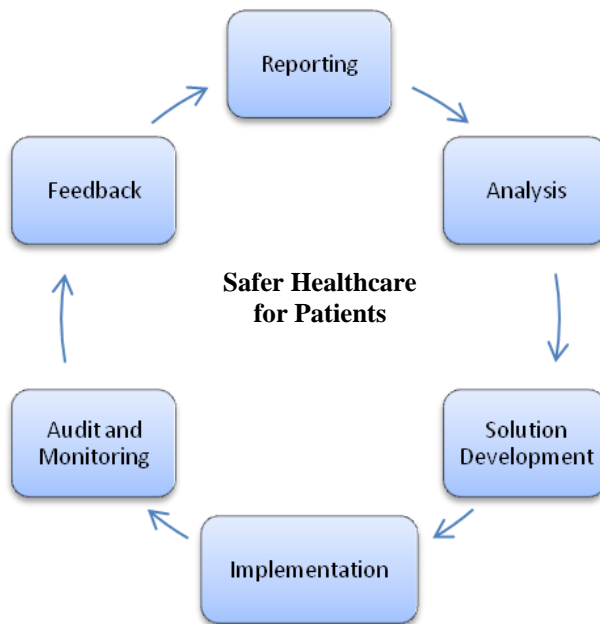
Fig. 3. Circle of Safety from the National Patient Safety Agency.

Results of this study were compared with AHRQ comparative database for USA hospitals. The overall positive percentages of patient safety culture, shown in Fig. 4, were lower in KSA hospitals than those

for USA. However, some dimensions scored higher (organizational learning-continuous improvement, hospital handoffs and transitions and feedback and communication about error), almost equal (teamwork across hospital units and hospital, management support for patient safety , and teamwork within units), and lower (non-punitive response to error, communication openness, staffing, overall perceptions of patient safety, frequency of event reporting, and supervisor/manager expectations and actions promoting safety). Saudi hospitals must improve their patient safety culture in the specific areas where scores were lower than the benchmarks.
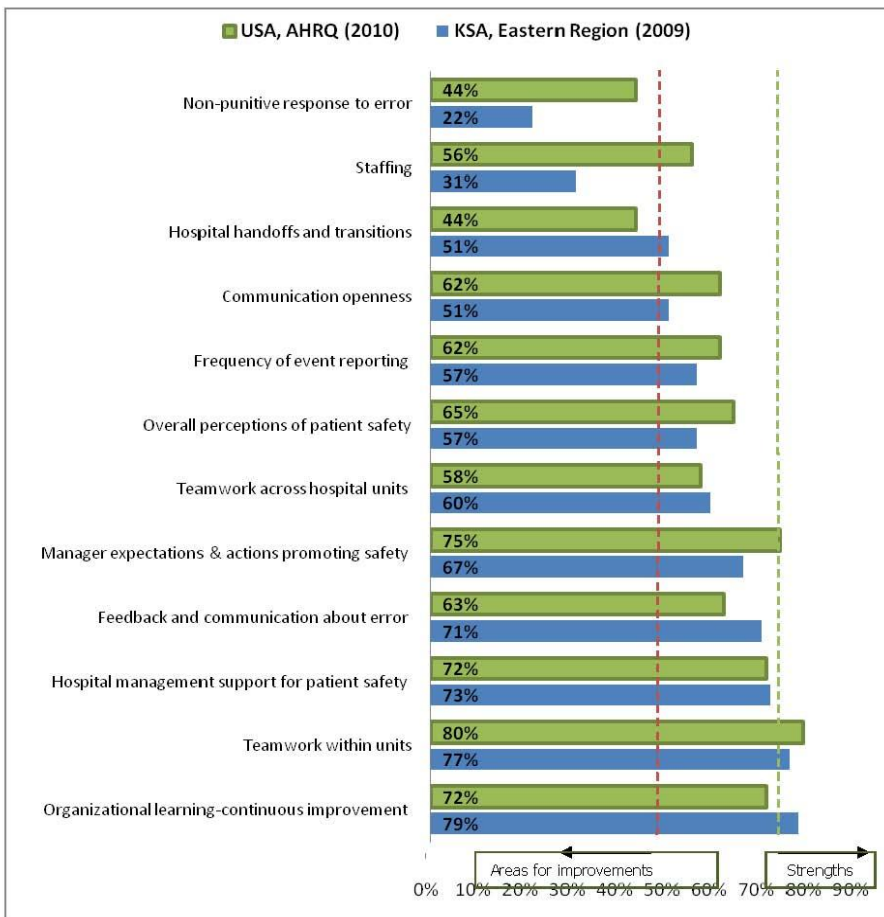

Fig. 4.   Benchmarking the average percentage of positive responses of KSA hospitals with the comparative database of USA hospitals conducted by AHRQ.

This quantitative survey is only one method to assess patient safety culture. Qualitative approaches as observation, focus groups and interviews can provide more in depth understanding. Methodological approaches as medical records review, use of patient safety indicators, trigger tools to identify patient harm, and data from event reporting systems can also be used to identify patient safety defects[7].

Limitations

This study provides an overall assessment of perceptions of safety among healthcare staff in two general hospitals which may not represent all hospitals in Saudi Arabia. Therefore, expanding the scale of the survey in KSA to cover more geographical areas, different types of hospitals and healthcare providers are necessary for future research.

Conclusion

Currently, there is a major effort to improve the quality of care by starting with the current state assessment of patients' safety culture. This study is the first study to assess the patient safety culture of hospitals in the Eastern Region of KSA. It highlighted the important information on several patient safety issues and the areas for improvements. It also assessed the different patient safety dimensions at both, the unit and hospital levels. Additionally, it raised staff awareness and guided policy makers, managers and leaders to implement proper safety improvement interventions. These results can be used as a baseline for patient safety, track culture change over time, and conduct benchmark reports with other local as well as international hospitals.

Acknowledgments

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تقييم ثقافة سلامة المرضى في المستشفيات السعودية : دراسة أساسية في المنطقة الشرقية

دعاء إبراهيم الجبري

قسم إدارة الجودة والأنظمة الصحية

كلية الصحة العامة والمعلوماتية الصحية

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المستخلص. أصبح تعزيز ثقافة السلامة واحدا من أهم أعمدة سلامة المرضى. ويتزايد الاهتمام الدولي في إرساء ثقافة السلامة في مجال جودة الرعاية الصحية. الهدف من هذه الدراسة هو إجراء تقييم أساسي لثقافة سلامة المرضى بشكل عام في اثنين من المستشفيات العامة في المنطقة الشرقية من المملكة العربية السعودية وتحديد نقاط القوة العامة ومجالات التحسين. اعتمدت الدراسة على تصميم البحث المستعرض والاستفادة من استبيانات المستشفى المعتمدة حول سلامة المرضى الصادرة عن وكالة أبحاث الرعاية الصحية والجودة. يقيم الاستبيان ١٢ بعداً من أبعاد ثقافة سلامة المريض وشارك ما مجموعه ٧٢٦ من موظفي الرعاية الصحية في الدراسة مع معدل استجابة بلغ ٦١٪. بلغت النسبة الإجمالية من ردود الفعل الإيجابية بين أبعاد سلامة المرضى ٥٨٪. وكانت الأبعاد التي حصلت على أعلى نسبة من ردود الفعل الإيجابية، والتي تعتبر نقاط قوة تتمثل في التعلم التنظيمي والتحسين المستمر (٧٩٪) والعمل الجماعي ضمن الوحدات (٧٧٪). بينما كانت أدنى نسبة من ردود الفعل الإيجابية،

والتي تقع ضمن مجال التحسين، الاستجابة غير العقابية على خطأ (٢٢٪) والموظفين (٣١٪). إن وجود ثقافة قوية للسلامة يرتبط مع وجود قيادة ملتزمة وداعمة، وتشجيع العمل الجماعي داخل الوحدات، إضافة إلى وجود العدد الكافي من الموظفين للتعامل مع عبء العمل، وآليات التواصل السليم، وتقديم التقارير المنتظمة وبيئة خالية من اللوم.