Assessment of patient safety culture in Palestinian public hospitals

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Abstract

Objective. To assess the prevalent patient safety culture in Palestinian public hospitals.

Design. A cross-sectional design, Arabic translated version of the Hospital Survey on Patient Safety Culture was used.

Setting. All the 11 general public hospitals in the West Bank.

Participants. A total of 1460 clinical and non-clinical hospital staff.

Intervention(s). No.

Main Outcome Measures. Twelve patient safety culture composites and 2 outcome variables (patient safety grade and events reported in the past year) were measured.

Results. Most of the participants were nurses and physicians (69.2%) with direct contact with patients (92%), mainly employed in medical/surgical units (55.1%). The patient safety composites with the highest positive scores were teamwork within units (71%), organizational learning and continuous improvement (62%) and supervisor/manager expectations and actions promoting patient safety (56%). The composites with the lowest scores were non-punitive response to error (17%), frequency of events reported (35%), communication openness (36%), hospital management support for patient safety (37%) and staffing (38%). Although 53.2% of the respondents did not report any event in the past year, 63.5% rated patient safety level as 'excellent/very good'. Significant differences in patient safety scores and outcome variables were found between hospitals of different size and in relation to staff positions and work hours.

Conclusions. This study highlights the existence of a punitive and blame culture, under-reporting of events, lack of communication openness and inadequate management support that are key challenges for patient safe hospital care. The baseline survey results are valuable for designing and implementing the patient safety program and for measuring future progress.

Keywords: patient safety culture, public hospitals, Palestine

Introduction

Patient safety is defined by the Institute of Medicine (IOM) as 'the freedom from accidental injury due to medical care or medical errors' [1]. The issue has received significant attention following the release of the renowned report from the IOM, 'To Err is Human: Building a Safer Health System' [1]. The main message in the report was that preventing death and injury from medical errors requires dramatic and system-wide changes [2].

Developing a positive patient safety culture is a crucial element in the improvement of patient safety in health-care organization [3, 4]. Achieving a culture of patient safety requires an understanding of the values, beliefs and norms about what is important in an organization and what attitudes and behaviors

related to patient safety are supported, rewarded and expected [5]. The assessment of the prevalent culture is a first step that should precede designing patient safety programs in hospitals [6].

The Agency for Healthcare Research and Quality developed an extremely useful tool to assess health-care organization culture regarding patient safety, the Hospital Survey on Patient Safety Culture (HSOPSC) [7]. This tool has been widely used in different health-care settings in many countries; few of these studies were from the region [8, 9].

In Palestine, health sector development is occurring in a unique political and socioeconomic context [10]. Public health-care services have considerably evolved following the establishment of the Palestinian Authority and the handover

of public services to the Palestinians in 1994. The international community is contributing significantly to health sector capacity building, yet the stalled peace process and the fragile political situations remain the major challenges [11]. The Ministry of Health (MoH) has become the main provider of health services including hospital care [12]. Nevertheless, it is believed that emphasis on the physical capacity and quantity preceded the quality and safety of health-care services.

Recently, there has been a growing attention to improve quality and safety of services provided in hospitals. The issue became one among the key strategic areas included in the last national health strategy [13]. In relation to this, the MoH recently joined the World Health Organization's (WHO) Patient Safety Friendly Hospital Initiative [14]. This program requires periodic assessment of safety culture at participating hospitals. Despite these developments, there is still a lack of research evidence on the patient safety in general and on the status of patient safety culture in hospitals in particular. The aim of this study is to assess the prevalent patient safety culture in Palestinian public hospitals and to identify strengths and areas for potential improvement. The study also looks into some hospital and respondents characteristics that might have influence on patient safety culture at the public hospitals.

Methods

Study setting and design

All the 11 general public hospitals in the West Bank run by the MoH participated in the study. Only one specialty (psychiatry) public hospital was excluded to ensure similarity among participants. None of the hospitals possessed an external accreditation; two of them had just embarked on the WHO patient safety initiative [14]. They had 1187 beds in total, and their size ranged from 30 to 216 beds [12].

A cross-sectional quantitative design was adopted. The study used an Arabic translated version of the HSOPSC [7]. Data were collected in the period between July and August 2011.

Participants

The study targeted all the clinical and non-clinical hospitals staff with direct contact with patients, including physicians and nurses, staff without direct contact with patients, but whose work directly affects patient care, including paramedical and support services, as well as hospital managers and supervisors. A self-administered questionnaire (HSOPSC) was distributed to the entire target group estimated as 2852 out of a total of 3229 hospital personnel [12].

The researchers obtained ethical approval to carry out the assessment from the MoH. Participation was anonymous, voluntarily and confidential, and participants were informed about the purpose of the study.

Study tool

Psychometric evaluation of the Arabic translation of the American HSOPSC version in Palestine (Sh Najjar *et al.*,

submitted) showed that the HSOPSC is a valid and reliable instrument for assessing the safety culture in the Arabic speaking hospital settings. In this study, the internal consistency of the instrument was measured using the Cronbach's coefficient Alpha (α). The highest value (0.86) was for the frequency of reported events, and the lowest value (0.38) was for the communication openness (Table 1). Two composites were below the HSOPSC user's guide acceptable level of $\alpha \geq 0.6$ [7].

Analysis of survey composite scores

The HSOPSC is composed of 42 items that measure 12 patient safety culture composites (Table 1). It included both positively and negatively worded items. Items were scored on a five-point frequency scale. The percentage of positive responses for each item and composites were calculated. Negatively worded items were reversed when computing percentage-positive response rates. Moreover, composite-level scores were computed by summation of the items within the composite scales and dividing by the number of items.

We followed the HSOPSC User's Guide [7] for data analysis to allow for benchmarking the results. Positive responses in positively worded survey items were 'agree/strongly agree' or 'most of the time/always'. Positive responses in negatively worded items were 'disagree/strongly disagree' or 'never/rarely'. Hence, areas of strength was defined as those items that received 75% of respondents' positive answers or when about 75% of respondents disagreed with reverse-worded item. Whereas areas identified as potential for improvement are the items that about 50% or more of respondents answered negatively using 'disagree/strongly disagree' or 'never/rarely', when 50% of respondents disagreed with reverse-worded items. The results were presented in descending order in relation to the percentage of positive responses received (Table 1). In addition to that, the survey included two single-item responses outcome measures regarding the overall patient safety grade ('excellent' to 'failing') and the number of events reported in the last year.

Data analysis

Descriptive statistics were computed to summarize respondent characteristics. Analysis of variance was used to examine differences in patient safety culture composites across hospital size, respondents' work area and positions. Chi-square tests were used to assess the relationship between patient safety outcome measures and selected hospital and respondents characteristics. Finally, general linear model univariate analysis was performed to examine the effect of different hospitals and respondent characteristics on the patient safety score. The model used an aggregate patient safety score (summation of patient safety composite scores) as the dependent variable and hospital size, work area/unit, contact with patients, professional experience and working hours per week as principal independent variables.

Data were analyzed using the Microsoft Excel and SPSS 16.0. A level of $P \leq 0.05$ was considered to represent statistical significance.

Table 1 Survey composites and items positive scores and Cronbach's α

Composites and survey items	Average percentage-positive response
Teamwork within units (Cronbach's $\alpha = 0.77$)	71
People support one another in this unit	76
When a lot of work needs to be done quickly, we work together as a team to get the work done	72
In this unit, people treat each other with respect	70
When one area in this unit gets really busy, others help out	67
Organizational learning—continuous improvement (Cronbach's $\alpha = 0.79$)	62
We are actively doing things to improve patient safety	83
Mistakes have led to positive changes here	56
After we make changes to improve patient safety, we evaluate their effectiveness	56
Supervisor/manager expectations and actions promoting patient safety (Cronbach's $\alpha = 0.76$)	56
Manager says a good word when he/she sees a job done according to established patient safety procedures	54
Manager seriously considers staff suggestions for improving patient safety	56
Whenever pressure builds up, my manager wants us to work faster, even if it means taking shortcuts (R)	45
My manager overlooks patient safety problems that happen over and over (R)	69
Hospital handoffs and transitions (Cronbach's $\alpha = 0.72$)	48
Things 'fall between the cracks' when transferring patients from one unit to another (R)	46
Important patient care information is often lost during shift changes (R)	60
Problems often occur in the exchange of information across hospital units (R)	35
Shift changes are problematic for patients in this hospital (R)	53
Feedback and communication about error (Cronbach's $\alpha = 0.69$)	46
We are given feedback about changes put into place based on event reports	30
We are informed about errors that happen in this unit	52
In this unit, we discuss ways to prevent errors from happening again	56
Teamwork across hospital units (Cronbach's $\alpha = 0.61$)	44
There is good cooperation among hospital units that need to work together	50
Hospital units work well together to provide the best care for patients (R)	53
Hospital units do not coordinate well with each other (R)	38
It is often unpleasant to work with staff from other hospital units	37
Overall perceptions of safety (Cronbach's $\alpha = 0.67$)	43
Patient safety is never sacrificed to get more work done	59
Our procedures and systems are good at preventing errors from happening	44
It is just by chance that more serious mistakes do not happen around here	38
We have patient safety problems in this unit (R)	31
Staffing (Cronbach's $\alpha = 0.62$)	38
We have enough staff to handle the workload	18
Staff in this unit work longer hours than is best for patient care	81
We use more agency/temporary staff than is best for patient care	37
We work in 'crisis mode' trying to do too much, too quickly (R)	18
Hospital management support for patient safety (Cronbach's $\alpha = 0.76$)	37
Hospital management provides a work climate that promotes patient safety	35
The actions of hospital management show that patient safety is a top priority	47
Hospital management seems interested in patient safety only after an adverse event happens	29
Communication openness (Cronbach's $\alpha = 0.38$)	36
Staff will freely speak up, if they see something that may negatively affect patient care	48
Staff feel free to question the decisions or actions of those with more authority	29

(continued)

Table 1 Continued

Composites and survey items	Average percentage-positive response
Staff are afraid to ask questions when something does not seem right (R)	32
Frequency of events reported (Cronbach's $\alpha = 0.86$)	35
When a mistake is made, but is caught and corrected before affecting the patient, how often is this reported?	35
When a mistake is made, but has no potential to harm the patient, how often is this reported?	33
When a mistake is made that could harm the patient, but does not, how often is this reported?	37
Non-punitive response to error (Cronbach's $\alpha = 0.57$)	17
Staff feel like their mistakes are held against them (R)	15
When an event is reported, it feels like the person is being written up, not the problem (R)	23
Staff worry that mistakes they make are kept in their personnel file (R)	12

R, negatively worded items that were reverse coded.

Results

Response rate

Of the 2852 surveys distributed, 1460 were returned. Out of these, 52 surveys were disqualified as either one entire section was not completed, fewer than half of the items throughout the entire survey were completed or all items were given the same answer. The overall response rate was 51.2%; for physicians 46.5%, nurses and midwives 50.6%, pharmacists 100%, other health professionals 44.4% and administrative and support staff 49%.

Respondent characteristics

The descriptive statistics for the study respondents are provided in Table 2. In terms of hospital size, 31.3% of the participants were employed in small-, 28.6% medium- and 40.1% in large-sized hospitals. Most of them work in medical (33.2%) and surgical (21.9%) units. Nurses/midwives and physicians formed most of the participants (69.2%). The majority have more than 1 year experience in the profession (93.3%) or at the hospital (92.5%). About 50% work more than the regular working hours per week (40 h), and 14.7% work more than 60 h per week.

Patient safety culture composite scores

The survey of safety culture composite scores with two regional comparisons [8, 9] and results from the USA [5] are provided in Fig. 1. The safety culture composites with the highest positive scores were teamwork within units (71%), organizational learning and continuous improvement (62%) and manager expectations and actions promoting patient safety (56%). However, none of these three dimensions reached the threshold of 75% positive score to be an area of

strength. The remaining nine survey dimensions were negatively scored as areas for potential improvement. The lowest scores were non-punitive response to error (17%), frequency of events reported (35%), communication openness (36%), hospital management support for patient safety (37%) and staffing (38%).

Outcome measures

Overall, patient safety grade was rated as 'excellent or very good' by 63.5% of the respondents, 'acceptable' by 27% and 'poor or failing' by 9.5%. About 53.2% of the respondents reported that they had not reported any event in the past 12 months, 22% reported one to two events, 12.7% reported three to five events and 12.2% reported more than five events.

Means for composite scores across hospital size, unit and staff positions

The differences in patient safety culture composites across hospital size, respondents' work area and positions were examined. The results showed that hospitals size and influence on patient safety were significant only in four patient safety culture composites: supervisor/manager expectations and actions promoting patient safety ($P = 0.001$), feedback and communication about error ($P = 0.015$), frequency of reported events ($P = 0.048$) and handoffs and transitions ($P = 0.016$), in favor of larger hospitals. Hospital work area/ units effect was found significant ($P < 0.05$) in all composites, expect for communication openness and teamwork across units ($P > 0.05$) and mostly in favor of pharmacy units.

In relation to staff positions, except for supervisor/ manager expectation, communication openness, teamwork across units, frequency of reported events and overall perception of patient safety, significant differences ($P < 0.05$) were

Table 2 Characteristics of the participants

	n	%
Hospital size		
Small (less than 60 beds)	441	31.3
Medium (60–150 beds)	403	28.6
Large (more than 150 beds)	564	40.1
Hospital work area/unit		
Medical	468	33.2
Surgical (including operation room, anesthesia)	309	21.9
Administrative/support	148	10.5
Diagnostics (laboratory, radiology)	143	10.2
Emergency	104	7.4
Different units	93	6.6
Intensive care (different types)	93	6.6
Pharmacy	50	3.6
Staff positions		
Nurses/midwives	693	49.2
Physicians	282	20.0
Other health professionals	170	12.1
Administration /management	120	8.5
Support services	91	6.5
Pharmacists	52	3.7
Interaction/contact with patients		
Yes, have direct patient interaction	1292	92.0
No, do not have direct interaction	116	8.0
Experience at hospital		
Less than 1 year	106	7.5
1–5 years	594	42.2
6–10 years	304	21.6
11–15 years	203	14.4
16–20 years	91	6.5
21 years or more	110	7.8
Experience in profession		
Less than 1 year	94	6.7
1–5 years	310	22.0
6–10 years	188	13.4
11–15 years	95	6.7
16–20 years	100	7.1
21 years or more	621	44.1
Work hours per week		
Less than 20 h	18	1.3
20–39 h	685	48.7
40–59 h	498	35.4
60–79 h	103	7.3
80 h or more	104	7.4

found in all patient safety means for composite scores. Pharmacists were the most positive staff group toward patient safety.

Safety outcome across hospital and respondent characteristics

Patient safety grade and number of events reported in the past 12 months were cross-tabled by hospital size, staff categories and experience at hospital (Table 3). Participants from larger hospitals (more than 150 beds) were less likely to report an 'excellent/very good' patient safety grade (58.5%) and more likely to report a 'poor or failing' grade (11.5%) ($P = 0.007$). Pharmacists were the most positive toward the patient safety level, and 80.8% gave their hospital 'excellent/ very good' patient safety grade with only 1.9% giving 'poor or failing'. Physicians were the least positive, 48.4% gave 'excellent/very good' and 13.6% gave 'poor or failing' safety grade ($P = 0.001$). Meanwhile, no significant difference was found in patient safety grade in relation to the experience of staff at hospital ($P = 0.17$).

With regard to number of events reported, 53.2% of the respondents said that they had not reported any events in the past 12 months. Participants from larger hospitals were less likely to report no events (49.1%) and more likely to report more than two events in the past year (26.7%) ($P = 0.001$). Managers/administrators followed by physicians were the most likely groups to report events, respectively, and 45.9 and 48.2% had not reported any events in the past year. Pharmacists followed by nurses were the least likely to report events, where 74.0 and 55.7%, respectively, had not reported any events in the past year ($P = 0.001$). Finally, staff with less than 1 year experience were the most to report no events in the past year (61.0%), and, generally, the number of events reported increased in relation to staff experience ($P < 0.001$).

Patient safety culture aggregate scores

The regression analyses revealed that medium-sized hospitals (60–150 beds) had significantly higher aggregate patient safety score ($B = 113.554$, $SE = 35.168$ and $P = 0.001$) than small-sized hospitals (Table 4). Those respondents with direct contact/interaction with patients had a significantly higher score ($B = 82.324$, $SE = 35.741$ and $P = 0.021$). All the respondents working 40 or more hours per week were found to have a significantly higher patient safety score than those working on a part-time basis (less than 40 h) (see Table 4). In addition, a significantly higher patient safety score was observed for those working in medical ($B = 98.128$, $SE = 47.983$ and $P = 0.041$) surgical ($B = 122.188$, $SE = 51.801$ and $P = 0.019$), emergency ($B = 44.108$, $SE = 20.755$ and $P = 0.034$) and administrative/support units ($B = 169.903$, $SE = 37.827$ and $P < 0.001$) in comparison with those working in other units. The model explained 5.7% of the variation in the aggregate patient safety score as explained by the adjusted overall R^2 (0.057).

Discussion

This is the first study tackling the issue of patient safety culture in Palestinian public hospitals. It is of importance as it comes at a time when the MoH is working to improve the quality of hospital care and patient safety. Besides contributing to the design and implementation of the program, the results provide a baseline for future culture assessments.
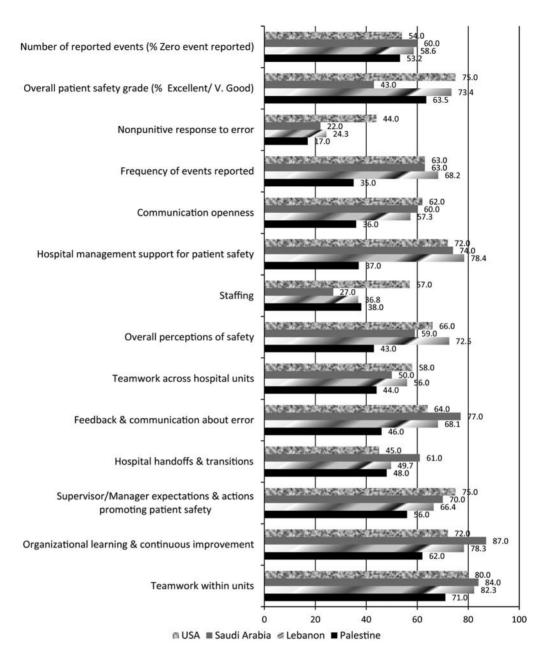
Figure I Comparison of composite-level average percentage-positive scores and safety outcome of the participating hospitals with regional (Lebanon and Saudi) and US study results [5, 8, 9].

However, this study has two limitations. First, although the overall response rate was 51.2%, participation of allied health professions, e.g. technicians and therapists, reached only 44%. Second, comparably lower Cronbach's α values for the composite scores measuring the communication openness ($\alpha = 0.38$) and non-punitive response to error ($\alpha = 0.57$) were observed. It is worth indicating that low values (<0.6) of Cronbach's α for the same composite scores were also reported in the Lebanese study that used an Arabic translation of the HSOPSC [8]. In further use, the translation of the tool needs to be improved.

Keeping in mind the exceptional political and instable economic conditions of the country and the Palestinian

health-care system [10, 11], results were compared with 2 similar studies from the region; a Lebanese study conducted in 68 private hospitals with 6807 participants [8] and a Saudi Arabia study conducted in 13 public and private hospitals with 223 participants [9]. The results were also compared with a 2011 study [5] conducted in 1032 hospitals in the USA. Whereas in all studies, the composite scores of teamwork within unit and organizational learning-continuous improvement were the highest, non-punitive response to error and staffing composites scores were among the lowest (see Fig. 1). Event reporting was a common concern, where those who reported no events in the past 12 months were 43% in Saudi Arabia, 53.2% in Palestine, 58.6% in Lebanon

Table 3 Patient safety outcome variables by selected hospital and respondent characteristics

| | Patient safety grade | | | | | | Events reported in the past 12 months | | | | | | | |
| | Excellent/ very good | | Acceptable | | Poor/ failing | | No events | | 1–2 events | | 3–5 events | | +5 events | |
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Hospital size (beds)														
Small (>60)	286	65.4	108	24.7	43	9.8	229	53.6	93	21.8	63	14.8	42	9.8
Medium (60–150)	274	68.5	101	25.2	25	6.2	232	58.4	75	18.9	53	13.4	37	9.3
Large (>150)	325	58.5	167	30.0	64	11.5	272	49.1	134	24.2	59	10.6	89	16.1
Chi-square = 14.145, P-value = 0.007							Chi-square = 21.611, P-value = 0.001							
Staff categories														
Nurses	462	67.2	169	24.6	56	8.2	381	55.7	154	22.5	90	13.2	59	8.6
Physicians	135	48.4	106	38.0	38	13.6	134	48.2	59	21.2	36	12.9	49	17.6
Pharmacist	42	80.8	9	17.3	1	1.9	37	74.0	10	20.0	2	4.0	1	2.0
Other health professionals	101	59.4	46	27.1	23	13.5	84	50.0	37	22.0	20	11.9	27	16.1
Administration/management	80	69.0	29	25.0	7	6.0	51	45.9	28	25.2	17	15.3	15	13.5
Support services	65	73.0	17	19.1	7	7.9	46	52.9	14	16.1	10	11.5	17	19.5
Chi-square = 48.353, P-value < 0.001							Chi-square = 37.862, P-value < 0.001							
Experience at hospital														
Less than 1 year	59	55.7	32	30.2	15	14.2	64	61.0	23	21.9	6	5.7	12	11.4
1–5 years	374	63.6	151	25.7	63	10.7	328	56.0	122	20.8	73	12.5	63	10.8
6–10 years	201	66.3	81	26.7	21	6.9	160	54.8	69	23.6	39	13.4	24	8.2
11–15 years	121	61.1	54	27.3	23	11.6	85	42.5	47	23.5	25	12.5	43	21.5
16–20 years	57	64.0	26	29.2	6	6.7	44	48.9	23	25.6	9	10.0	14	15.6
21 years or more	73	67.0	32	29.4	4	3.7	52	49.5	18	17.1	23	21.9	12	11.4
Chi-square = 13.982, P-value = 0.174							Chi-square = 41.253, P-value < 0.001							

and 54% in the USA study, respectively. The overall patient safety grade in Palestine (63.5%) was higher than Saudi Arabia (60%), but lower than Lebanon (73.4%) and the USA (75%). However, the role of management in patient safety in Palestinian hospitals represented by the hospital management support to patient safety (37%) and the management expectations and actions promoting patient safety (56%) dimensions were considerably lower than the other three studies (see Fig. 1). Leadership commitment to patient safety as a priority is crucial, and leadership support in providing expertise, training and necessary resources is fundamental for the success of patient safety program [15–17]. We believe that Palestinian public hospitals lack effective governance and adequate human and other resources that are needed for successful quality and patient safety system.

Event reporting is a common patient safety concern in different countries [5, 8, 9, 18, 19]. Incident reporting has a key role in enhancing patient safety by learning from mistakes and the enhanced changes in the system to reduce the likelihood of injury to future patients [20]. The study findings showed that this is also a major concern in the Palestinian hospitals. Mistakes that harm or have potential to harm patients are less frequently reported; about 53.2% of the respondents did not report any event in the past year. An interesting finding was that respondents from larger hospitals (26.7%) and physicians (30.5%) were the most likely to report more than three events in the last year in comparison

with nurses (21.8) % or other health professionals (P = 0.001). This might be due to more supportive medical leadership and to the dominance of the medical profession, where other professionals are probably more vulnerable to blame and punishment than physicians in Palestinian hospitals.

Consequences of event reporting affect frequency of event reporting [19, 21–24]. The reluctance of staff to report incidents is probably linked to the prevalence of a punitive response to error and blame culture (composite score 17%). Staff worry that mistakes they make are kept in their personnel file (item score 15%) and fear that they will be held against them (item score 12%) (see Table 1). Adding to that, the insufficient feedback and communication about error (46%), which means that staff are less informed about errors that occur, or feedback about changes implemented and ways to prevent errors are not properly discussed. Further research on professional's attitudes and barriers for incident reporting is necessary for developing an adequate incident reporting system in Palestinian hospitals.

Staffing was another patient safety concern (composite score 38%). Most of the participants indicated insufficient staff to handle the workload and that they work in 'crisis mode' trying to do too much, too quickly (both with 18% item score). This should not be a surprise as Palestinian public hospitals suffer from lack of professional staff together with high patient workloads. Staff has to do more

Table 4 Factors associated with patient safety culture aggregate score

Parameter	B	Standard error	t-test	P-value
Hospital size				
Small (less than 60 beds)		Reference group		
Medium (60–150 beds)	113.554	35.168	3.229	0.001
Large (more than 150 beds)	−6.103	40.089	−0.152	0.879
Experience in profession				
Less than 1 year		Reference group		
1–5 years	5.546	10.126	0.548	0.584
6–10 years	9.441	39.449	0.239	0.811
11–15 years	−32.156	26.315	−1.222	0.222
16–20 years	62.306	50.645	1.230	0.219
More than 20 years	−22.076	28.637	−0.771	0.441
Direct contact with patients				
No		Reference group		
Yes	82.324	35.741	2.303	0.021
Working hours per week				
Less than 40 h		Reference group		
40 h per week	90.904	36.099	2.518	0.012
41–59 h	128.424	33.990	3.778	<0.001
60–79 h	174.192	43.143	4.038	<0.001
80 h and more	180.153	37.517	4.802	<0.001
Work area/hospital unit				
Different units		Reference group		
Medical	98.128	47.983	2.045	0.041
Surgical	122.188	51.801	2.359	0.019
Intensive care	36.095	22.210	1.625	0.104
Diagnostics (laboratory/radiology)	−14.081	34.531	−0.408	0.684
Pharmacy	38.853	44.776	0.868	0.386
Administrative/support	169.903	37.827	4.492	<0.001
Emergency	44.108	20.755	2.125	0.034

Corrected model $F = 1.223$, $P = 0.008$. $R^2 = 0.313$, adjusted $R^2 = 0.057$.

shifts to compensate for shortages, and about 50% of the participants work more than the regular 40 h per week. The amount of work hours should be appropriate to provide the best care for patients. Long work hours increase staff fatigue and can lead to medical errors and adverse events and outcomes [25].

Our findings on the effect of hospital size on patient safety score and event reporting were inconsistent with the Lebanese study [8]. Staff from larger size hospitals were found to have a more positive perception of aggregate patient safety score and event reporting behavior. In this study setting, this could be explained by the fact that most of the smaller public hospitals are newly established and still lack qualified and experienced staff and equipment. In comparison, the larger hospitals, which serve as referral centers, have received significant improvements in infrastructure, equipment and staff training. Moreover, many patient safety procedures were also piloted in some of these hospitals. Quality improvement strategies include accreditation, when implemented at hospitals, it is known to be positively associated with patient safety levels [26].

Conclusions

Implementation of quality improvement strategies, including accreditation in hospitals is positively associated with patient safety. The Palestinian public hospitals survey results reveal that staff feel less positive toward patient safety culture within their organization. Several dimensions of patient safety culture need to be improved, especially those related to developing effective incident reporting system and establishing a non-punitive culture, allocating more staff and adequate work hours and ensuring hospital management support for patient safety. The survey should be repeated after implementation of appropriate interventions to monitor improvements in patient safety culture in these hospitals.

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Conflict of Interest statement

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