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ASSESSMENT OF PATIENT SAFETY CULTURE IN THE GAZA STRIP HOSPITALS

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ABSTRACT

Culture is described as a critical element of healthcare safety and quality. This study aims to assess a patient safety culture in GS hospitals.A cross-sectional, descriptive design was utilized. A total number of 376 clinical and non-clinical hospitals' staff participated in the current study. Data were collected using an Arabic version of the Hospital Survey on Patient Safety Culture (HSOPSC). The study data was evaluated using the SPSS for Windows 20.0. Dimensional- and item-level positive scores were used for results reporting. Additionally descriptive statistics, Chi-square test, independent sample t-test and ANOVA were used for data analyzing. Finding shows,the dimensions which elicited the highest positive ratings were teamwork within units (78%), and organizational learning and continuous improvement (72%); meanwhile those with the lowest ratings included staffing (58%), and non-punitive response to error (48%). Statistically significant differences among hospitals and also in reference to participants working characteristics (P<0.05). Small hospitals recived significantly higher mean safety scores than large hospitals, and physicians were the least positive towards safety than other employees (p<0.05). The study concluded that the status of safety culture in Gaza hospitals is acceptable despite the prevailing difficult conditions, but it can be improved through promoting reporting events, reinforcing management commitment towards safety, and implementing effective communication strategies.

INTRODUCTION

Historically, healthcare facilities had borrowed the safety culture concepts from high-reliability industries such as aviation and nuclear energy, implementing communication and teamwork models, and creating work environments that are conducive to patient safety (Healthcare Embracing Concept of the High-Reliability Institute, 2009). Patient safety culture is defined as the set of shared values, attitudes, perceptions, beliefs and behaviors that support safe practices among individuals in healthcare organizations (World Alliance for Patient Safety, 2008; Pronovost and Sexton, 2005). Contributed to the report "To Err is Human" by the Institute of Medicine (IOM), measuring safety culture in healthcare received increased attention at the end of the 1990s (Institute of Medicine, 1999). Numerous studies have revealed that harmful incidents occur in general practice and it is generally estimated that around 50% of Adverse Events (AEs) in healthcare can be prevented (Brennan *et al.* 1991). Monitoring the incidence of AEs is essential for tracking patient safety because doing so increases awareness and recognition of

responsibility at each level of the system (Health Foundation, 2012). Therefore, currently more pressure is exercised on healthcare organizations to provide safe and high quality healthcare. WHO estimates that tens of millions of patients worldwide suffer disabling injuries or death every year due to unsafe medical practices (World Alliance for Patient Safety, 2008). In addition countries spend considerable cost due to unsafe care that result in prolonged hospitalization, lost income and disability (World Alliance for Patient Safety, 2008). It is may be believed that a safety culture of health care organizations contributes to the promotion of an environment that enables the provision of safe care. Perceptions of safety culture vary from one hospital to another and among departments and professional groups. The variations in safety culture may compromise patient safety because it may lead to unmet expectations and communication breakdowns among health teams (Huang *et al.*, 2007; Bernstein *et al.*, 2003). There have been some studies that assessed patient safety culture in Palestinian hospitals in the West Bank (Najjar *et al.*, 2013; Hamdan and Saleem, 2013; Hamdan, 2013) and one study at the neonatal intensive care units in GS (Samour,andHamouda, 2013). However, systematic evidence from Gaza about patient safety and safety culture is still

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lacking. The aim of this study is to assess the current status of the safety culture in Gaza hospitals and investigates the variations in perceptions about the safety culture's dimensions across hospitals and staff categories. The study also explores the frequency of event reporting at Gaza hospitals.

METHODS AND MATERIALS

Study setting and design

The study utilized a quantitative cross-sectional approach. It was conducted at ten hospitals in Gaza; five governmental and five NGOs hospitals. From each of the five Gaza governorates, one governmental and one NGOs hospital were randomly selected. Data collection were done between August to December 2013.

Participants

All staff working at the selected hospitals during the period of the study were regarded as eligible. This included clinical staff who have direct contact with patients such as physicians and nurses and those without direct contact with patients but directly affect patient care such as managers, supervisors and clerks. The Ethical Committee of the Health Research Council in the GS has approved the study.

Data Collection

The study utilized the Arabic version of the HSOPSC which has been regarded as a valid and reliable instrument for assessing the safety culture in the Arabic speaking hospital settings (Najjar *et al*. 2013). The tool was previously used by Hamdan and Saleem (2013) to assess patient safety culture in the West Bank hospitals.The internal consistency of the instrument was measured using the Cronbach's coefficient Alpha (α) and showed high overall reliability (0.85).

Data Management and Statistical Analysis

The HSOPSC is composed of 42 items that measure 10 patient safety culture dimensions. Items were scored on a five-point Likert scale. The percentage of positive responses for each item and for the dimension was calculated. Negatively worded items were reversed in the calculations of the domain mean scores. The dimension-level scores were computed by summation of its items and dividing by the total number of these items. Positive responses in positively worded 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 were defined as those items that received 75% of participants' positive answers or when about 75% of participants disagreed with the negatively-worded items. Whereas areas identified as potential for improvement are the items that received about 50% [14]. The survey also included two single-item responses' outcome measures regarding the patient safety grade ('excellent' to 'failing') and the range of reported events in the last year. Data were analyzed using the SPSS version 20.0. Descriptive statistics were conducted to summarize participants characteristics. t-test and one-way ANOVA (included Post Hoc-Scheffe test) were used to examine differences in patient safety culture dimensions

between hospitals and participants characteristics. Chi-Square test was used to assess the relationships between patient safety outcome variables and the hospitals and participants characteristics. The level of statistical significance was accepted when the P was ≤ 0.05.

Ethical and administrative consideration

An ethical approval was obtained from Helsinki Committee in Gaza to carry out the study. An administrative approval was obtained from the Ministry of Health to conduct the study at the ten designated hospitals. Every participant was provided with a full explanatory form attached to the questionnaire including the purpose of the study, assurance about the confidentiality of the information, - instructions on how to respond to the questionnaire, and a statement indicating that participation is voluntary. Honesty was maintained during reporting and analysis of the data with respect to confidentiality and respecting of results.

RESULTS

Of the 405 questionnaires distributed, 376 were returned. Out of these, 13 questionnaires were disqualified due to many missing responses. The overall response rate was 92.8%. The characteristics of sample are shown in Table 1. Forty percent of the participants were from Gaza governorate and 84% were employed in governmental hospitals, the main provider of health care, and 69.1 % were working in large hospitals. Nurses and physicians formed 62.8% of the study participants. About 44% were having less than 5 years of experience in the current hospital and about a similar percentage (40%) were having less than 5 years in the profession. The majority (69.5%) were working up to 36 hours per week, and 5.9% reported working more than 60 hours per week. The safety culture dimensions were presented in descending order in relation to the percentage of positive responses (Table 2). The safety culture dimensions with the highest positive scores were teamwork within units (78%), and organizational learning and continuous improvement (72%). However, the teamwork within units was the only dimension that reached the threshold of 75% positive score indicating that it is an area of strength. The dimensions with the lowest scores were non-punitive response to error (48%) and staffing (58%).

In the other six dimensions in addition to the outcome scale variables, the overall perceptions of patient safety culture and the frequency of reported events the percentage ranged from 62% - 68%. The patient safety grade was regarded as 'excellent or very good' by 66.9% of the participants and 'acceptable' or less by 33.1%. On the other hand, 44.7% of the participants didn't report any event in the past 12 months and only 27.6% reported more than 2 events. Findings also show that participants from the North and Rafah governorates had significantly higher means of overall safety score with 3.41 and 3.39 respectively, but participants from Gaza governorate had the lowest mean with 3.04 scores (p=0.00). Post hoc test indicates that the differences were statistically significant between Gaza governorate and the North, Khanunis and Rafah governorates. This result was supported by the revealed overall safety score in the large hospitals that was found to be less than the small hospitals 3.1 and 3.4 respectively at

(p<0.001) due to the existence of Al-Shifa hospital (the largest hospital at GS) in Gaza governorate. Significant variations in the overall safety scores in relation the department of participants (p=0.027) (Table 3).

Table 1. Participant characteristics

Variable	Frequency	%
Governorates		
North	46	12.2
Gaza	151	40.2
Middle	55	14.6
Khanunis	92	24.5
Rafah	32	8.50
Ownership		
Governmental	316	84.0
Non-governmental	60	16.0
Hospital size		
Large	263	69.9
Small	113	30.1
Weekly work hours		
20-39 Hours	260	69.5
40-59 Hours	92	24.6
$60 \leq$ Hours	22	5.9
Work years in profession		
Less than 5 years	129	40.1
6-10 years	83	22.3
More than 10 years	140	37.6
Having direct contact with patients		
Yes	297	80.1
No	74	19.9
Job category		
Nurse	131	35.3
Physician	102	27.5
Administrator	88	23.7
Paramedic	50	13.5
Departments		
Surgical	95	25.7
Administrative Affairs	74	20.0
Obstetrics & Gynecology	56	15.1
Paramedical	52	14.1
More than one department	42	11.4
Internal Medicine	33	8.9
Pediatric	18	4.9

Whereby, the highest scores were reported by participants working at the paramedical and administrative departments (3.28 and 3.27 respectively), and the lowest scores reported by participants working at pediatric and surgical departments (3.07 and 3.1 respectively). In addition, the highest overall safety score were obtained from responses of paramedical staff (laboratory technicians, radiologist, physical and occupational rehabilitation specialists and pharmacists) (3.29), then administrators (3.24), and the lowest scores were reported by physicians (3.12) (p=0.037). Around 60% of those working in governmental hospitals rated safety at their hospitals as "excellent/ very good" in comparison with 93.1% of those working in non-governmental hospitals (p=0.01). Paramedical staff (83.3%) were significantly more positive towards safety in their hospitals than nurses (73%) and physicians (53%) (p=0.004). Moreover, participants from pediatric and internal medicine departments were the least positive towards safety in their hospitals, whereas 33.3% and 56.2% respectively regarded safety as excellent/very good at their hospitals (p=0.012). Table 5 shows the number of events reported in the last 12 months by participants and hospitals. Participants from the North and Rafah governorates had the highest percentages of reporting one or more events (73.3% and 70% respectively), while participants from the Middle governorate had the lowest percentage (43.1%); the differences between the two groups were statistically significant (p=0.044). No statistically significant differences were noticed in reference to hospital ownership, hospital size, job category and hospital unit/department.

DISCUSSION

This is the first study to assess this issue in Gaza hospitals with the purpose of ascertaining the patient safety culture at different hospitals departments using internationally approved tools. It is an essential step for improving patient safety by appraising the level of safety so areas can be prioritized and interventions mounted (Health Quality and Safety Commission, 2013). The results can be compared with similar studies from the WB and the region.

Table 2. Patient safety culture dimensions' means and percentage of positive responses

Dimensions of patient safety culture	No. of items	Mean score 5-points scale	% of positive responses
Teamwork within hospital units	4	3.9	78
Organizational learning and continuous improvement	3	3.6	72
Feedback and communication about error	3	3.4	68
Teamwork across hospital units	4	3.2	64
Communication openness	3	3.2	64
Handoffs and transitions	4	3.2	64
Frequency of reporting events	3	3.2	64
Supervisor expectations and actions promoting patient safety	4	3.1	62
Management support for safety	3	3.1	62
Overall perceptions of safety	4	3.1	62
Staffing	4	2.9	58
Non-punitive response to error	3	2.4	48
Overall safety score	42	3.2	64

Table 3. Overall safety scores by hospital and participant characteristics

Variables	N	Mean	SD	F	p-value
Governorate				13.02	<0.001
Gaza	151	3.044	16.70		
North	46	3.415	13.24		
Middle	55	3.183	15.91		
Khanyonis	92	3.257	15.59		
Rafah	32	3.397	14.53		
Department				2.411	0.027
Surgical	95	3.100	17.75		
Administration affairs	61	3.276	16.42		
Obstetric	56	3.183	14.85		
Paramedical	52	3.287	14.93		
Internal medicine	33	3.194	18.99		
More than one department	20	3.249	13.98		
Pediatric	18	3.071	15.36		
Jobcategory				2.862	0.037
Nurse	131	3.169	15.89		
Physician	102	3.121	17.61		
Administrator	88	3.249	17.47		
Paramedical	50	3.291	15.02		

Table 4. Patient safety grade in reference to hospitals and participants characteristics

Patient safety grade						
Grade	Excellent & Very good		Acceptable and Less		X^2	P-value
	F	%	F	%		
Hospital owner						
Governmental	186	61.8	115	38.2	22.7	<0.001
Non-governmental	54	93.1	4	6.9		
Job category						
Nurse	92	73.0	34	27	28.7	0.004
Physician	53	54.1	45	45.9		
Administrator	52	63.5	30	36.5		
Paramedic	40	83.3	8	16.7		
Department						
Surgical	58	63.7	33	36.3	42.3	0.012
Administration	48	69.6	21	30.4		
Paramedic	41	82	9	18		
Obstetric	36	67.8	17	32.1		
More than one	30	75	10	25		
Internal Medicine	18	56.2	14	43.8		
Pediatric	6	33.3	12	66.7		

Table 5. Numbers of reported events in reference to hospitals and participants characteristics

Number of reported events										
Number	No events		1-2 events		3-5 events		More than 5		X^2	P-value
	No.	%	No.	%	No.	%	No.	%		
Hospital owner										
Governmental	133	44.5	78	26.1	39	13	49	16.4	7.65	0.054
Non-governmental	27	45.8	21	35.6	9	15.2	2	3.4		
Governorates										
North	12	26.7	17	37.7	8	17.8	8	17.8	21.4	**0.044**
Gaza	63	44.0	40	28.0	16	11.2	24	16.8		
Middle	29	56.9	13	25.5	4	7.8	5	9.8		
Khanunis	47	52.8	22	24.7	11	12.4	9	10.1		
Rafah	9	30.0	7	23.3	9	30.0	5	16.7		
Department										
Surgical	47	51.1	25	27.2	5	5.4	15	16.3	27.9	0.063
Administration Affairs	28	41.8	16	23.9	12	17.9	11	16.4		
Obstetric	19	35.2	16	29.6	12	22.2	7	13		
Paramedical	28	53.9	18	34.6	2	3.8	4	7.7		
More than one	12	30.8	11	28.2	11	28.2	5	12.8		
Internal Medicine	15	46.9	9	28.1	9	28.1	4	12.5		
Pediatric	9	56.2	4	25	1	6.3	2	12.5		

The mean overall percentage of positive responses of all patient safety culture dimensions was 64% in Gaza compared with 44.4% in the WB (Hamdan and Saleem, 2013), 61.5% in Lebanon (El Jardali et al. 2010) and 53.9% Saudi hospitals (Al-Ahmadi, 2010). Similar to the findings of all these studies, the teamwork within unit and organizational learning-continuous improvement were the highest scored dimensions, and non-punitive response to error and staffing composites scores were among the lowest. The teamwork within units and the organizational learning dimension scored higher than the WB study (Hamdan and Saleem, 2013) and lower than Lebanon (El Jardali et al., 2010). Also the lowest score for the non-punitive response dimension was higher than the studies conducted in the WB and Lebanon (Hamdan and Saleem, 2013; El Jardali et al., 2010). Concerning the patient safety grade, it was slightly higher than the studies conducted in the WB (Hamdan and Saleem, 2013) and Lebanon (El Jardali et al. 2010); in which respectively 63.5% and 70% of the participants judged safety level at their hospitals as excellent or very good. It is worth noting that perceptions are to some extent influenced by expectations and the relatively high result obtained in this study could be attributed to the lower expectations hospitals team hold in Gaza. In addition, health staff in GS had rarely received training on patient safety issues, therefore lacking of proper knowledge of patient safety might have affected their judgments. Also, safety of care probably is not a top priority in the health care system that dealing more with urgent and crises issues. A concern was observed with regard to communication openness, where 64% of the respondents reported that staff is afraid to ask questions, when something does not seem right. Communication is essential at the workplace as it provides knowledge, institutes relationships and establishes predictable behavior patterns (WHO, 2009). Definitely, when there are certainly powerful interconnected hierarchies operating in many sectors of healthcare, especially between doctors and nurses (Health Quality and Safety Commission, 2013).

Prevalence of punitive culture in Gaza hospitals is denoted by the staff feelings that their mistakes are held against them (64.5%), and the fear that mistakes they make are kept in their personnel file (75.1%). Also, about 45% of the participants didn't report any event within 12 months. This reflects negative impressions of staff toward the hospital management attitudes in using errors against them. Whereas hospital management does not consider the outcome of the knowledge produced about error and the possibility of learning from these mistakes. A shift from a culture discouraging to a one encouraging reporting errors can be accomplished by limiting the practice of blaming and focusing instead of processes emphasizing patient safety (Berwick, 1998). Some participants (34%) disagreed that supervisors acknowledge good performance done in accordance with the patient safety procedures. Supervisory safety practices have been found to decrease the number of minor injuries and positively influence staff safety culture perceptions (Berwick, 1998). However, most of respondents agreed that evaluation is usually done after introducing changes to improve safety. The literature shows that this gives a clue to the worthy climate that will be provided by the implementation of upcoming safety training and initiatives. Participants working at pediatrics and surgical departments reported lower scores than other departments.

Departments that are more subjected to errors require extra safety precautions and should be given a priority. The literature indicates that there are variations in the adverse events occurrence across different departments especially surgical units, where more than half of these events occur (Najjar et al. 2013). On the other hand, the lowest means of the overall safety score were elicited by physicians and nurses which must set off alarms. Singer and colleagues found that among nurses, work experience and work position were significantly associated with perceptions about the patient safety culture (Sorra et al. 2014). Nurses and clinical workers often spend more time with patients and thus may receive complaints and hear opinions from the patients' perspective which influence their own perceptions of safety procedures (Berwick, 1998; Sorra et al. 2014). Therefore, it is a necessity to focus more on physicians and nurses to track their attention toward the safety issue. Not surprisingly, mean scores given to all the dimensions were higher in the non-governmental hospitals, especially in team work across units and hospital management support for safety dimensions (p<0.001). Also, non-governmental hospital means were significantly higher in the outcome variables; frequency of reporting events and the overall perceptions of dimensions (p<0.001). This can be explained by that non-governmental hospitals in Gaza have smaller size and initiatives to promote safety procedures. Similar results were also reported by Al-Ahmadi in Saudi hospitals (Al-Ahmadi, 2010) and Hamdan&Saleem in the WB (Hamdan and Saleem, 2013), which reveals the need to reinforce patient safety measures in large hospitals.

The similarity in the scores' level in most of the dimensions reflects the level of safety culture's that predominates Gaza hospitals. This signals the strength of the interactions between these dimensions and refers to the impact of each dimension has on the other dimension (high related dimensions). So, when a safety culture initiative or program focuses on some of the safety culture's dimensions, the positive effects will actually reinforce other dimensions (spill-over effects). The opposite is also true, the pitfall in one dimension may negatively affects the other dimension. It is important to consider the system thinking approach when dealing with the patient safety construct. Findings concluded in this study are constrained by the fact that the safety culture has been subjectively judged by the respondents who filled a self-administered questionnaire-self reported response. It is needless to say that self-reported responses are based on participants own understanding and thesubjective judgment of questionnaire's items and their expectations. Also, it did not consider the external environmental and the exceptional politically unstable conditions which might have its impacts on perceptions about patient safety culture (Health Foundation. Evidence, 2012; El Jardali et al., 2010). Nevertheless, it actually gave the staff the opportunity to explain freely their experiences about the safety issue in the most important pillars of safety. As they were motivated to fill the questionnaire so that high response rate was achieved.

Conclusions

Safety culture influences staff's behaviors, attitudes and cognitions on the job by providing cues about the relative priority of patient safety compared with other issues (Zohar et

al. 2007). However, Gaza health workers have comparably good patient safety culture perceptions despite the difficult conditions that hospitals operates in. Nonetheless, the higher scores given to safety culture of the dimensions may reflect the undermine awareness of the hospitals staff about the ideal model of these dimensions. In other words, high perception scores could be attributed to lower expectations resulted from inadequate exposure to such concepts as well as the dominant emergency situation which affects long term interventions and plans including safety culture. Most of the dimensions of the patient safety culture are perceived as acceptable, but still need enhancement. However, the low percentages of these dimensions could be attributed mainly due to a weakness in one or two related variables or issues (problem segmentation). Recognizing the later gaps, might stimulate the development of corrective strategies accompanied by training provision in order to bridge the gaps in these specific issues as the difficulty is not the availability of guidelines but the absence of adequate training (Ministry of Health, 2014). Patient safety could be promoted through formulating policies, protocols and reinforcing evidence-base practices to guarantee safety practice. Also there is a big requisite for a just culture to achieve the aim of reporting errors. In addition, integrating a well-defined reporting system and paying more attention for the large and medical hospitals is essential. Nonetheless, extra-efforts are required to target specific departments and staff categories who elicited the lowest scores through more in-depth understanding of the root causes attributed to their scores and put in amendment actions.

Acknowledgements

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