Assessing Patient Safety Culture and Factors Affecting It among Health Care Providers at Cairo University Hospitals

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Abstract: Patient safety is a critical component to the quality of health care. Increasingly, health care organization is becoming aware of the importance to improve safety culture. Assessing healthcare provider's attitudes about issues relevant to patient safety is the first stage of developing a safety culture. The current study aimed to assess patient safety culture perceptions among health care providers and to identify factors that may critically affect patient safety culture at randomly selected departments of Cairo University Teaching Hospitals. An analytic cross-sectional design was utilized for this study. During a period of 4 months, from December, 2011 till March, 2012, four hundred healthcare providers were identified and voluntarily approved to participate. The study adapted the "Hospital Survey on Patient Safety Culture" (HSOPSC). The Patient Safety grade and number of events reported are the two outcome variables of the survey. The study results revealed that dimensions of the overall perceptions of safety and frequency of events reporting mean scores were significantly highest for physicians that differed from scores of nurses and paramedical personnel. Overall, physicians showed the highest significant positive composite scores while nurses showed the lowest scores in most dimensions of the HSOPSC. The non-punitive response to error composite received one of the lowest scores(33.3%).The highest percentage of participants that reported "Excellent/Very good" patient safety grades were paramedical personnel (52.4%). Only 48.5% of the study participants reported the occurrence of patient safety events in their corresponding departments. Also the number of events reported increased as the years of work experience increased. Study findings provide evidence that can be used by policy makers, managers and leaders who are able to create the culture and commitment needed to identify and solve underlying systemic causes related to patient safety.
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1. Introduction

Issues of patient safety have become a priority in health policy and healthcare management. The rapidity by which healthcare technologies evolve have required greater attention to safety issues necessary for effective, and efficient delivery of high quality services [1]. Patient safety is a new healthcare discipline that emphasizes reporting, analysis, and prevention of medical errors that often lead to adverse health care events. Recognizing healthcare errors impact 1 in every 10 patients around the world, the World Health Organization (WHO) calls patient safety an endemic concern [2].

In 1999, the Institute of Medicine (IOM) issued a report, "To Err Is Human," describing the magnitude of the patient safety problem in some detail. It estimated that up to 98,000 preventable deaths occur each year due to medical errors, with no significant improvement in 5 years due to failure to improve patient safety [3 – 5].The ultimate conclusion was that "the biggest challenge to moving towards 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"[3].

In 2006, the European Society for Quality in Health Care defined safety culture as "an integrated pattern of individual and organizational behavior, based upon shared beliefs and values that continuously seeks to minimize patient harm, which may result from the processes of care delivery". The above definition reflects a dynamic, conscious culture of safety in which actions are taken towards reducing harms or risks to the patient [6]. In March 2007, the Eastern Mediterranean Regional Office (EMRO) of the WHO planned and conducted a "Regional Patients for Patient Safety" workshop in Cairo that ended with particular emphasis on the importance of engaging patients in shaping the healthcare system [7].

In Egypt, a number of studies addressing patient safety have been conducted [8 - 10]. However, in order to advance patient safety in healthcare organizations, and track progress in cultural transformation over time, collaborative efforts must assess the positive and negative perceptions and attitudes toward the safety environment and relationships that promote or hinder safe patient care. Hence, this study was carried out to identify patient safety perceptions of healthcare providers at Cairo University hospitals, in an effort to suggest proactive actions to improve attitudes, and

policies reinforcing and sustaining commitment to safer patient care.

Study Objectives:

1- Assessment of patient safety culture perceptions among health care providers at Cairo University Teaching Hospitals.
2- Identify factors that may critically affect patient safety culture at Cairo University Teaching Hospitals.

Methodology:

Study Setting and Design:

This study was conducted in Cairo University teaching hospitals, Cairo - Egypt. Four internal medicine and four general surgery departments were randomly selected by cluster random sampling technique to be included in the study. The Clinical pathology department and laboratory and X-ray department were also included as representatives of paramedical departments. An analytic cross-sectional design was utilized for this study.

Study Subjects:

All health care providers (Doctors – Nurses – Technicians) fulfilling the inclusion criteria of our study at the selected departments were included as the study sample. Inclusion criteria were are follows: subjects have a direct or indirect responsibility of carrying out services for patients in the chosen departments for at least six months, are acquainted with the hospital processes and system and did not undertake any managerial role. During a period of 4 months, from December, 2011 till March, 2012, four hundred healthcare providers were identified and voluntarily approved to participate of which150 were from medical departments of internal medicine (120), ICU (15) and Rheumatology (15), 134 from surgical and surgical related departments of the general surgery (96), Obstetrics and Gynecology (20) and Anesthesiology (18) departments, while another 116 from the paramedical departments of Clinical pathology (100) and X-ray (16) departments. Of all participants,219 were physicians, 99 nurses and 82 paramedical personnel.

Study tool:

The study adapted the "Hospital Survey on Patient Safety Culture" (HSOPSC) developed by the Agency for Healthcare Research and Quality [11]. This tool was translated into Arabic. Validation of the adapted and translated study tool was conducted before using it for data collection. Back translation to English was done to ensure that the Arabic version is consistent with the original English version. Then a pilot testing phase was done to adapt the survey to fit the Egyptian context to suite the culture in our hospitals and verify that items and questions are comprehensible and clear.

The HSOPSC is composed of 42 items that measure12 dimensions of patient safety culture. The survey measures seven unit-level aspects of safety culture: Supervisor/manager expectations and actions promoting patient safety (4 items), Organizational learning and continuous improvement (3 items), Teamwork within units (4 items), Communication openness (3 items), Feedback and communication about error (3 items), Non-punitive response to error (3 items), Staffing (4 items). In addition, the survey measures three hospital- level aspects of safety culture: Hospital management support for patient safety (3 items), Teamwork across hospital units (4 items), and Hospital handoffs and transitions (4 items). The remaining two dimensions, the Overall perception of safety (4 items), and the Frequency of events reported (3 items) are two of the four outcome variables of the survey. The response to each item in the questionnaire was assessed by using a 3 point Likert scale where 1 = "strongly disagree", 2 = "neutral", 3 = "strongly agree". Reversed scoring was used for negative statements. The Patient Safety grade (measured on a scale of Excellent/very good, Neutral, and poor/failing), and number of events reported are the other two outcome variables of the survey.

Background variables of participants included questions related to age group of participant, sex, job category, year's of working experience, work setting and working hours per week. The types of the medical errors, recording and notification in the selected departments were also included. Distribution of the questionnaire was conducted by the research team and required about 10 – 15 minutes to complete.

Statistical Analysis:

After data collection, all collected questionnaire were revised for completeness and logical consistency. Data was entered on a spreadsheet designed for the study on Excel program and then transposed to the Statistical Package for Social Sciences (SPSS) version 15 for analysis. All responses for each item in the HSOPSC dimensions were added for a total score. Maximum scores for each dimension were calculated by multiplying the maximum score by the number of items within each dimension. A composite score formed of the frequency of total percentage of positive responses, among study participants, was calculated by summation of the number of positive responses for each item and dividing by the total number of responses to the items in the dimension. Areas of strength were defined as composites for which 70% or more of participant's answered positively whereas areas requiring improvements were those with composite frequencies below that level.

Statistical measures included descriptive measures (counts, percentages, arithmetic mean, and standard deviation).The Chi-square test was used for comparison of qualitative variables. The ANOVA (F

test) was used for statistical comparisons of mean dimension scores of study groups followed by the Bonferroni method for post-hoc adjustment. All statistical tests were considered significant at P – value≤ 0.05.

Ethical considerations:

Ethical and scientific approval was obtained on 19th November, 2011 from the Research Ethics Committee of the Faculty of Medicine, Cairo University**.** Waiver of informed written consent was granted on the basis that the questionnaires are anonymous. Participants were informed of the aims of the study and assured confidentiality. Verbal consents were obtained from all participants before completion of the questionnaires. Data confidentiality was maintained throughout the study conforming to requirements of the latest revision for the Helsinki Declaration of Bioethics [12].

3. Results:

In total, 400 healthcare members completed the survey. Physicians represented the majority of participants (54.8%) while nurses and paramedical personnel represented 24.7% and 20.5% respectively. The mean age of participants was 32.5± 8.4 years with the majority (45.8%) under 30 years of age. Females were slightly more than males (54.2%). Most participants (45.5%) had a 5 – 10 years working experience while slightly over a third had less than 5 years experience and only about 20% had a work experience over 10 years. Accordingly, nearly 60% reported over 35 working hours/week. The main source of continuing medical education and training on issues of patient safety was in the form of lectures (45.7%) while workshops and clinical training were reported by only 31.7% and 22.6% respectively **[Table 1].**

Table 1: General Characteristics of study participants

General Characteristics		Frequency (N=400)	Percent (%)
Job Category	Physicians	219	54.8
	Nurses	99	24.7
	Paramedical	82	20.5
Age Group†	< 30 Years	183	45.8
	30 – 40 Years	148	37.0
	> 40 Years	69	17.2
Sex	Male	183	45.8
	Female	217	54.2
Work Setting	Medical departments	150	37.5
	Surgical departments	134	33.5
	Paramedical departments Lab / X-ray	116	29.0
Working Hours/Week	≤ 35 Hrs	161	40.2
	> 35 Hrs	239	59.8
Years of Experience	<5 Years	139	34.8
	5 – 10 Yrs	182	45.5
	≥ 10 Yrs	79	19.7
Training Courses‡	Lectures	101	45.7
	Workshops	70	31.7
	Clinical Training	50	22.6

†Mean Age 32.5 ± 8.4 years ‡Total = 221 response

Healthcare provider's mean patient safety dimension scores showed physicians with the highest mean scores for dimensions of supervisor/manager expectations & actions promoting patient safety (7.6 ± 2.4), organizational learning –continuous improvement (6.8± 1.7), teamwork within hospital units (6.4 ± 2.0), feedback & communication about error (5.7 ± 1.9) and staffing (7.8 ± 1.7). The main statistical difference was found for mean scores of nurses that showed the lowest scores in all these composites. For the dimension of communication openness, paramedical personnel had the highest mean scores (6.2 ± 1.5) that differed significantly between scores of nurses, with the lowest scores (P = 0.002), and no difference was found between scores of physicians. Paramedical's scores to non-punitive response to error was the significantly highest among study groups (5.1 ± 1.5) and this finding differed significantly between mean scores of nurses (P < 0.001) with the lowest scores, with no difference between scores of physicians, which differed from scores of nurses. For the dimension of staffing, physicians showed the highest scores that differed significantly from both nurses and paramedical's scores **[Table 2].**

Table 2: Healthcare providers mean patient safety dimension scores by job category.

Safety Culture dimensions (Max Score)	Physicians Mean ±SD	Nurses Mean ± SD	Paramedical Mean ± SD	ANOVA P-value	Post-hoc analysis
Unit Level variables					
Supervisor/manager expectations & actions promoting safety (12)	7.6 ± 2.4	6.9 ± 2.0	7.4 ± 2.3	0.04	A – B
Organizational Learning – Continuous improvement (9)	6.8 ± 1.7	6.3 ± 1.4	7.1 ± 1.3	< 0.001	A – B A – C
Teamwork within hospital units (12)	6.4 ± 2.0	5.7 ± 1.7	5.9 ± 1.6	0.007	A – B
Communication openness (9)	5.9 ± 1.5	5.6 ± 1.6	6.2 ± 1.5	0.02	B – C
Feedback & communication about error (9)	5.7 ± 1.9	4.6 ± 1.5	5.1 ± 1.8	< 0.001	A – B
Non-punitive response to error (9)	5.0 ± 1.5	4.6 ± 1.5	5.1 ± 1.5	<0.001	A – B B – C
Staffing (12)	7.8 ± 1.7	6.8 ± 1.6	6.8 ± 1.3	< 0.001	A – B A – C
Hospital-wide variables					
Hospital Management Support for patient safety (9)	7.1 ± 1.6	5.9 ± 1.3	6.6 ± 1.4	< 0.001	A – B A – C B – C
Teamwork across hospital units (12)	5.9 ± 1.5	5.1 ± 1.5	4.6 ± 1.3	< 0.001	A – B A – C
Hospital handoffs & Transitions (12)	8.7 ± 1.9	7.2 ± 1.8	7.6 ± 1.9	< 0.001	A – B A – C
Outcome variables					
Frequency of event reporting (9)	4.6 ± 1.4	3.7 ± 1.2	3.5 ± 1.2	< 0.001	A – B A – C
Overall perceptions of safety (12)	6.2 ± 1.2	5.7 ± 1.3	5.6 ± 1.4	0.001	A – B A – C

A – B: Significant mean difference between physicians and nurses scores
A – C: Significant mean difference between physicians and paramedical scores
B – C: Significant mean difference between General Surgery and Paramedical scores

Regarding the hospital level variables, nurses showed the lowest mean scores for the dimension of hospital management support for patient safety (5.9 ± 1.3) that was significantly different from both scores of physicians (with the highest scores) and paramedical personnel that also differed between each other (P < 0.001). Additionally, teamwork across hospital units dimension scores were highest for physicians (5.9 ± 1.5) that differed significantly with those of nurses and paramedical personnel (with the lowest scores), with P < 0.001. Similar findings were found for the dimension of hospital handoffs & transitions. Furthermore, dimensions of the overall perceptions of safety and frequency of events reporting mean scores were significantly highest for physicians that differed from scores of nurses and paramedical personnel **[Table 2].**

Overall, physicians showed the highest positive composite scores while nurses showed the lowest scores in most dimensions of the HSOPSC. Three areas of strength were identified where physicians' scores were the highest. These dimensions were those of teamwork within units (81.3%), organizational learning and continuous improvement (75.3%) and hospital management support for patient safety (72.1%). For the first dimension, paramedical personnel showed the lowest positive composite scores (35.4%) followed by nurses (38.4%) while for the remaining two dimensions, nurses showed the lowest positive composite scores (31.2% and 47.5% respectively), indicating needs for improvement for these groups, and these differences where highly significant (P < 0.001). The dimensions in dire need of improvements were those with the lowest scores included supervision/manager expectations & actions promoting safety, and non-punitive response to errors. In these dimensions nurses continued to show the significantly lowest positive composite scores (23.2% and 15.2% respectively) versus scores of 40.6% and 41.6% for physicians and scores of 42.7% and 32.9% for paramedical personnel. Furthermore, staffing showed highest positive composite scores for physicians (63.0%) with paramedical's showing the least scores (24.4%) and this finding was highly significant. Communication openness, another important dimension in need for improvement, showed scores for physicians to be 50.7%, nurses 26.3% and paramedical's 37.8% and these differences were highly significant with P < 0.001. Dimensions of teamwork across hospital units and hospital handoffs and transitions showed no statistical differences between

groups although composite scores where low and also indicated needs for improvements. Similarly, the dimension of feedback & communication about error showed no statistical significance between groups. When addressing the outcome variables, physicians showed the highest percentages for overall perceptions of safety (81.3%), and frequency of event reporting (65.8%), while nurses showed the least composite scores for overall perceptions of safety (62.9%) and paramedical personnel were the least for frequency of event reporting (29.3%) which were highly significant **[Table 3]**.

Table 3: Percent distribution of patient safety culture positive composite scores among study participants

Patient Safety culture dimensions	Composite Score Percent			P - Value
Unit Level variables	**Physicians N=219 (%)**	**Nurses N=99 (%)**	**Paramedical N=82 (%)**	
Supervisor/manager expectations & actions promoting safety	89 (40.6)	23 (23.2)	35 (42.7)	0.005
Organizational Learning – Continuous improvement	165 (75.3)	31 (31.3)	37 (45.1)	< 0.001
Teamwork within hospital units	173 (81.3)	38 (38.4)	29 (35.4)	< 0.001
Communication openness	111 (50.7)	26 (26.3)	31 (37.8)	< 0.001
Feedback & communication about error	140 (63.9)	65 (65.7)	49 (59.8)	0.70
Non-punitive response to error	91 (41.6)	15 (15.2)	27 (32.9)	< 0.001
Staffing	138 (63.0)	34 (34.3)	20 (24.4)	< 0.001
Hospital-wide variables				
Hospital Management Support for patient safety	158 (72.1)	47 (47.5)	43 (52.4)	< 0.001
Teamwork across hospital units	99 (45.2)	35 (35.4)	35 (42.7)	0.26
Hospital handoffs & Transitions	127 (57.9)	53 (53.5)	49 (59.7)	0.66
Outcome variables				
Frequency of event reporting	144 (65.8)	35 (35.4)	24 (29.3)	< 0.001
Overall perceptions of safety	178 (81.3)	62 (62.6)	57 (69.5)	0.001

The highest percentage of participants that reported "Excellent/Very good" patient safety grades were paramedical personnel (52.4%) followed by nurses (49.5%) and the least were physicians (23.7%). Physicians showed the highest percentage reporting "Poor/Failing' patient safety (25.1%). When analyzing patient safety grade by department, personnel working in the paramedical departments (Clinical pathology & X-ray units) were those with highest percentage reporting "Excellent/Very good" patient safety grades (51.7%). On the other hand, personnel from the Medical departments were the most to report "Poor/Failing' patient safety grade (24.7%) and all these findings were highly significant with P < 0.001. The association of years of experience and patient safety grade was also explored, and showed those with less than 5 years of working experience were less likely to give "Excellent/Very good" patient safety grade (22.3%) but this increased as years of experience increased to be 37.9% for those with experience between 5 – 10 years and 48.1% for those with experience more than 10 years and these findings were statistically significant (P = 0.028) **[Table 4].**

Only 48.5% of participants reported the occurrence of patient safety events in their corresponding departments. The majority of respondents (79.3%) felt that errors are held against them and later kept in their files. The most frequently reported events over the past 12 months were: bed sores(43.8%), patient falls (29.8%), accidental death (19.8%), blood transfusion problems (18.1%), surgical errors (17.7%), medication errors and side effects (13.7% for each), and wrong diagnosis (10%).

Table 4: Percent distribution of patient safety grade, as an outcome measure, by participants' characteristics

Participants Characteristics		Patient Safety Grade			P - Value
		Excellent/V.Good No. (%)	**Acceptable No. (%)**	**Poor / Failing No. (%)**	
Work Setting	**Medical departments**	23 (15.3)	90 (60.0)	37 (24.7)	< 0.001
	Surgical departments	61 (45.5)	53 (39.6)	20 (14.9)	
	Paramedical Lab/X-ray	60 (51.7)	39 (33.6)	17 (14.7)	
Work Position	**Physicians**	52 (23.7)	112 (51.2)	55 (25.1)	< 0.001
	Nurses	49 (49.5)	42 (42.4)	8 (8.1)	
	Paramedical	43 (52.4)	28 (34.1)	11 (13.4)	
Years of Experience	**< 5 Years**	31 (22.3)	71 (51.1)	37 (26.6)	0.028
	5 – 10 Years	69 (37.9)	82 (45.1)	31 (17.0)	
	≥ 10 Years	38 (48.1)	29 (36.7)	12 (15.2)	

Physicians were the most to report the presence of patient safety events (53.9%) while 39.4% of nurses and 32.8% of paramedical personnel reported such events in their corresponding departments. Participants with less than 5 years of experience were the largest group to report no events (92.1%), and this dropped as years of experience increased between 5 – 10 years (22.8%) then rose again after years of experience exceeded 10 years (78.0%) and this finding was highly significant (P < 0.001). Participants working in medical departments were the most frequent to report events in their departments (30.7%), while those from surgical and paramedical departments showed a lower frequency of reported events (26.1% and 28.4% respectively) with P = 0.04 **[Table 5].**

Discussion:

Patient safety is a critical component of health care quality. As health care organizations continually strive to improve, there is a growing recognition of the importance of establishing a culture of safety [11]. Safety culture assessment provides an organization with a basic understanding of safety-related perceptions and attitudes of both managers and staff [13]. It also aims to improve performance rather than blame individuals [14]. McKesson 2005 concluded that as healthcare organizations develop patient safety strategies, it is vital to understand concerns and opportunities from the front-line healthcare's perspectives [15].The HSOPSC is one of the most common tools used to assess the culture of safety in hospitals. It was used in this study to assess the current state of patient safety culture at Cairo University Teaching Hospitals. This study is the first to systematically investigate patient safety culture in our organization.

Table 5: Percent distribution of number of events reported, as an outcome measure, by participants' characteristics

Participants Characteristics		Number of events reported			P - Value
		No events reported No. (%)	1 – 5 events reported No. (%)	> 5 events reported No. (%)	
Work Setting	Medical departments	104 (69.3)	43 (28.7)	3 (2.0)	0.04
	Surgical departments	99 (73.8)	31 (23.1)	4 (3.0)	
	Paramedical Lab/X-ray	83 (71.6)	23 (19.8)	10 (8.6)	
Work Position	Physicians	101 (46.1)	116 (53.0)	2 (0.9)	0.001
	Nurses	60 (60.6)	32 (32.3)	7 (7.1)	
	Paramedical	55 (67.1)	25 (30.4)	2 (2.4)	
Years of Experience	< 5 Years	128 (92.1)	11 (7.9)	----	< 0.001
	5 – 10 Years	18 (22.8)	59 (74.7)	2 (8.5)	
	≥ 10 Years	142 (78.0)	31 (17.0)	9 (4.9)	

Results of the present study detected that dimensions of the overall perceptions of safety and frequency of events reporting mean scores were significantly highest for physicians that differed from scores of nurses and paramedical personnel. This could be explained by the lack of effective communication and collaboration between physicians and other medical personnel, which has a profound effect on workplace environment and patient care. Additionally, the dimension of communication openness showed physician's composite scores to be significantly higher than those of nurses and paramedical's although they barely passed 50%. In healthcare organizations, communication is a process of sharing information, thoughts, beliefs, and feelings that influence the individual's health-directed behaviors, and creating support for individual or collective action that directly affects professional-professional and professional-client interactions [16]. Communication within and across hospital units is critical in a healthcare environment as the patient is usually treated by several healthcare practitioners and specialists in multiple settings [17]. Evidence shows that communication problems are major contributors to adverse events [18]. High quality and safe healthcare services depend on the ability of healthcare providers to communicate well with patients as well as with other health professionals [19]. It is therefore apparent that difficulties in communication may jeopardize patient safety.

The present study findings are in agreement with those of Abbas et al., 2008, where statistically significant differences were found between the 3 job categories of participants, as well as among their work settings, and in perceptions of management commitment to patient safety [9]. However, they are opposing to those of Carayon et al., who examined the elements of the work system, employees' outcomes, and care processes by comparing various safety measures applied across 3 categories: nurses, physicians, and other staff. They found that there was no difference between the 3 job categories on the

measures of perceptions toward safety performance [20].

Overall, in the present study physicians showed the highest positive composite scores while nurses showed the lowest scores in most dimensions of the HSOPSC. The dimension that received the highest positive response rate was "Teamwork within units", which is similar to results reported in other studies [21 – 24]. Another dimension were physicians showed the highest composite scores, was that of organizational learning and continuous improvement. Aspden and colleagues, 2004, advocated that a key aspect of a patient safety system is a culture that encourages clinicians, patients, and others to be vigilant in facilitating learning and redesign of care processes [25]. Moreover, in a survey conducted by Kitch 2005, to determine characteristics of patient safety culture, it was concluded that teamwork within units; honest and open communication among physicians, administrators and healthcare workers; as well as with patients are considered the principal characteristics of a culture of safety [16].

A safety culture includes three major components; a just culture, a reporting culture, and a learning culture [26]. Event reporting, an essential component for achieving a learning culture, can only happen in a non-punitive environment where events can be reported without people being blamed [23]. In our study the non-punitive response to error composite received one of the lowest scores (33.3% overall) revealing that hospital employees, especially nurses, are not at ease when it comes to reporting errors. In comparison to other studies the score on non-punitive response to error, although low in US hospitals (44%), was much better than our score and the score in Lebanese hospitals (24.3%) [21].

Many errors in health care go unreported for many reasons including fear, humiliation, the presence of a punitive response to error, and the fact that reporting will not usually result in actual change [27]. Encouraging health professionals, specifically nurses, to report events in a non-punitive environment is crucial for improving patient safety. According to Singer and Tucker, nurses must accept their role accountability and move forward with concrete evidence of commitment toward participating in shaping a culture of safety [28]. An earlier study showed that frustration among nurses arose from discrepancies between high level of professional responsibility and low level of autonomy [29]. Loss of trust in hospital administration is widespread among nursing staff. This loss of trust stems, in part, from a perception that initiatives in patient care and nursing work redesign have emphasized efficiency over patient safety. Furthermore, management practices are essential to the creation of safety within the organization, and these practices include creating and sustaining trust throughout the organization [30].

When analyzing patient safety grade by participants, department and years of experience, findings of our study show that physicians and personnel from the medical departments were the most to report “Poor/Failing’ patient safety grade and those with less than 5 years of working experience were less likely to give “Excellent/Very good” patient safety grade. In accordance with this finding, Singer and colleagues 2003 concluded that safety culture may not be as strong as desired by high reliability organizations, and that safety culture differs significantly, not only between hospitals but also by clinical status and job class within individual hospitals [31]. Contradicting to our study findings Abbas et al, 2008 reported no significant differences between front-line healthcare providers' perceptions toward patient safety according to their work settings, although the management commitment to patient safety among paramedical departments reflected a more positive perception [9].

Only 48.5% of the study participants reported the occurrence of patient safety events in their corresponding departments similar to that reported in US hospitals (48%) [21], and higher than Lebanese hospitals (41.4%) [24]. Physicians, and participants with less than 5 years of experience as well as those working in medical departments were the most to report the presence of patient safety events. Employees who do not deal directly with the patient are more at ease when it comes to reporting errors. As mentioned by Jones et al. 2008 [32], work in laboratory units is considered as more organized than other units since it is controlled by more professional standards and because errors investigated in these units are done as a group. On the contrary, when an error is performed by a nurse, the nurse is investigated as an individual rather a member of a medical team [32].A study conducted by Van Geest and Cummings 2003, revealed that a punitive response to error is a major barrier for disclosure of errors upon their identifications [27]. The majority of our study respondents felt reports of errors are held against them and later kept in their files. Work experience at the hospital also had some impact on the frequency and number of events reported. As the years of work experience increased to be between 5 – 10 years the number of events reported increased, then decreased after 10 years. Similarly, El-Jardali et al.2011 reported that the frequency of events reported was found to increase with increasing years of experience [33].

Conclusions and recommendations:

Based on our findings, it could be recommended that an effective safety culture should be initiated, supported, and maintained organization-wide, among

both front-line personnel and senior management, to improve safety and quality. Patient safety should become a top strategic priority and this should be communicated to all personnel within Cairo University Teaching Hospitals. To be truly effective, patient safety needs to be incorporated into the education of health professionals across the spectrum of healthcare. There should be a blame-free system for identifying threats to patient safety, sharing information and learning from events. In addition, there should be a collaborative environment so that all health workers in the healthcare organization can share and exchange information about patient safety.

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