

Patient safety outcome as a predictor of quality care in a Saudi Public Hospital

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Abstract

Background: *The establishment of a patient safety culture was one of the most important issues raised by the Institute of Medicine to support hospitals in improving quality and patient safety. Safety culture assessments allow healthcare organizations to get a clear understanding of those aspects of patient safety requiring urgent attention, pinpoint safety culture strengths and weaknesses, help health units identify their present obstacles affecting patient safety, and benchmark their scores with other similar organizations.*

Objective: *to evaluate the extent to which the culture supports patient safety at a hospital in Saudi Arabia.*

Method: *A cross section analytical observational study conducted in King Fahad Hospital at Al Madinah Al Munawarah city.*

Results: *The staff felt less convinced concerning patient safety culture inside the institute. The greatest positive scores were obtained for teamwork within units; the safety culture composites, feedback, and communication about error, manager expectations, and actions promoting patient safety and organizational learning and continuous improvement. None of these features achieved a positive score of 75% or more as an area of strength. The rest of the aspects were negatively marked as areas for probable development, where the lowest scores were non-punitive reaction to error, Staffing, Hospital handoff and transition, communication openness, hospital management support for patient safety*

Conclusion: *There is a strong need to improve and instigate applicable policies to improve the culture of patient safety in this hospital. The development of strong management competence to institute an environment of open consultation and administrative wisdom without blame, fear and silence regarding reporting errors will go a long way in improving patient safety culture..*

Keywords: *patient safety culture, quality, quality outcomes, hospitals, Saudi Arabia.*

I. Introduction

The implementation of a patient safety culture is one of the primary recommendations proposed by the Institute of Medicine to ensure that hospitals can develop an environment of excellence and patient safety [1, 2]. The evaluation of the health organization's current safety culture is the first step in the building of an approach for a culture which promotes and supports safety [3]. The Health care organizations' safety culture assessments, advocated by the international accreditation organizations, permit healthcare organizations to obtain a clear view of aspects related to patient safety. These include the ability of identifying the strengths and flaws of its security culture [4], helping health units recognize their prevailing difficulties related to patient safety [5], and allowing them to benchmark their scores with other parallel organizations [6]. Previous studies have reported that the key predictors of a constructive patient safety culture in hospitals incorporate communication founded on shared trust, good flow of information, mutual reading of the significance of safety, organizational learning, devotion from the administration and leadership, and the presence of a non-punitive attitude to incident and error reporting [7]. A culture of patient safety in a health organization embraces the staff members' awareness of safety, the motivation of public servants to recount events, the number of incidents registered, and a global patient safety grade furnished by staff members to their units [8]. Some of the literature has reported that patient safety culture issues that need attention include; incident recording by hospital staff, the role of the workplace setting in influencing safety, and steps that can be pursued to enhance safety. Although there has been a lot of studies on the prevalence and types of culture of patient safety, there is limited evidence on the relationship between the predictors and outcomes of patient safety culture particularly in countries of the Eastern Mediterranean Region. El-Jardali et al. were one of the first to attempt to evaluate the culture of safety in Lebanese hospitals [9].

The American Hospital Survey on Patient Safety Culture "HSOPSC" measures 12 patient safety culture composites representing several patient safety culture predictors. The HSOPSC also requires that respondents give their work area/unit a patient safety grade and to answer a question concerning some events recounted in the past 12 months [8]. Answers with positive percentages for each composite indicates which aspect of patient safety receives the highest positive ratings, these include the composites of teamwork within units, hospital administration support for patient safety, and organizational education and continuous

development. Conversely, low ratings composites were teamwork across hospital units, staffing, non-punitive response to error and hospital handoffs and transitions [9].

According to Alahmadi H (2010), Saudi Arabian hospitals in Riyadh city are striving to perfect their quality of care by emphasizing the issue of patient safety using safety systems implementation and establishing a culture of safety. His study aimed to evaluate the degree to which the traditions supports patient safety at Saudi hospitals.

The HSOPSC questionnaire was distributed to 13 general hospitals in Riyadh city, Saudi Arabia, and comprised of 223 health specialists including nurses, technicians, managers and medical staff. The results showed that general Patient Safety Grade was rated as excellent or very good by 60% , acceptable by 33% and failing or poor by 7%. Positive reactions to patient safety culture constituents have ranged from 22% to 87%. Areas of strength for most hospitals were organizational education /continuous development (87%), teamwork within units (84%) and feedback and communication about errors (77%). Possible areas for improvement included the under-reporting of events (43% unreported events over 12 months), non-punitive response to error (22%), staffing (22%) and teamwork across hospital units (27%)[10]. The results of this study stressed the need to conduct additional similar research in other hospitals in different regions of Saudi Arabia. According to previous study results, it seems that the safety culture was good and there is a need to study and update whether this can be generalized to all Saudi hospitals or not.

Aim of the study:

To determine level of knowledge and application of safety measures in a Saudi Governmental Hospital

II. Methodology

A cross section analytical observational, study conducted in King Fahd Hospital at Al Madinah Al Munawarah city. King Fahd Hospital is the biggest governmental hospital in Al Madina Al Monowara city, offering tertiary healthcare services to Al Madina residents in addition to visitors coming to Al Madina for Hajj or Omra all over the year. The study included nurses working in King Fahd Hospital or specialized center belonging to the Hospital as Cardiology Center, Diabetes Center, and renal dialysis center.

Inclusion criteria were to be a nurse working in King Fahd Hospital or one of its related specialized centers, Male or female, voluntarily agree to participate in the survey.

Based on the total number of Saudi nurses 395, (309 female and 86 male), the sample size was calculated using Epi-Info StatCalc software with an expected frequency of acceptance 70% and a confidence level of 5% a sample of 231 participants will give a power of 99 % to the study.

The study team distributed 400 questionnaires to all nurses who fulfill the inclusion criteria.

The study used Psychometric evaluation of the Arabic translation of the American Hospital Survey on Patient Safety Culture "HSOPSC" version by El Jardeli F et.al, [9, 11]. The HSOPSC has been shown to be reliable evaluating the safety culture in Arabic-speaking hospitals. In this report, the internal consistency of the instrument was gauged by the Cronbach's coefficient Alpha (α). The highest value (0.83) was for teamwork within units, and the lowest value (0.239) was for the Hospital Management Support for Patient Safety (Table, 2).

Analysis of the composite scores

The HSOPSC consists of 12 patient safety composites (Table 2) that combine to make a total score of 42 points. It consists of positive and negative worded statements . The points were scored on a five- point scale . Positive responses for each item were calculated. Positive response rates negatively worded items were reversed during analysis . Additionally, composite-level scores have been computed by the sum of the elements within the composite scales and dividing by the number of points.

In this study, the HSOPSC User's Guide was used [11] for data analysis in order to benchmark and compare the results to other similar studies. The positive responses were 'Agree/strongly agree' or 'most of the time/always' while the negative responses were 'Disagree/strongly disagree' or 'never/ rarely'.

On this basis, areas of strength were defined as those elements that obtained 75% of respondents' positive answers or when approximately 75% of respondents differed with the reverse-worded item. However, areas recognized to have the potential for development are those points that 50% or more of the interviewees answered negatively using 'disagree/strongly disagree' or 'never/rarely' (when 50% of respondents did not agree with reverse-worded items). Survey results were plotted in descending order of the percentage of positive responses shown in (Table 2). Furthermore, two single-item responses outcome measures concerning the overall patient safety score ('excellent' to 'failing') and the number of results reported within the previous year were included.

Ethics: This study was submitted for review and approved by Taibah University, College of Dentistry Research Ethics Committee, "TUCD REC."

Waiver of informed consent was requested and permitted based on the nature of the study tools to be used being self-administered questionnaire

Statistical analysis of the results:

Data were gathered coded and analyzed using SPSS software under Windows version 22. Simple descriptive analysis done followed by inferential statistics using Chi Square test, Cronbach's alpha coefficient was calculated for the 12 patient safety culture composites to measure the internal consistency a p-value of 0.05 will be considered a cut-off point for significance level.

III. Results

From the 400 survey forms distributed, 272 were returned. Of these, 22 forms were rejected either due to an entire section being incomplete, less than half of the items from the whole form were filled, or all the elements were assigned the same response. A total number of 240 fulfilled the requirements and as a result this equaled a power of 99% (estimated sample size 231).

Table (1); Showed that 168 (70%) of the sample were females and 72 (30%) males. Almost half (43%) reported to be working for 1 to 5 years, followed by 26% who reported that they were working for less than a year. Just under a quarter (23%) stated that they were working for more than 6 years.

Most of the study participants worked from 40-59 hours per week (61%). Almost all participants (90%) had direct contact with patients while 36% worked in their specialty less than a year and 38% worked for between 1 and 5 years. Table 2 showed the safety culture composites consisting of 12 safety culture composites; the internal consistency of the instrument was calculated using the Cronbach's coefficient Alpha (α). The safety culture composites with the highest positive scores were teamwork within units (58.75%), feedback and communication about the error (55.83%), manager expectations and actions promoting patient safety (52.12%) and organizational learning and continuous improvement (50%). It can be observed that none of these dimensions achieved the 75% threshold of the positive score to be an area of strength. The rest of the questionnaire dimensions were negatively scored as areas for possible development. The lowest scores were a non-punitive response to error (30%), Staffing 34%, Hospital handoff, and transition (38%), communication openness (46%), hospital management support for patient safety (45%).

As shown in Table 3, half (51%) of respondents agreed that the overall grade for patient safety was acceptable; 30% reported that the grade ranged from very good to excellent and 19% felt that the grade was 'poor or failing'. The highest category of the event reported was 1-2 event representing 31.3%. However, 0 40% reported no events in the last 12 months.

Table 4 showed a significant statistical difference when associating duration of service in the current specialty with patient safety grade perception $P < 0.01$. However, this was not the case when associating the length of duty as a whole with the patient safety grade $P = 0.69$ (NS).

It was also shown that interaction with patients give a percent of 56 % acceptable level of patient safety and no interaction was associated with the excellent perception of patient safety 50%, and this was statistically significant $p < 0.001$. Table 5, showed a statistically significant association between length of service and duration of work in the same specialty within King Fahd Hospital and some events reported $P < 0.001$ and $P = 0.001$ respectively.

IV. Discussion

It is essential to continuously improve the quality through the implementation of patient safety culture. Despite the health leader's role to put the patient safety on a top priority, leaders should apply all efforts to prevent the adverse event from occurring. Previous studies have reported clear ideas about safety culture and how safety can be improved.

Results appear in this study in Table 2 confirm findings by other researchers and were evaluated against 3 similar studies from the same geographic area; a study from Lebanon conducted in 68 private hospitals with 6807 participants [9], a study from Palestinian study [12] and a study from Saudi Arabian (Riyadh City) study effected in 13 public and private [10].

From the previously mentioned studies, the composite scores of teamwork within the unit, organizational learning-continuous improvement, and feedback and communication about errors were the highest. The lowest composites scores were the non-punitive response to error and staffing. This result highlights the critical role of effective leadership in accepting patient safety culture as a way of assuring quality and patient safety by encouraging and practicing teamwork building leading to a robust and proactive safety culture and commitment used to learning from errors. Also, building a safety culture system needs consideration being given to staff to make them feel that their mistakes will not not be held against them but will be used as

constructive discussions. . Also, when an event is reported, it should be dealt with in a systematic and professional way rather than victimizing the person. staff were concerned about whether their mistakes or errors that they committed will be kept in their r personnel and staff should be reassured that this will not be the case. [12, 13]. Factors such as staff to patient ratio , acceptable working hours and use of permanent staff should be considered predisposing factors to an effective patient safety culture. Hospital staffing and staff/unit ratio were an additional patient safety concern (composite score (34.%) as shown in table2. The majority of the participants complained of a high patient to staff ration which forced them to operate in ‘crisis mode’ trying to do a lot more, too quickly (17.5% item score). This should be communicated to staff that asking Fahad hospital in Al Madinah Al Munawarah city is one of the largest in the area. It also frequently experiences a shortage of professional staff and often high patient workloads as this hospital is a referral tertiary hospital serving a community of almost 2 million. As a consequence to that, staff have to do more shifts to offset the shortages, and approximately 61% of the respondents had to work more than the standard 40 hours per week. Therefore, sufficient work hours should be available to allow patients to receive the best care. Long working hours among medical staff has shown to produce increased staff fatigue which can cause medical oversights, undesirable consequences and after-effects [13].

A high percentage of “no event” reporting was noted in this study (table 3). As well as Table 5, showed a statistically significant association between length of service and duration of work in the same specialty within King Fahd Hospital and some events reported $P < 0.001$ and $P = 0.001$ respectively.

It is a common concern, these studies have reported “no events” in the past year. The prevalence in the current study was 40% while a study in Riyadh, Saudi Arabia reported 43%, a Palestinian study reported 53.2%, and in Lebanon it was 59%. Another shared patient safety concern in different countries is event reporting [8-10, 12]. The extents of the frequency of event reporting affect responses from the staff [12]. The unwillingness to report incidents by the staff is undoubtedly associated with the prevalence of a punitive response to error and the blame culture (composite score 30.%). The staff could be fearful that oversights made by them will be kept in their personnel file (item score 27.5%) and furthermore they reported to be afraid that oversights made might be held against them (item score 15%) (Table 2). The fact that lacking feedback and communication about the error (55.83%), meant that staff were not being notified or are not clearly told of errors that had occurred, or advised of changes implemented and practices to prevent errors were not appropriately reviewed. Incident reporting should be used by healthcare organizations as a tool towards enhancing safety culture and improving quality, transferring the culture from an atmosphere where errors are viewed as personal failures to one in which errors are seen as areas for improvement.

As shown from Table 3, the overall patient safety grade was (30%) which was lower than that found in other Saudi Hospitals done in Riyadh (60%), Palestine (64%), Lebanon (73.%) and USA (75%) [8-10, 12]. Table 4 showed a statistically significant difference when associating duration of service in the current specialty with patient safety grade perception ($p < 0.01$). That means the staff duration 16-20 years reflecting excellent/very good patient safety grade.

This points need further study to investigate either this result due to their cumulative experiences or due to their adaptation to face errors and harm as a part of the work. They accept it as a factor not affecting the hospital service or patient outcomes.as an evidence to that what was also noticed from Table 4, no interaction was associated with excellent perception of patient safety 50%, and this was statistically significant ($p < 0.001$).

V. Conclusions

Commitment to quality care as an outcome will surely associate with patient safety. This study provides an overall assessment of perceptions of safety culture among nursing staff in the biggest governmental hospital in Al Madina Al Monowarah city in Saudi Arabia. The participants had negative attitude regarding patient safety culture. Teamwork within units, feedback and communication about error, manager expectations and actions promoting patient safety and organizational learning and continuous improvement received the highest safety culture composite scores. However, none of these dimensions reached the 75minimum score to be recognized as an area of strength. The lowest composite scores were obtained in non-punitive response to errors, staffing, hospital handoff and transition, communication openness and hospital management support for patient safety. Results also pointed out the need to develop and implement effective strategies to promote patient safety culture in Saudi hospitals by enhancing leadership capacity to establish a climate of open communication and organizational learning with no blame, fear and silence regarding reporting errors.

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Tables

Table 1: Characteristics of the Participants:

	N=240	%
Gender		
Male	72	30
Female	168	70
How long have you worked in the current hospital work area?		
Less than 1 year	63	26.3
1-5 years	102	42.5
6-10 years	54	22.5
11-15 years	12	5
16-20 years	6	2.5
21 years or more	3	1.3
How many hours per week do you work in this hospital?		
Less than 20 hrs. per week	6	2.5
20-39 hrs. per week	51	21.3
40- 59 hrs. per week	147	61.3
60-79 hrs. per week	21	8.8
80-99 hrs. per week	12	5
100 hrs. per week or more	3	1.3
Direct interaction or contact with patients		
Yes	216	90
No	24	10
How long have you worked in the current specialty or profession?		
Less than 1 year	87	36.3
1-5 years	90	37.5
6-10 years	45	18.8
11-15 years	15	6.3
16-20 years	3	1.3

Table 2; Survey Composites and items positive score and Cronbach's α

Composites and Survey items	Average percentage positive Response ^a
Overall perception of safety (Cronbach's $\alpha = 0.411$)	43.45
A10- It is just by chance that more serious mistakes do not happen around here (R) ^b	25
A15- Patient safety is never sacrificed to get more work done	53.8
A17- We have patient safety problems in this unit (R)	37.5
A18- Our policies and procedures and systems are effective in preventing errors	57.5
Supervisor/manager expectations and actions promoting patient safety (Cronbach's $\alpha = 0.618$)	52.125
B1-My supervisor/manager says a good word when he/she sees a job done according to established patient safety procedures ^c	66.3
B2- My supervisor/manager seriously considers staff suggestions for improving patient safety	51.2
B3- Whenever pressure builds up, my supervisor/manager wants us to work faster, even if it means taking shortcuts (R)	38.8
B4- My supervisor/manager overlooks patient safety problems that happen over and over (R)	52.5
Organizational learning and continuous improvement (Cronbach's $\alpha = 0.674$)	50
A6- We are actively doing things to improve patient safety 91.4	61.3
A9- Mistakes have led to positive changes here 62.2	41.3
A13- After we make changes to improve patient safety, we evaluate their effectiveness 80.8	47.5
Teamwork within units (Cronbach's $\alpha = 0.831$)	58.75
A1-People support one another in terms of work in this unit	60
A3-When a lot of work needs to be done quickly, we work together as a team to get the work done	63.7

Composites and Survey items	Average percentage positive Response ^a
A4- In this unit, people treat each other with respect	58.8
A11- When members of this unit get really busy, other members of the same unit help out	52.5
Non-punitive response to error (Cronbach's $\alpha = 0.0716$)	30.43
A8- Staff feel like their mistakes are held against them (R)	15
A12- When an event is reported, it feels like the person is being reported, not the problem (R)	48.8
A16- Staff worry that mistakes they make are kept in their personnel file (R)	27.5
Staffing (Cronbach's $\alpha = 0.577$)	34.075
A2- We have enough staff to handle the workload	28.7
A5- Staff in this unit work long hours which might affect patient care (R)	41.3
A7- We use/hire temporary/part-time staff which sometimes affects patient care (R)	48.8
A14- When the work is in 'crisis mode' (i.e. when the work pressure is too high) we try to do too much, too quickly (R) _{SEP}	17.5
Hospital management support for patient safety (Cronbach's $\alpha = 0.239$)	44.6
F1- Hospital management provides a work climate that promotes patient safety	35
F8- The actions of hospital management show that patient safety is a top priority	53.8
F9- Hospital management seems interested in patient safety only after an adverse event happens	45
Teamwork across hospital units (Cronbach's $\alpha = 0.451$)	38.45
F2- Hospital units do not coordinate well with each other and this might affect patient care (R)	32.5
F4- There is good cooperation among hospital units that need to work together	40
F6- It is often not easy to work with staff from other hospital units (R)	35
F10- Hospital units work well together to provide the best care for patients	46.3
Hospital handoffs and transitions (Cronbach's $\alpha = 0.716$)	37.93
F3- Things 'fall between the cracks', i.e. things might go uncontrolled and get lost (e.g. medical records, medical treatment, patient information and education, discharge criteria) when transferring patients from one unit to another (R)	31.3
F5- Important patient care information is often lost during shift changes (R)	40
F7- Problems often occur in the exchange of information across hospital units (R)	32.5
F11- Shift changes are problematic for patients in this hospital (R)	42.5
Communication openness (Cronbach's $\alpha = 0.614$)	45.86
C2- Staff will freely speak up if they see something that may negatively affect patient care	55
C4- Staff feel free to question the decisions or actions of those with more authority	48.8
C6- Staff are afraid to ask questions when something does not feel right (R)	33.8
Feedback and communications about error (Cronbach's $\alpha = 0.719$)	55.833
C1- We are given feedback about changes put into place based on event reports	43.8
C3- We are informed about errors that happen in this unit	63.7
C5- In this unit, we discuss ways to prevent errors from happening again	74.5
Frequency of incidents reported (Cronbach's $\alpha = 0.799$)	40.2
D1- When a mistake is made, but is caught (noticed, discovered) and corrected before it affects the patient, how often is this reported? _{SEP}	41.8
D2- When a mistake is made, but has no potential to harm the patient, how often is this reported?	42.5
D3- When a mistake is made that could harm the patient, but does not, how often is this reported?	36.3

Table 3: Self-perception regarding patient safety and Number of events reported:

	N=240	%
Work area/unit overall grade on patient safety		
Excellent	30	12.5
Very good	42	17.5
Acceptable	123	51.2
Poor	30	12.5
Failing	15	6.3
Number of incidents reported in the last 12 months		
No incident reports	96	40
1-2 incident reports	75	31.3
3-5 incident reports	30	12.5
6-10 incident reports	27	11.3
11-20 incident reports	12	5

Table 4: Patient safety grade variable and respondent characteristics:

Patient safety grade	Excellent/ v. good		Acceptable		Poor/ Failing		Total N=240
	N= 72	%	N=123	%	45	%	
Length of service							
Less than 1 year	15	26.3	36	63.2	6	10.5	57
1-3 years	21	43.8	15	31.3	12	25	48
4-6 years	18	28.6	30	47.6	15	23.8	63
7-9 years	9	23.1	24	61.5	6	15.4	39
10 years or more	9	27.3	18	54.5	6	18.2	33
Chi Square test 14.54	P=0.69						

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Gender							
Male	18	25	42	58.3	12	16.7	72
Female	54	32.1	81	48.2	33	19.6	168
Chi Square test 2.1 P=0.35							
How long have you worked in your current hospital work area?							
Less than 1 year	15	23.8	36	57.1	12	19	63
1-5 years	45	44.1	48	47.1	9	8.8	102
6-10 years	6	11.1	30	55.6	18	33.3	54
11-15 years	3	25	6	50	3	25	12
16-20 years	3	50	0	0	3	50	6
21 years or more	0	0	3	100	0	0	3
Chi Square test = 36.37 P<0.001							
Do you have direct interaction with patients?							
Yes	60	27.8	120	55.6	36	16.7	216
No	12	50	3	12.5	9	37.5	24
Chi Square test = 16.369 P<0.001							