Personal Preference and Perceived Barriers toward Disclosure and Report of Incident Errors among Healthcare Personnel

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Abstract: Background: Despite the best intentions of caregivers, medical errors occur frequently. Each year thousands of injuries and deaths in hospitals result from medical errors. Reporting and disclosure about incidents errors is fundamental to error prevention. **Aim**: The aim of this research was to assess the personal preference and perceived barriers toward disclosure and report of incident errors among healthcare personnel. **Design**: A descriptive cross-sectional design was used for this research. **Setting**: The study was conducted at two hospitals' namely; King Fahd Hospital of the University (KFHU) in Saudi Arabia and El-Behara Hospitals in Egypt in Intensive Care Units (ICUs) and surgical department. **Sample**: The sample included 155 health care professionals (physicians and registered nurses). **Tools**: Two tools were used in this study; the first tool used to assess perceived barriers to medical errors and the second tool used to assess personal preference about which incidents to be disclosed and to whom disclose or report errors. **Results**: The current study demonstrated underreporting of adverse events by both nurses and physicians due to administrative barrier which considered as a major barrier. Majority of total sample preferred to disclose errors with near miss, followed those who don't prefer to disclose any errors then those preferred to disclose errors with minor harm. Furthermore, the majorities of participants did not prefer to disclose errors for patients or their families and did not prefer to report errors for colleges, head nurses or chief executive officer. **Conclusion**: When errors are not reported, the potential to avoid future preventable errors is greatly reduced. Thus, sustained and collaborative efforts to reduce the occurrence and severity of health care errors are required so that safer, higher quality care results. **Recommendations:** The results recommended the needs to improve healthcare professionals' education, training, and practice in disclosure, and health care institutes should establish non-punitive policies of error reporting and implement full disclosure policies.

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1. Introduction

Medical errors that injure or cause death in patients have become a significant and costly problem prompting governmental and regulatory agencies, health care organizations, and private industry to seek solutions to reduce errors and minimize their effect on individuals while limiting their cost[(1)]. Despite the best intentions of caregivers, medical errors occur frequently. Each year thousands of injuries and deaths in hospitals result from medical errors[(2)].

Error-free performance is a standard expected from all healthcare professionals. However, health systems and personnel are not infallible; errors are made, with high human and economic costs. Some errors have devastating consequences; others do not. Adverse events are visible manifestations of errors, and most represent unintended errors of omission (usually) or commission[(3)]. Learning from both adverse events and near misses (i.e., an event/occurrence where harm to the patient was avoided) are essential for improving the quality of care[(4)].

Patient safety is a central concern of current healthcare delivery systems and quality[(5)]. Contrary to commonly held perceptions, medical errors are generally not the result of individual misconduct; they are caused by failures in the health care systems and organizations that we create[(6)]. However, Physicians and nurses play a pivotal role in the identification, prevention, and reduction of medical errors and promotion of patient safety[(1)].

Commonly, neither health care professionals nor health care organizations counsel others when a mishap occurs, nor do they share what they have learned when an investigation has been carried out. Consequently, the same mistakes occur repeatedly in many settings and patients continue to be harmed by preventable errors[(7)]. Errors in the health care system have been major public health problems which caused due to a diverse interaction of human behavior, socio-cultural aspects, technical aspects of the system, as well as a range of system weaknesses[(8)].

Incident is an unplanned and often destructive event that disrupts the administration, development or

continuation of the work. Incident is caused by unsafe tasks or working in unsafe conditions or a combination of the two, because of the lack or weakness in its detection, or due to some failures in risk control systems[9]. Reporting about incidents errors is fundamental to error prevention. Concealing a medical error may violate ethical codes. Moreover, the process of reporting errors requires courage, composure, communication skills, and a belief that the importance of telling the truth. Nevertheless, many possible reasons explain why medical personnel may not be forthcoming with the truth[7,10]. Actually, reporting an adverse event is a difficult and fearful event for healthcare providers. It may not be easy, but ethically it's the right thing to do. In fact, the process of disclosing is an ethical and legal obligation that provides essential information to patients and families. Nonetheless, errors can happen at every level of the healthcare continuum. There is a significant gap between what is expected and what actually occurs in current practice; therefore increasing attention to disclosing harmful events is inevitable[11].

Individual physicians, nurses, pharmacists, and other health care practitioners inevitably make mistakes in judgment, overlook a symptom, and fail to use medication or equipment properly, or misinterpret a finding. Furthermore, the devices, machines, medications, and other equipment used in treating and diagnosing patients play an important role in determining health care safety and can also serve as a source of error[12,13].

Many errors go unreported by health care workers[3]. The major concern of them is that self-reporting will result in repercussions. Providers' emotional responses to errors inhibit reporting, yet some are relieved when they share the events of the error with peers or others[14,15]. Health care professionals report feeling of worried, guilty, and depressed following serious errors, as well as being concerned for patient safety and fearful of disciplinary actions[16,17]. Therefore, they choose not to acknowledge or document errors. In other cases, errors are discussed only behind closed doors between providers and administrators; patients and families aren't told when errors have occurred, or that corrective actions are needed. Thus, certain kinds of errors re-occur, and the risk for patient harm increases[17].

Disclosure of errors is required per professional, legal and regulatory standards[18]. Consequently, the process of reporting and disclosing medical errors requires agreement among health care professionals about what constitutes an error; how errors should be reported; and when, how, and by whom they should be disclosed[19].

The lack of standardization in the information that is reported and collected makes comparisons and trending more difficult in preventing future errors[20]. When health care providers do not recognize, report, or disclose errors, they fail to act in the best interest of the patient. This failure compromises patient autonomy and informed decision-making. The failure to report and disclose errors also compromises the principles of beneficence, fidelity, and justice[21]. Research has revealed that errors are a growing problem in the family practice setting, and upon discharge from the hospital[22].

Indeed, health care organizations are morally obligated to develop and implement a disclosure policy that promotes open and honest communication in order to honor and respect patients, and to maximize benefits, reduce harm, reflect honesty and truthfulness in the patient/clinician relationship[22,23]. Failure of professionals to communicate effectively, and to honestly admit to the error in a timely manner, can potentially undermine the hospital's reputation and heighten the risk of litigation. Health care providers may experience a certain relief when disclosure policies have been crafted and are in place[24].

Accordingly, reporting (providing accounts of mistakes) and disclosing (sharing with patients and significant others) actual errors and near misses provide opportunities to reduce the effects of errors and prevent the likelihood of future errors by, in effect, warning others about the potential risk of harm[25]. Reporting reduces the number of future errors, diminishing personal suffering and decreasing financial costs. In contrast, disclosure is thought to benefit patients and providers by supplying them with immediate answers about errors and reducing lengthy litigation. Although clinicians and health care managers and administrators feel uncomfortable with disclosure, disclosure is a duty[26].

Consequently, there are no easy road maps for providers who face a complex problem like medical error disclosure or report. Errors can trigger feelings of shock and anxiety among all parties involved. Recognizing the preferences and perceptions of health professionals who will implement this system is mandatory for its success. Therefore, this study aimed to assess the personal preference and the perceived barriers of health care personnel towards disclosure /reporting of incident/error.

Research's Questions

Three research's questions were asked about:

- What was the relation between demographic data of healthcare personnel and their perceived barriers to medical errors?
- Which type of errors the healthcare personnel preferred to report?

- To whom the healthcare personnel preferred to disclose or report errors?

2. Material and Methods

Design: A descriptive cross-sectional study design was used.

Setting: This study was conducted at two hospitals' namely; King Fahd Hospital of the University (KFHU) in Saudi Arabia and at El-Behara Hospitals (Abohomos, Kafr Eldawar, Etay El Baroad, El Delangat and Hosh Essa) in Egypt in Intensive Care Units (ICUs) and surgical departments.

Sample: 155 health care professionals participated in the study as 52 physicians (consultant and residents) and 103 registered nurses (head nurses and supervisors) worked in the above mentioned settings. Two tools were used in this study.

Tool I: Perceived Barriers' Assessment to Medical Errors.

It consisted of two parts. The first part included demographic data of healthcare personnel such as age, sex, position, work area, working hours/week and years of experience. The second part was developed by **Wakefield et al (2000)**[27] and modified by the researchers based on the recent literature to be 29 items categorized under four sections; fear (12 items), understanding (7 items), administrative barriers (5 items) and burden of effort (5 items). The subjects' responses were represented in five points Likert Scale ranging from 5= strongly agree to 1= strongly disagree.

Tool II: **Personal Preference Assessment.**

It was developed by the researchers which included two parts; part one contained 1 item asked about which incidents to be disclosed with five options for subjects' responses ranged from 1= don't disclose, 2= disclose with major harm, 3= disclose with moderate harm, 4= disclose with minor harm and 5= disclose with near miss.

The second part consisted of two sections. Section one asked about personal preference of healthcare personnel to disclose errors for patient and family (1 item). Section two asked about to whom report errors and contained five items. Two options were allowed for subjects' responses; yes or no.

Both tools submitted to five experts in the different fields of nursing for testing the content and face validity. Necessary modifications were done, included clarification, omission of certain questions and adding others and simplifying work related words.

The researchers used test-retest reliability of nominal data which its value greater than 0.75. Cronbach's coefficient alpha was used to measure internal consistency reliability of tools which greater than 0.7.

Ethical considerations

The research was approved by an ethical committee of Dammam University. The data was collected after the approval of permission from the hospital responsible authorities. Prior to the data collection, informed consent of all participants was obtained. Participants were informed about the purpose of the research study. A pilot study was carried out on 10 healthcare personnel (physicians and nurses) in previously mentioned settings and excluded from the main study's sample.

Statistical analysis

Statistical analysis was carried out using SPSS (version 11.5). Quantitative variables were described by the Mean, Standard Deviation (SD) and the Range (Maximum – Minimum). Qualitative variables were described by proportions and Percentages. Analyzed data was done through the use of two tests; student t-test and ANOVA Spearman's rho is used to measure correlation. Significance level was stated at $\alpha = 0.05$.

3. Results

The overall response rate from 155 participants was 77.5% who agree to participate in data collection. Table (1) shows demographic data of healthcare personnel at El-Behara and Fahd hospitals. at El-Behara participants, (41.1%) were in age group 30 to 39 years, (77.8%) were mainly female with Egyptian nationality, (65%) were nurses, (51.1%) worked in surgical department, (47.8%) had less than 5 years of experience and (67.8%) worked for ≥39 hours/week.

Regarding Fahd participants, (33.8%) were in age group 30 to 39 years, (84.6%) were mainly female, (50.8) had Saudi nationality, (67.7%) were nurses, (60%) worked in surgical department, (29.2%) had 5-9 years of experience and (81.5%) worked for 40-59 hours/week.

Table (2) reveals correlation of demographic data with perceived barriers' subscales to report errors at El-Behara and Fahd hospitals. This study suggested no statistically significant correlation between participants' age and their perceived barriers' subscales in both settings except the understanding barrier at Fahd hospital (r=0.253 p=0.0493). In relation to years of experience, there were significant correlations with fear (r=0.158 p=0.0499) and administrative barriers (r=0.348 p=0.0000) at El-Behara hospitals, also with total perceived barriers (r=0.225 p=0.0049), as well as in understanding and administrative barriers at Fahd hospital (r=0.333 p=0.0067, r=0.326 p=0.0081) respectively, and with total perceived barriers (r=0.320 p=0.0094). Moreover, there were inverse statistically significant correlations between males and females for all perceived barriers subscales at El-Behara hospitals and positive correlations at Fahd hospital except for fear barrier.

Concerning staff position, inverse significant correlations found between doctors and nurses for all perceived barriers' subscales at El-Behara hospitals except for administrative barrier and positive significant correlations at Fahd hospital except for burden of effort barrier. The table showed no significant correlation between two working areas and their perceived barriers subscales in both settings. Regarding working hours, highly significant correlations presented between different groups of working hours and their perceived barriers' subscales at El-Behara hospitals and no significant correlation found among participants at Fahd hospital.

Table (1): Demographic data of healthcare personnel at El-Behara and Fahd hospitals

Demographic Data	Hospital names			
	El-Behara Hospitals		Fahd Hospital	
	Frequency	%	Frequency	%
Age /years				
20 - 29	32	35.6	13	20.0
30 -39	37	**41.1**	22	**33.8**
40-49	20	22.2	6	9.2
50 – 60	1	1.1	20	30.8
Missing	0	0.0	4	6.2
Total	90	58.1	65	41.9
	Range 20-52 Mean 33.56 & SD 6.72		**Range 26-60 Mean 40.07 & SD 11.43**	
Sex				
Male	20	22.2	10	15.4
Female	70	**77.8**	55	**84.6**
Total	90	58.1	65	41.9
Nationality				
Egyptian	90	**100.0**	2	3.1
Saudi	0	0.0	33	**50.8**
Foreign	0	0.0	30	46.2
Total	90	58.1	65	41.9
Staff Position				
Doctor	31	34.4	21	32.3
Nurse	59	**65.6**	44	**67.7**
Total	90	58.1	65	41.9
Working Areas				
ICU	44	48.9	26	40
Surgical	46	**51.1**	39	**60**
Total	90	58.1	65	41.9
Years of Experiences				
>5	43	**43.0**	11	16.9
5 to 9	27	27	19	**29.2**
10 to 19	20	20	17	26.2
≤20	0	0	18	27.7
Total	90	58.1	65	41.9
	Range 0.3 – 18 Mean 5.91 & SD 4.27		**Range 0.25-32 Mean 11.97 & SD 8.85**	
Working Hours/Week				
≥39	61	67.8	4	6.2
40-59	18	20.0	53	81.5
≤60	11	12.2	8	12.3
Total	90	58.1	65	41.9

Table (2): Correlation of demographic data with perceived barriers' subscales to report errors at El-Behara and Fahd hospitals

Demographic Variables		El-Behara Hospitals					Fahd Hospital				
		Fear Barrier	Underst. Barrier	Admin. Barrier	Burden Barrier	Total PBs	Fear Barrier	Underst. Barrier	Admin. Barrier	Burden Barriers	Total PBs
Age		0.135 0.2046	0.052 0.6236	0.188 0.0757	0.136 0.2017	0.152 0.1521	0.107 0.4136	**0.253** **0.0493***	0.221 0.0869	0.044 0.7350	0.193 0.1361
Experience		**0.158** **0.0499***	0.140 0.0816	**0.348** **0.0000*****	0.092 0.2524	**0.225** **0.0049****	0.200 0.1097	**0.333** **0.0067****	**0.326** **0.0081****	**0.073** 0.5647	**0.320** **0.0094****
Sex	Males	**-2.30**	**-3.37**	**-2.95**	**-3.49**	**-3.75**	0.50	**2.47**	**3.60**	**3.58**	2.62
	Females	**0.0236***	**0.0011***	**0.0041***	**0.0008****	**0.0003****	0.6196	**0.0163***	**0.0006****	**0.0007****	**0.0110***
Position	Doctor	**-2.94**	**-2.75**	-1.73	**-3.55**	**-3.70**	**2.15**	**2.41**	**3.41**	-0.33	2.82
	Nurse	**0.0042***	**0.0072***	0.0872	**0.0006****	**0.0004****	**0.0354***	**0.0191***	**0.0011****	0.7445	**0.0065****
Working Areas	ICUs	1.22	0.06	-0.36	-1.19	0.36	0.35	-0.52	-1.96	0.31	0.54
	Surgical	0.226	0.955	0.717	0.237	0.722	0.724	0.604	0.054	0.158	0.860
Working hours	≥39	**16.39**	**11.10**	**5.09**	**17.79**	**24.26**	0.77	0.58	2.45	0.90	1.05
	40-59	**0.0000*****	**0.0000*****	**0.008****	**0.0000*****	**0.0000*****	0.466	0.561	0.095	0.413	0.357
	≤60										

Significant P < 0.05, P < 0.001, P < 0.0001*****

Table (3): Relation of participants' nationality with perceived barriers' subscales to report errors

Perceived Barriers' Subscale	Nationality	N	Mean	SD	F P-value
Fear Barrier	Egyptian	92	63.69	20.42	**8.34** **0.00036*****
	Saudi	33	49.44	24.32	
	Foreigner	30	49.17	21.59	
Understanding Barrier	Egyptian	92	64.36	19.45	3.70 **0.02690***
	Saudi	33	60.18	16.58	
	Foreigner	30	53.92	17.43	
Administrative Barrier	Egyptian	92	84.08	16.24	38.34 **0.00000****
	Saudi	33	64.39	20.11	
	Foreigner	30	53.17	21.52	
Burden of Effort Barrier	Egyptian	92	76.79	20.50	27.76 **0.00000****
	Saudi	33	53.64	19.97	
	Foreigner	30	51.67	17.24	
Total PBs	Egyptian	92	69.62	15.18	21.93 **0.00000*****
	Saudi	33	55.32	14.39	
	Foreigner	30	51.44	15.55	

Significant P < 0.05, P < 0.001**

Table (3) represents the relation of participants' nationality with perceived barriers' subscales to report errors. This table revealed highly statistically significant correlation between three groups of nationalities and their perceived barriers subscales to report errors; fear (r=8.34 p=0.00036), understanding (r=3.70 p=0.02690), administrative (r=38.34 p= 0.0000), burden of effort (r= 27.76 p= 0.0000), as well as total perceived barriers (r= 21.93 p= 0.0000).

Table (4) reveals the perceived barriers to report errors at El-Behara and Fahd hospitals. It can be noticed that administrative barrier had the highest mean scores at both settings (mean=84.50 ± 16.15 & 59.23 ± 21.09) respectively. The next strongest

perceived barrier was burden of effort (mean=77.44 ± 19.96) at El-Behara hospitals and understanding barrier (mean= 57.25 ± 16.90) at Fahd hospital. The weakest perceived barrier was fear at both settings. It was obviously observed that doctors and nurses at El-Behara hospitals have higher mean scores (69.82 ± 15.28) in all perceived barriers' subscales than Fahd hospital (53.70 ± 14.80). Moreover, there were statistical significance differences between two settings in all perceived barriers to report errors; fear, understanding, administrative, burden of effort (t=3.95 p=0.0001, t=2.40 p= 0.01, t=8.45 p=0.0000 & t=7.86 p=0.0000) respectively.

As shown in Figure (1), around half (56.7%) of participants at El-Behara hospitals preferred to disclose errors with near miss and (26.7%) of them didn't prefer to disclose any errors. While considerable percent (29.2%) at Fahd hospitals' respondents didn't prefer to disclose errors and (27.7%) of them preferred to disclose errors with minor harm only.

Table (5) illustrates the personal preference of healthcare personnel to whom disclose/report errors at El-Behara and Fahd hospitals. It stated that the majorities (93%) of participants in both settings did not prefer to disclose errors for patients and their families, as well as did not prefer to report errors for colleges (81.9%), head nurses (59.4%) or chief executive directors (92.3%). On the other hand, 67.7% and 45.6% of participants prefer to report errors for supervisor and physician at Fahd and El-Behara hospitals respectively.

Table (6) represents the correlation between perceived barriers' subscales in El-Behara and Fahd hospitals. It revealed highly statistical significant correlations between all subscales of perceived barriers in both settings except for fear with administrative and burden of work in Fahd hospital no significant correlation was existed.

Table (4): Perceived barriers to report errors at El-Behara and Fahd hospitals

Perceived Barriers Items	Hospital name	Mean	±SD	t-test P value
Fear	**Damanhur**	63.64	20.63	3.95
	Fahd	49.82	22.71	**0.0001*** **
Understanding	**Damanhur**	64.48	19.63	2.40
	Fahd	**57.25**	**16.90**	**0.01***
Administrative	**Damanhur**	**84.50**	**16.15**	8.45
	Fahd	**59.23**	**21.09**	**0.0000*** **
Burden of effort	**Damanhur**	**77.44**	**19.96**	7.86
	Fahd	52.54	18.75	**0.0000*** **
Total PBs	**Damanhur**	**69.82**	**15.28**	6.57
	Fahd	**53.70**	**14.80**	**0.0000*** **

Figure 1: Personal preference to which error to be disclosed

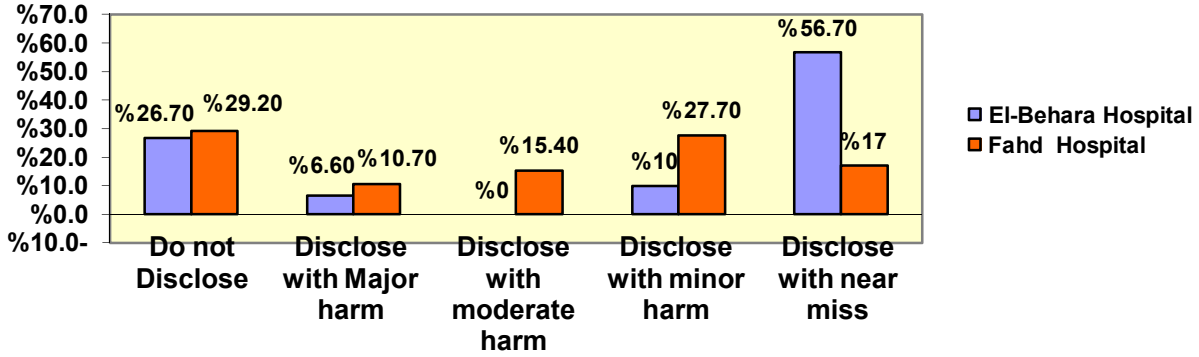

Table (5): Personal preference of healthcare personnel to whom disclose/report errors at El-Behara and Fahd hospitals

Who disclose/report errors	Hospital name	No (%)	Yes (%)
Patient & Family	**El-Behara**	83 (**92.2**)	7 (7.8)
	Fahd	61 (**93.8**)	4 (6.2)
Total		**144 (93)**	**11 (7)**
College	**El-Behara**	74 (**82.2**)	16 (17.8)
	Fahd	53 (**81.5**)	12 (18.5)
Total		**127 (81.9)**	**28 (18.1)**
Head nurse	**El-Behara**	53 (58.9)	37 (41.1)
	Fahd	39 (60)	26 (40)
Total		**92 (59.4)**	**63 (40.6)**
Supervisor	**El-Behara**	83 (**92.2**)	7 (7.8)
	Fahd	21 (32.3)	44 (**67.7**)
	Total	**104 (67.1)**	**51 (32.9)**
Physician	**El-Behara**	49 (54.4)	41 (**45.6**)
	Fahd	37 (56.9)	28 (43.1)
Total		**86 (55.5)**	**69 (44.5)**
CEDs	**El-Behara**	88 (**97.8**)	2 (2.2)
	Fahd	55 (**84.6**)	10 (15.4)
Total		**143 (92.3)**	**12 (7.7)**

Table (6): Correlation between perceived barriers subscales at Damanhur and Fahd hospitals

Perceived Barriers Subscale	El-Behara (n = 90)			Fahd (n = 65)		
	Unders.	Admin.	Burden	Unders.	Admin.	Burden
	r (p)	r (p)	r (p)	r (p)	r (p)	r (p)
Fear	**0.455 0.000*****	**0.395 0.000****	**0.288 0.005****	**0.526 0.000*****	0.225 0.0709	0.026 0.8348
Unders.		**0.274 0.009****	**0.235 0.025***		**0.604 0.000*****	**0.314 0.01****
Admin.			**0.304 0.003****			**0.277 0.025***

Significant P < 0.05*, P < 0.001, P < 0.0001*****

4. Discussion

Although healthcare providers are not expected to make errors, mistakes do occur, and some mistakes have resulted in serious injury or death. Each year, approximately 1.3 million patients are injured because of error during their hospitalization, and more than 100000 deaths due to preventable adverse events occur[28]. Hence, concerns about incidents errors represent a significant threat to patient safety.

To our knowledge, in Arabic Islamic countries no researches study the relationship between perceived barriers of medical errors among nurses and physicians and their demographic characteristics, as well as their personal preference toward which error to be disclosed and to whom disclose/report error. Likewise, the aim of this research is to assess personal preference and perceived barriers toward disclosure and report of incident errors among health care personnel in Egypt at El- Behara Hospitals and in KSA at King Fahd University Hospital.

In this study, no statistical significant differences were found between age and perceived

barriers subscales in both settings except in understanding barrier at king Fahd hospital. These results can be explained as older physicians or nurses were more understanding for meaning of errors and able to determine which error must be reported, as well as, they were mature enough and familiar with the policy of their hospital. On contrary, younger physicians or nurses had lack of knowledge about how, what and whom to report errors. Additionally, reporting errors is not a common practice at El-Behara hospitals in Egypt and not all respondents perceived that an error was serious enough to be reported.

Chiang et al (2006)[29] supported these findings as they found that nurse's demographic characteristics were not related to the perceived barriers. Moreover, this finding is inconsistent with **Blegen et al., (2004)**[30] study who reported that age was negatively correlated to the reporting barriers. One reason for this difference may be that these respondents were much younger and had shorter work experience especially at El-Behara hospitals.

Findings of the current study documented statistical significant differences for respondents' years of experience with fear and administrative barriers at El-Behara hospitals, as well as statistical significant differences with understanding and administrative barriers in Fahd hospital. This congruence between participants' years of experience and administrative barriers in both settings may be due to that more experienced nurses / physicians had more knowledge, skills base and respectful for rules and regulations of hospital[7]. Moreover, the majority of them experienced administrative barrier focusing on the person rather than the system.

In addition, the experienced respondents at El-Behara hospitals revealed increased afraid of blaming, punishment and fear of career threatening disciplinary actions with possible malpractice litigation and liability due to unclear policy about reporting errors. On the other hand, experienced participants at Fahd hospital revealed that they are incompetent and damage their professional reputation when report for error, especially if their hospital didn't provide feedback on reported errors and give exaggerated response regardless severity of error, as well as their leaders may not protect reporters of errors from negative consequences.

Evans et al (2006)[31] research confirms the previous finding and claimed that the frequency of error reporting was found to be higher among nurses with 5-10 years of experience. While, this finding inconsistent with **Mayo and Duncan (2004)**[32] who suggested that a weak relationship between percentage of errors perceived reported and years of RNs' practice. Additionally, another survey reported that nurses with more than 5 years of experience were more likely to believe there was no value in reporting near misses[33]**.** Furthermore, it was found that staff nurse relied on personal experience to estimate medication administration errors on their unit[34].

Moreover at El-Behara hospitals, findings revealed inverse statistically significant correlation between males' and females' respondents for all perceived barriers subscales. This may be attributed to that the majority of the studied sample at El-Behara hospitals was female. Female respondents were more likely than male participants to feel guilty and angry at themselves, and be afraid of accusations of malpractice, losing their licenses, damaging their reputation, or losing confidence when report for errors.

On the contrary, there are positive significance differences between males' and females' respondents for perceived barriers subscale at Fahd hospital except for fear barrier. The reason for this finding may be referred to that most male workforce were foreign (nurses or doctors) who contracted and renew annually so they were afraid from poor professional reputation and financial penalties especially they had family responsibilities which obligate them to maintain contracts.

Furthermore, findings of the present study showed inverse statistical significant differences between doctors and nurses for all perceived barriers subscales at El-Behara hospitals except for administrative barrier. These results are in consistent with several studies which mentioned that incident-reporting behavior differs between medical and nursing professional groups, with nurses reporting significantly more often than doctors[35-38]**.**

Based on a survey among different healthcare professionals, it has been suggested that nurses feel more guilty, worried, embarrassed, and afraid of disciplinary action than doctors and pharmacists as a result of a greater feeling of responsibility for an error, fear of the consequences for the patient and fear of further punishment from senior staff[39]**.**

On the other hand, there are positive statistical significant differences between doctors and nurses for all perceived barriers subscales at King Fahd University Hospital except for burden of effort barrier were inverse without difference. The truth stated that doctors were perceived to report errors less often than nurses. This can be attributed that, physicians believed that nurses were responsible for reporting errors[40]**.** In fact, they not considered more serious events as incidents, but as known complications. However, physicians' willingness to disclose errors may be stimulated by accountability, honesty, trust, and reducing risk of malpractice, physicians may hesitate to disclose because of

professional repercussions, humiliation, guilt, and lack of anonymity[41]. These results are in congruence with a survey of physicians and nurses, physicians identified twice as many barriers to reporting than did nurses both identified time and extra work involved in documenting an error[42].

Results of the present study revealed that no statistical significant differences between two working areas and all perceived barriers' subscales in both settings. These findings are in contradictory with **Mayo and Duncan (2004)**[32] who concluded that nurses working in neonatal ICUs perceived higher reported errors than did those working in medical/surgical units.

In the current study, findings showed highly statistical significant differences between different groups of working hours and perceived barriers subscales at El-Behara hospitals, while the results showed no statistical significant differences at King Fahd University Hospital. In fact, excessive total worked hours puts nurses and physicians at risk; in addition, rotating shifts can also threaten patient safety. Working more than 40 or 50 hours/ week and also increased the odds of making an error[43,44].

Actually, human factors like fatigue are often absent from the analysis of an incident report. Nurses who worked 12 – hours' shifts made more errors in grammatical reasoning and chart reviewing than did nurses who worked shorter shifts. Most reporting systems are complex and time consuming, hence clinicians don't feel they have time to use them. Actually, reporting systems have been relatively cumbersome. The process of completing detailed forms, submitting them up the chain of command, and attending meetings and interviews has deterred many health care professionals from reporting all but the most egregious errors[45]. Moreover, physicians referred to the excessive time required for form filling could be better spent with patients and the menial nature of paperwork that was somehow beneath the medical expertise[43].

Findings of the current study demonstrated highly statistical significant differences between three groups of nationalities and perceived barriers' subscales at King Fahd University Hospital. The highest mean score was for Egyptians, followed by Saudis then foreigners. An explanation for these findings may be due to increasing number of Egyptians' respondents than others, as well as both Egyptians and Saudi had professional responsibility to protect patient safety. Moreover, they were more interested to investigate and explore the causes and barriers for poor reporting system in order to disseminate the results to the administrative body of the hospital and take appropriate actions to enhance reporting system and encourage health care personnel to report errors without fearing of blame and penalties. A recent study showed that language barriers can play a significant role in medical mistakes[46].

In the current study, it can be noticed that respondents in both settings agreed that administrative barrier was the main reason for not reporting error. Indeed a punitive environment to error reporting was perceived as an important feature due to culture of blame within healthcare without organizational leadership and support. Similar studies were supported the previous finding as **Malik et al (2010)**[7], **Chiang and Pepper (2006)**[29] and **Blegen et al (2004)**[30]. A non-supportive environment, a culture of blame and shame and the culture of medicine, with its emphasis on professional autonomy, collegiality, and self-regulation, is unlikely to foster incident reporting[47].

The next strongest perceived barrier was "burden of effort" at El-Behara hospitals and "understanding barrier" at Fahd hospital. At El-Behara hospitals, nurses may be overwhelmed with many roles for providing patient care besides clerk and administrative tasks with no clear job descriptions was available. Moreover, most of doctors are busy and have poor time management skills because they waste a lot of time doing unproductive things. Thus, some doctors will flit from hospital to hospital and travel from one clinic to another, right from one end of the city to another, which means they will often end up spending two or three hours stuck in traffic, just commuting, rather than seeing patients. As a result, both doctors and nurses haven't enough time to fill forms of incident reports. Therefore, error reports are difficult to complete, and feedback about needed system changes to improve safety is not commonly given[48].

At King Fahd University hospital, both doctors and nurses have lack of understanding for what constitute the errors because they shoulder much of the responsibility, job stress and anxiety, lack of appropriate teamwork and effective communication. To improve incident reporting among them, clarification is needed of which incidents should be reported, the process needs to be simplified, and feedback given to reporters.

In one study of clinicians in rural hospitals, the majority agreed that hospital administrators didn't punish error reporters. Most agreed that the hospital culture recognized that mistakes could be made (64%) and that error reporting could be done by all employees (86%). The majority felt comfortable (65%) or somewhat comfortable (32%), discussing medical errors, have learned, and would like to continue to learn from the mistakes of others[49].

Results in the present study demonstrated that the majority of total sample preferred to disclose errors with near misses, followed those who don't prefer to disclose any errors then those preferred to disclose errors with minor harm. Inasmuch as, nurses and physician who wish to act ethically and disclose harm-causing errors are therefore confronted by the possibility of financial and perhaps professional disaster.

Reporting near misses can provide invaluable information for proactively reducing errors. Nonetheless, reporting potentially harmful errors that were intercepted before harm was done, errors that did not cause harm, and near-miss errors is as important as reporting the ones that do harm patients[50]. For minor errors, disclosure may fall to the staff nurse but for more serious ones, it will be the responsibility of the nursing supervisor, department manager or director, nursing executive, executive administration, the physician, or any combination thereof. It depends on what the problem was, who made the error, and the extent of the loss or damage[51].

At El-Behara hospitals, the majority of respondents preferred to disclose errors with near miss and others don't prefer to disclose any errors. An obvious and understandable reason for not disclose major errors is the fear of consequences, such as an angry patient, a complaint sent to the court. Really, physicians and nurses often resist acknowledging offenses and fail to adequately apologize for their mistakes. Similar result reported that both physicians and nurses reported near misses[52].

On the contrary, considerable percent of respondents at King Fahd University Hospital did not prefer to disclose errors and others preferred to disclose errors with minor harm. In fact, the severity of errors and who is doing the reporting influence errors reported. In this respect, one survey found that 58% of nurses didn't report minor medication errors, while another survey suggested that physicians reported more major events and nurses reported more minor events, because they had a more "inclusive view"[53].

Banja (2005)[24] suggested that physician resistant to inform report to maintain a self-image for themselves and others of being strong, always in charge, unemotional, and a perfectionist. The feared loss of this self-image may lead to the unbearable emotion of shame and subsequent feelings of depression. An apology may expose vulnerability, remove emotional armor, and allow emotions to be exposed. Medical professionals and colleagues need to work at tolerating and supporting their own humanity and that of their colleagues.

On concerning personal preference to disclose errors for patients or their families, results showed that the majorities of respondents did not prefer to disclose errors for them, and also did not prefer to report errors for college, head nurse, or chief executive officer in both settings. These findings ought not be surprising due to fear of litigation, fear of losing the support of their colleagues or the organization in which they practice, fear from losing their professional and personal reputation, strong cultural reluctance within medicine and nursing to admit mistakes.

It is no accident that 45.6% of respondents preferred to report errors for physicians at El-Behara hospitals and 67.7% of respondents preferred to report errors for supervisors at Fahd hospitals. Thus one possible explanation for this finding is that in Egypt more friendship and support were established between nurses and doctors, while in KSA more restrictive and complicated hierarchy must be followed with limitation for friendship among staff.

Furthermore , the literature suggests other health professionals beyond physicians fail to disclose errors for several reasons including, a desire to protect patients and their family from any additional anxiety and distress, to prevent undermining the patients trust in the care that they are receiving and to protect their relationship with the patient and their family[54-56].

Based upon our findings, there are highly statistical significant correlations between all subscales of perceived barriers at El-Behara hospitals, while at King Fahd University Hospital the correlations of fear with administrative and burden of work are not statistically significant. Both physicians and nurses in two settings view the perceived barriers as a significant barrier to error reporting.

Conclusions

Sustained and collaborative efforts to reduce the occurrence and severity of health care errors are required so that safer, higher quality care results. To improve safety, error- reporting strategies should include identifying errors, admitting mistakes, correcting unsafe conditions, and reporting system.

The present study demonstrated underreporting of adverse events by both nurses and physicians due to administrative barrier which considered as a major barrier. The next strongest perceived barrier was burden of effort at El-Behara hospitals and understanding barrier at King Fahd University Hospital. The total sample preferred to disclose errors with near miss, followed those who don't prefer to disclose any errors then those preferred to disclose errors with minor harm. Furthermore, the majorities of respondents did not prefer to inform errors for patient, college, head nurse or chief executive officer.

While some of respondents preferred to report errors for physician at El-Behara and for supervisor at King Fahd University Hospitals.

Recommendations

The results of current study indicated the need to improve the accuracy of error reporting by nurses and physicians to provide a hospital environment conducive to preventing errors from occurring. Hence, healthcare professionals should receive education, training, and practice in disclosure, and health care institutes should establish non-punitive policies of error reporting and implement full disclosure policies. Hence, successful plans to support physicians and nurses will necessarily start with leadership at the top of organizations.

Institutions should also ensure that error reporting systems are confidential, simple, and worthwhile. To convince physicians and nurses that reporting errors is not a fruitless exercise, institutions should advertise examples that display the connection between error analysis and system improvement. Institutions should also teach physicians and nurses how to report errors and what errors to report. Finally, a disclosure team should be formed including associated staff and management along with risk management personnel and/or the organization's legal counsel, at least in the planning stage. Future study is required to further investigate these findings and improve reporting rates.

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