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Attitudes and perceived barriers of tertiary level health professionals towards incident reporting in Pakistan

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Abstract

Background: A limited framework of incident reporting exists in most of the health care system in Pakistan. This poses a risk to the patient population and therefore there is a need to find the causes behind the lack of such a system in healthcare settings in Pakistan. **Aims:** To determine the attitudes and perceived barriers towards incident reporting among tertiary care health professionals in Pakistan**. Materials and Methods:** The study was done in Shifa International Hospitals and consisted of a questionnaire given to 217 randomly selected doctors and nurses. Mean ± SD of continuous variables and frequency (percentage %) of categorical variables are presented. Chi square statistical analysis was used to test the significance of association among doctors and nurses with various outcome variables (motivators to report, perceived barriers, preferred person to report and patient's outcome that influence reporting behaviors). P value of <0.05 was considered significant. Student doctors and student nurses were not included in the study. **Results:** Unlike consultant, registrars, medical officers and nurses (more than 95% are willing to report), only 20% of house officers will report the incident happened through them. Sixty nine percent of doctors and 67% of nurses perceive 'administration sanction' as a common barrier to incident reporting. Sixty percent of doctors and 80% of nurses would prefer reporting to the head of the department. **Conclusions:** By giving immunity from administrative sanction, providing prompt feedback and assurance that the incident reporting will be used to make changes in the system, there is considerable willingness of doctors and nurses to take time out of their busy schedules to submit reports.

Keywords: Reporting of incident, health care professionals, attitude, barriers to incident reporting; Pakistan.

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Introduction

Errors in the health care system are due to a diverse interaction of human behavior, socio-cultural aspects, technical aspects of the system, as well as a range of system weaknesses. Various categories of errors present as an overlap between human and system causes. When working conditions lead to circumstances in which it is easy to commit an error, this is known as a 'latent error or 'system failure' [1]. Lack of experienced staff on duty, leading to staff fatigue and poor administration verdicts for example, may lead to latent errors or system failure. This, in turn, can lead to violation-producing conditions, where an individual has little choice but to violate protocol. Human error tends to manifest as "active failures". This includes knowledge-based errors, rule-based errors, skill-based errors, technical errors and violations. Tackling only the active failures will lead to an accretion of latent conditions, and an inevitable error will ultimately occur, completing the cascade and resulting in a tragic outcome [2].

A holistic approach to incident reporting would allow for the possibility that an error or adverse event suffered by a patient in one part of the world would be a transmitted source of learning that benefits future patients in many other countries [3]. Learning from both adverse events and

near misses is essential for improving the quality of care however one of the greatest frustrations for patients and professionals alike is the apparent failure of the health care systems to learn from their mistakes [2]. 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 [4]. Consequently, the same mistakes occur repeatedly in many settings and patients continue to be harmed by preventable errors. Health-care organizations and individuals benefit from incident reporting if they receive back useful information, gained by analysis of similar cases at other institutions. If the event and the results of the analysis are not reported to an external authority, the lessons learned are trapped within the walls of that hospital. The opportunity to analyze the problem is lost and the chance to develop more powerful and generalizable solutions is missed [5].

Although the importance of incident reporting has been established, under-reporting remains a significant problem occurring for example, at a rate of 50%–96% annually in the United States [2, 6, 7]. One solution to this dilemma is reporting by the primary care providers within the hospital or health-care organization, and by the organization to a broader audience through a system-wide, regional, or national reporting system [8]. Researchers in the field of Quality in Health care believe that an effective reporting system is the foundation of safe practice and, within a hospital or other health-care organization, a corner stone towards achieving a culture of safety [9, 10]. At a minimum, reporting can help identify hazards and risks, and provide information as to where the system is breaking down [11]. This can help target improvement efforts and systems changes to reduce the likelihood of injury to future patients.

Extensive work has been done in the west regarding the role of incident reporting systems in preventing harm to patients thus improving the quality and safety of health care.

A report prepared for the Department of Health in the UK [4] indicated that an adverse event was associated with 10% of hospital admissions. With over 850,000 events per year, costing more than £2 billion per year in direct health care costs. In one year, errors involving medical devices led to death or serious injury in 400 people. The cost of hospital-acquired infection was over £1 billion in direct health care costs alone, of which 15% were considered to be preventable. Clinical negligence claims currently amount to £400 million annually, with an estimated potential liability of £2.4 billion in existing and expected claims [12].

In the United States, analysis of the Harvard Medical Practice study of 1984 medical records and the Colorado/Utah study of 1992 records showed adverse events to have been associated with 3.7% and 2.9% of admissions, 13.6% and 8.8% deaths respectively [12]. Peer review indicated that 55% of these events were preventable, and almost 28% were due to negligence. Medication errors, technical errors, diagnostic errors and failure to prevent injury were the most common type of incidences reported. This report estimated that the total cost of preventable adverse events is between $17 billion and $29 billion, with direct health care costs accounting for over half.

Results from the Quality in Australian Health Care Study of 1995 show similar results [13]. Adverse events were associated with 16.6% of hospital admissions (with approximately half leading to the admission, and half occurring during the admission), 4.9% mortality and permanent disability in 13.7%. Of all adverse events, 51% were deemed to be highly preventable. The preventable cost of adverse events may be as much as $2 billion annually, or 5% of the $40 billion spent each year on health care. In addition, costs arising from legal expenses and compensation for medical error currently total $400 million per year, which consumes a further 1% of the health budget [14].

Since the publication of the US Institute of Medicine report ‘‘to err is human’’ [12], and the UK Department of Health report ‘‘an organization with a memory’’ [1], there has been increasing recognition of the need for healthcare organizations to monitor and learn from patient safety incidents. Over the last few years, several countries have established national or system-wide reporting systems to facilitate large scale monitoring and analysis of incident data [15-17]. The National Reporting and Learning System (NRLS) for England and in Wales, established by the National Patient Safety Agency, was rolled out in late 2003 and has now received over one million reports, mainly from acute hospitals [18-19].

Limited framework for incident reporting system exists in most of the health care system in Pakistan and therefore poses risk to the patients and results in compromised quality of care. Development of a nationwide incident reporting system is inevitable in Pakistan. Recognizing the attitudes and perceptions of health professionals who will implement this system is mandatory for its success. This study aims assess the attitudes and perceptions of doctors and nurses towards incident/error reporting in tertiary level health care of Pakistan and to identify potential barriers at the grass root level to the implementation of an error reporting system. To the best of our knowledge similar studies have not been conducted in Pakistan.

Materials and Methods

The study was conducted in Shifa International Hospital (SIH), a 600 bed tertiary care facility, employing 520 registered health professionals. EPI-info 6.0 was used to calculate the sample size. Fifty percent reporting of error was taken as identified factor. For 95% confidence interval and precision of ± 5%, the sample size came to 217. Simple random sampling was used for data collection.

The questionnaire was designed by modifying those

currently used by Agency of Health Related Quality (AHRQ) and other researchers [5]. A small description of key terminology such as incidence, error, adverse events, near misses or close calls, and medication errors was attached to each copy of the questionnaire. The questionnaire consisted of 3 sections, which encompasses determination of: the support or lack thereof provided by the working environment to affirm incident reporting ; health care professional's Perception regarding Attitudes of managers and most important Barriers to incident reporting; the Motivators to incident reporting; and Patient outcomes that influence reporting behavior of health professionals.

Variables explored were: working environment (supportive, culture of blame and shame); attitudes of managers ("We are informed about the errors that happen in this unit"); reasons to report the incident (to get immediate help for patient, system development so that repetition of incidents can be minimized); to whom incident reporting would be easy (administration, head of the department); and perceived barriers to incident reporting (lack of feedback, legal and financial penalties and administrative sanctions). The data was entered and analyzed by using SPSS 16.0. Mean ± standard deviation (SD) of age and working hours per week were reported. Frequency (percentage %) were presented for gender, staff position, primary area of employment, patient's outcome influencing reporting behavior, and individual reporting of an un-witnessed incident. Chi square test was used to test the significance of association of professional groups (doctors and nurses) with reasons to report, to whom incident reporting would be easy, perceived barriers to incident reporting and patient outcomes that influence reporting behavior. P value of < 0.05 was considered as significant.

The only exclusion criteria used in the study was medical and nursing students.

The ethical approval of the study was obtained from the institutional review board (IRB) of Shifa College of Medicine. Written informed consent was obtained from all participants. Anonymity and confidentiality of the participants was assured

Results

Two hundred and seventeen health care professionals participated in the study. The age distribution for the entire sample was 39 ± 15 years. One hundred and fourteen doctors (52.5%) and 103 nurses (47.5%) completed and returned the questionnaire. Of these participants, 116 (53.5%) were men and 101 (46.5%) were women. Response rate was 99.9%. Detailed demographic description of the sample is depicted in the Table 1.

Considerable homogeneity is found in the incident reporting attitude among different health professionals: 100% among consultants and registrars, 94% among medical officers and 97% among nurses are ready to report the incident happened through them. House officers are reluctant to report the incident happened through them, that is, 75% responded impartially (neither likely/unlikely) to report the incident. Overall results are depicted in Figure 1.

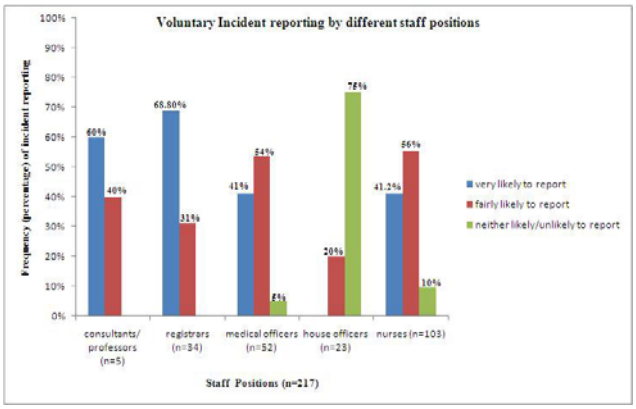

Fig. 1 Voluntary reporting of an incident happened through self. (n=217)

Table 1 Background Details of the sample (n=217)

Sex	**Frequency**	**Percentage (%)**
Male	116	53.5
Female	101	46.5
Staff position		
consultant	5	2.3
Registrar	34	15.7
Medical officer	52	24
House officer	23	10.5
Nurse	103	47.5
Primary area of work		
medicine(non surgical	59	27.2
ICU (any type)	42	19.4
surgery	40	18.4
anesthesia	13	6.0
Gyne & Obs	25	11.5
pediatrics	13	6.0
ER	12	5.5
Others	13	6.0
Working hours/week		
<20hrs/week	5	2.3
21-39hrs/week	1	0.5
40-59hrs/week	38	17.5
60-79hrs/week	42	19.4
80-99hrs/week	89	41.0
>100hrs/week	42	19.4
Working for how long in this institution		
>2 years	85	39.2
1-2 years	81	37.1
3-6months	51	23.7

Only 19.3% (n=42) doctors and nurses believe that tertiary health care centers have enough staff to handle the workload. This result matches up with the findings that 70% percent (n= 151) health professional believe that their working hours are too long and 60.4% (n=131) health

professional are working more than 80 hours per week. Some other characteristics of the working environment (such as mutual respect among workers) and attitudes of management towards patient safety (working fast by taking shortcuts) are depicted in Table 2.

Table 2 Working environment and attitudes of management (AGREED) frequency-percentage (n=217)

Working environment	Frequency	Percentage
people support one another in this unit	119	54.9
people respect each other in this unit	174	80.1
when lot of work to done, we work as team	166	76.5
enough staff to handle the workload	42	19.3
staff in this unit work longer than is best for patient care	151	69.6
when an event is reported, it feels like person is written up not the problem	124	57.1
we work in crisis mode trying to do too much too quickly	143	65.9
patient safety is never sacrificed in this unit to get more work done	142	65.5
our procedure and system are good in preventing errors	183	84.3
most serious mistakes don't happen around here	162	74.6
patient safety is a problem in this unit	137	63.1
Attitudes of management		
my supervisor/manager seriously consider staff suggestion to improve patient safety	133	61.3
whenever, pressure built up, supervisor/manager wants us to work faster, even if it means taking shortcut	37	17
my supervisor/manager overlooks patient safety problem that happen over and over	62	18.6
staff feel free to question the decision of those with high authority	91	42
We are informed about the errors that happen in this unit.	144	71

Table 3 shows the main motivator for incident reporting; to whom reporting is easy; perceived barriers to incident reporting and patient outcome that influence the reporting behavior of doctors and nurses. A statistically significant difference (P<0.001, OR 5.035, 95%CI 2.52, 10.04) was found between doctors (42%) and nurses (13%) in 'Learning for self and others from your mistake' as the main reason for incident reporting. Eighty percent doctors and 84% nurses think that 'system development to minimize the repetition of particular incidents' is the main reason for incident reporting, although this association is not significant (OR 0.727. 95% CI 0.36, 1.46. P= 0.37). Sixty percent doctors (n=69) and 80% nurses (n= 83) think that incidents should be reported to the head of the department (OR 0.37, 95% CI 0.19, 0.68. p =0.001). Eighty eight percent of doctors (n=101) and 84% of nurses (n=87) share a common barrier to incident reporting as lack of feedback generation while the significance of association is low (OR 1.42, 95% CI 0.65, 3.13. P= 0.37).

We presented three hypothetical situations, in which different outcomes of patients could influence the reporting behavior of health professionals. In first situation, an incident occurred but was corrected before affecting the patient. In the second, the incident happened but has no potential harm to the patient and lastly, an incident happened that can harm the patient but does not. In all three situations nurses tend to report more than doctors and the associations were statically significant (p<0.001). Only 37% doctors will report the incident that could harm the patient contrary to their counterparts nurses (79%) who reported significantly more in this situation (OR 0.13, 95% CI 0.07, 0.24. P<0.001). Overall results of Health professional's incident reporting behaviors in different situations are shown in Table 4.

Table 4 Health professionals Incident reporting behaviors in different consequences of patient (n=217)

Situation	Doctors	Nurses	Odds Ratio (95% CI)[+]	P [++]
	Yes	Yes		
1*	69 (60.5%)	97 (94.2%)	0.09 (0.03, 0.23)	<0.001
2**	27 (23.6%)	93 (90.3%)	0.03 (0.01, 0.07)	<0.001
3***	37 (32.4%)	81 (78.7%)	0.13 (0.07, 0.24)	<0.001

[+]Chi square test was used, [++] P< 0.05 was considered as significant.
1* when a mistake is made, but is caught and corrected before affecting the patient, how often is this reported?
2** when a mistake is made but has no potential harm to the patient, how often is this reported?
3*** when a mistake is made, that could harm the patient, but does not, how often this is reported

Discussion

Any program that aims to improve patient safety must contain all-inclusive information on incidents, near misses, adverse events or errors so that, as a source, it can be used for learning and grounds for precautionary action in the future. Many countries have developed reporting systems which vary in type, character and complexity. Some systems focus on specific types of incidents/errors concerning technologies or on areas where incidents/errors occur frequently (i.e. beeping equipment, infusion pumps, and blood transfusion). Some systems are open ended taking into account all incidents/ errors along with the entire spectrum of quality of care provided. The rationale for any reporting system is learning. Reporting can lead to learning and patient safety in several ways. First, through generating alerts regarding new hazards (e.g. complications or adverse effects of new drugs). Second, through dissemination of lessons learned through investigations at an organizational level. Finally, report analysis can provide insight into recognizing hazard trends and system failures to aid in the establishment of "best practices" guidelines. Our study shows that incident reporting for the purpose of learning is not well avowed by health professionals, particularly nurses. Significant differences exist between doctors (42%) and nurses (12%)

for 'learning' as the main reason for incident reporting (OR 5.035, 95% CI 2.52, 10.04. p<0.001). Whereas the majority of health professionals (doctors 80% and nurses 84%) will report an incident in order to minimize its repetition in the future.

Table 3 Reasons (Motivators) to Report, Feasible to report to and Barriers to incident reporting (n=217)

Reason to report	Doctors N=114 (Frequency- %) Yes	Nurses N=103 (Frequency- %) Yes	Odds ratio * (95% CI)	P value**
To get immediate help for patient	25 (22%)	25 (24%)	0.87 (0.46, 1.64)	0.68
To learn from mistakes	48 (42.1%)	13 (12.6%)	5.035 (2.52, 10.04)	<0.001
To develop a system to minimize repetition of incident	91 (79.8%)	87 (84.4%)	0.727 (0.36, 1.46)	0.37
Reporting would be easy if reports were made to:				
Colleague	22 (19.2%)	15 (14.5%)	1.402 (0.68, 2.87)	0.35
Senior faculty member	20 (17.5%)	17 (16.5%)	1.076 (0.52, 2.18)	0.84
Head of the department	69 (60.5%)	83 (80.5%)	0.37 (0.19, 0.68)	0.001
Administration	22 (19.2%)	10 (9.7%)	2.22 (0.99, 4.95)	0.04
Barriers to incident reporting:				
Non-supportive environment, culture of shame and blame	26 (22.8%)	12 (11.6%)	2.24 (1.06, 4.71)	0.03
Loss of prestige among colleagues	18 (15.7%)	9 (8.7%)	1.95 (0.83, 4.57)	0.11
Legal and financial penalties	28 (24.5%)	27 (26.2%)	0.91 (0.49, 1.69)	0.77
Administrative sanctions	79 (69.2%)	70 (67.9%)	1.06 (0.59, 1.88)	0.84
Lack of feedback	101 (88.5%)	87 (84.4%)	1.42 (0.65, 3.13)	0.37

*Chi square test was used, ** P< 0.05 was considered as significant.

Incident-reporting behavior differs between doctors and nursing professional groups, with nurses reporting significantly more often than doctors [1, 6, 20, 22]. A study in the UK indicated that health professionals are reluctant to report an incident in which there was a negative outcome for the patient. Our study showed similar findings in that nurses are more willing to report than doctors. An incident which harmed the patient negatively influenced the reporting behavior of both doctors and nurses. This may be because health professionals feel insecure about their job and are afraid that they will have to face administrative fury after committing and reporting an error. This is supported by the finding in our study that 69% of doctors (n=79) and 68% of nurses (n=70) believe that administrative sanction is the most important barrier to incident reporting.

It is vital to note that a reporting system itself does not bring about or improve patient safety. It is the action or response to the reporting that brings the change. Within an organization, reporting of incidents/ adverse events should lead to an in-depth investigation to assess the etiological factors (active or latent) so the system can be changed and recurrence can be prevented. At a national level, report analysis by experts and dissemination of information is required to improve patient safety through incident reporting. In this study more than 88% of doctors and 84% of nurses believe that 'the lack of feedback generation' is the most influential barrier to incident reporting. A similar study conducted in South Australia (2006) also found that almost two thirds of the health professionals (doctors and nurses) believed lack of feedback was the greatest deterrent to reporting [23].

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 [6]. Our study identified that only 54% of health professionals believe that their hospital environment is supportive. Moreover 57.1% of health professionals perceive lack of value in incident reporting because 'when an event is reported, it feels like the person is written up, not the problem'. Some other barriers to incident reporting identified from peer reviewed literature is the lack of knowledge about how, what and whom to report [1, 23-25]. The evidence suggests that an autonomous body to collect and analyze incident reports should be established within the hospitals and that it should not work under the influence of manager/supervisors, head of the department or senior faculty members [2]. Our study shows that a significant proportion of doctors (60%) and nurses (80%) are in favor

of reporting an incident to the head of the department, while, only 19% of doctors and 9% of nurses prefer reporting to the hospital administration. This preference may be because department heads are more accessible, offer a certain level of confidentiality and feedback may be pursued easily.

Our research confirms the previous finding that, in the presence of written protocols and guidelines, an incident is more likely to be reported. This finding may provide an initiative to introduce protocols and guidelines in writing, as these are less likely to be violated and violations are more likely to be reported. [11, 21, 23]

Conclusion

The willingness of health professionals to report incidents in order to improve patient safety indicates that fertile grounds are available for development of an incident reporting system in Pakistan. The core and theme of any incident/error reporting system is to learn from mistakes. This fact however, is not well acknowledged by health professionals in Pakistan. More work is needed to raise the awareness among health professionals pertaining to incident reporting. Furthermore, any system of incident reporting that might be implemented in the future would need to consider providing: a supportive working environment; prompt feedback; and immunity from penalties (administrative and financial).

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References

1. Department of health, An organization with a memory. London: Department of health, 2000.
2. Reason J. Human error: models and management. BMJ 2000; 320(7237): 768-770.
3. World health organization. World alliance for patient safety: WHO draft guidelines for adverse event reporting and learning systems, 2005. http://www.who.int/patientsafety/events/05/Reporting_Guidelines.pdf (accessed on 12-8-2009)
4. Leape LL. Error in medicine. JAMA 1994; 272: 1851-1857.
5. Kreckler S, catchpole K, Culloch PM, Handa A. factors influencing incident reporting in surgical care. Qual Saf Health Care, Apr200; 18;116-120
6. Lawton R, Parker D. barriers to incident reporting in health care system. Qual Saf Health care 2002; 11: 15-18.
7. Cullen DJ, Bates DW, small SD. The incident reporting does not detect the adverse drug events: a problem foe quality improvement. Jt Comm J Qual Improv 1995; 21: 541-548
8. Cook, Richard, Woods, David. “Operating At The Sharp Ends: the complexity of human error,” in Human error in Medicine, Ed, Marilyn Sue Borgner, Hillsdale, NJ: Lawrence Erlbaum Associates, 1994.
9. Van C, Harlod, “Human Errors: their causes and reduction,” in Human error in Medicine, Ed, Marilyn Sue Borgner, Hillsdale, NJ: Lawrence Erlbaum Associates, 1994.
10. Roberts, Karlene. “Organization change and Culture of safety”,” in Proceedings of Enhancing Patient safety and Reduction Errors in Health care, Chicago. National patient safety foundation at AMA, 1999.
11. Chassin, Mark R, Galvin, Robert W. The national roundtable on health care quality. The urgent need to improve health care quality, JAMA. 1998; 280(11): 1000-1005.
12. Kohn LT, Corrigan JM, Donaldson MS. To err is human: building a safer health system. Washington: National Academy Press, 2000.
13. Wilson RM, Runciman WB, Gibberd RW, Harison BT, Newby L, Hamilton JD. The Quality In Australian Health Care Study. Med j Aust. 1995; 272(23):1851-1857.
14. Australian Patient safety Foundation. Iatrogenic injuries in Australia: Department of Health and Aged Care, 2000.
15. Williams SK, Osborn SS. The development of the National Reporting and Learning System in England and Wales, 2001–2005. Med J Aust 2006; 184:65–68S.
16. Spigelman AD, Swan J. Review of the Australian incident monitoring system. ANZ J Surg 2005; 75:657–661.
17. Agency for Healthcare Research and Quality. Patient safety reporting systems factsheet, 2001. http://www.ahrq.gov/qual/taskforce/hhsrepor.htm (accessed 20 Feb 2009).
18. National Patient Safety Agency. National Reporting and Learning System. http:// www.npsa.nhs.uk/health/reporting/background (accessed 20 Feb 2009).