ORIGINAL ARTICLE

Patient safety: Perceptions of Medical Students of Dow Medical College, Karachi

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Abstract

Objective: To assess medical students' perceptions about patient safety issues before the teaching of "patient safety" can be recommended.

Methods: The cross-sectional survey was undertaken at the Dow Medical College and Civil Hospital, Karachi, in September, 2013. Data collection tool was a structured questionnaire administered to medical students. The main outcome measures were students' perceptions about patient safety issues and their attitude towards teaching of patient safety curriculum.

Results: There were 229 medical students in the study with a response rate of 100%. Overall, 129(57%) students agreed that medical errors were inevitable, but 106 (46.9) thought competent physicians do not make errors. While 167(74%) students said medical errors should be reported, 204(90%) thought reporting systems do not reduce future errors. Besides, 90(40%) students thought only physicians can determine the causes of error and nearly 177(78%)% said physicians should not tolerate uncertainty in patient care. Overall, 217(96%) agreed that patient safety is an important topic; 210(93%) agreed that it should be part of medical curriculum; 197(87%) said they would like to learn how to disclose medical errors to patients and 203(90%) to faculty members.

Conclusion: A significant knowledge gap existed among medical students regarding patient safety issues. The teaching of 'patient safety' was highly supported by students and needs to be included in medical curriculum on an urgent basis.

Keywords: Patient safety, Medical error, Undergraduate Medical Curriculum, Pakistan. (JPMA 65: 1261; 2015)

Introduction

Physicians are under the pledge to follow the Hippocratic Oath of "first do no harm". However, the report from Institute of Medicine in 1999, "To err is human: Building a Safer Health System", showed that much harm is being done by medical errors.[1] According to the report, around 98,000 people may be dying every year due to medical errors in hospitals of the United States. This number was more than deaths due to road traffic accidents (RTAs), breast cancer, or acquired immunodeficiency syndrome (AIDS), causes which receive much wider public attention. If we add the financial burden, these huge mortality figures make medical error one of the most urgent public health problems.[2]

Significant improvement in healthcare has occurred as a result of advances in medical science and technology. However, this improvement has come at the cost of patient safety, as patients increasingly suffer from adverse events due to hospitalisation and medical management. In response to this situation, 'patient safety' has emerged as a new specialised discipline which can help health professionals develop a culture of patient safety.[3]

It has been suggested that the healthcare system should learn from the aviation experience which, by implementing a system-based and team-based management approach, has successfully developed a culture of air travel safety.[4]

Traditionally, medical error has been blamed on a person error. This approach, by naming, blaming, and shaming individuals, may be psychologically more satisfying for administrations as it absolves the institutions from any responsibility. It focuses attention on unsafe acts or active failures of people at the sharp end (nurses, trainees, doctors, pharmacists etc.) and attributes these to human factors e.g. forgetfulness, poor motivation, carelessness, and negligence. On the other hand, the "systems approach" is based on the premise that humans are fallible and will make errors in the best of institutions. Errors are actually related to weaknesses in the defence system, including factors like time pressures, understaffing, prolonged duty hours, sleep deprivation and their consequent physical, mental, and emotional fatigue. The key, therefore, lies in improving the working conditions or the system defence as the important issue is not about who did it, but how and why the system

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defence failed.[5,6]

In Pakistan, millions of people suffer death or disability directly attributed to medical care provided by hospitals with poor or no patient safety protocols. Moreover, hardly any physicians or hospitals maintain a record of the outcomes of their surgical procedures, drug reactions and other medical errors. Above all, there is no incident reporting by the healthcare system which should ideally be responsible for communicating such information to the public.[7,8]

Medical students are the future healthcare providers and leaders and they need to understand how systems affect the quality and safety of healthcare and must prepare themselves to practice safe care. The World Health Organisation (WHO) has developed a Patient Safety Curriculum Guide for medical students to help them meet this future challenge.[3]

The current survey was planned to assess medical students' perceptions about patient safety issues and their attitudes to introduction of patient safety programme in the undergraduate and postgraduate curriculum.

Subjects and Methods

The cross-sectional survey was undertaken at the Dow Medical College and Civil Hospital, Karachi, in September, 2013. A structured and anonymous self-administered questionnaire was handed to medical students including undergraduates (UGs), house officers (HOs) and Residents posted in departments of Obstetrics and Gynaecology, Surgery and Medicine. The questionnaire having 20 items related to patient safety issues was adapted from one used in an earlier study.[9]

Non-probability, purposive sampling was used and all UGs, HOs and Residents present in the wards were approached. Those who volunteered were included. No sample size calculation was done.

The first 11 items in the questionnaire were about students' perceptions about the causes and management of medical errors, whereas, the last 9 items addressed their perceptions about knowledge and skills related to patient safety issues and their views on inclusion of patient safety education in medical curriculum. Grading of responses was done using a 5-point ordinal scale where 1=strongly disagree and 5= strongly agree.

The main outcome measures were students' knowledge and attitudes about patient safety issues and their attitude to the teaching of patient safety curriculum.

Data was analysed using SPSS 16. Frequency and percentage was used to report categorical data. Chi-square was used to find out significant difference between the responses of different groups of students, with $p<0.05$ being significant.[3]

Results

All 229 participants responded. Three incomplete

Table-1: Responses to items of the questionnaire on patient safety (n=226).

Item (%)	Item Question	Disagree n(%)	Neutral n (%)	Agree n
1	Making errors in medicine is inevitable	51 (26.2)	46 (20.4)	129 (57.1)
2	There is a gap between what physicians know as "best care" and what is being provided on a day to day basis.	10 (4.4)	34 (15.0)	182 (80.5)
3	Competent physicians do not make errors that lead to patient harm.	76 (33.6)	44 (19.5)	106 (46.9)
4	Most errors are due to things that physicians cannot do anything about.	71 (31.4)	61 (27.0)	94 (41.6)
5	If I saw a medical error, I would keep it to myself.	167 (73.9)	41 (18.1)	18 (8.0)
6	If there is no harm to a patient, there is no need to address an error.	138 (61.5)	35 (15.5)	53 (23.5)
7	Only physicians can determine the causes of a medical error.	94 (41.6)	42 (18.6)	90 (39.8)
8	Reporting systems do little to reduce future errors	15 (6.6)	7 (3.1)	204 (90.3)
9	After an error occurs, an effective strategy is to work harder and to be more careful.	116 (51.3)	41 (18.1)	69 (30.5)
10	Physicians should not tolerate uncertainty in patient care.	16 (7.1)	33 (14.6)	177 (78.3)
11	The culture of medicine makes it easy for providers to deal constructively with errors.	34 (15.0)	91 (40.3)	101 (44.7)
12	I am well informed about patient safety issues.	60 (26.5)	72 (31.9)	94 (41.6)
13	'Patient safety' is an important topic.	6 (2.7)	3 (1.3)	217 (96.0)
14	Physicians should routinely spend part of their professional time for improving patient care	12 (5.3)	12 (5.3)	202 (89.4)
15	Learning how to improve patient safety is an appropriate use of time in medical school	7 (3.1)	9 (4.0)	210 (92.9)
16	I would like to receive further teaching on patient safety	11 (4.9)	10 (4.4)	205 (90.7)
17	I would like to learn how to support and advise a peer who has to respond to a medical error	11 (4.9)	21 (9.3)	194 (85.8)
18	I would like to learn how to analyze a case to find the cause of a medical error	10 (4.4)	10 (4.4)	206 (91.2)
19	I would like to learn how to disclose an error to a patient	15 (6.6)	14 (6.2)	197 (87.2)

Table-2: Comparison of patient safety items among undergraduate students, house officers and residents (226).

item	Undergraduate students (n=123)			House officers (n=45)			Residents (n=58)			P value
	Disagree n(%)	Neutral n(%)	Agree n(%)	Disagree n(%)	Neutral n(%)	Agree n(%)	Disagree n(%)	Neutral n(%)	Agree n(%)	
1	24(19.5)	25(20.3)	74(60.2)	8(17.8)	14(31.1)	23(51.1)	19(32.8)	7(12.1)	32(55.2)	0.07
2	8(6.5)	15(12.2)	100(81.3)	1(2.2)	8(17.8)	36(80.0)	1(1.7)	11(19.0)	46(79.3)	0.38
3	44(35.8)	24(19.5)	55(44.7)	13(28.9)	11(24.4)	21(46.7)	19(32.8)	9(15.5)	30(51.7)	0.74
4	42(34.1)	34(27.6)	47(38.2)	12(26.7)	18(40.0)	15(33.3)	17(29.3)	9(15.5)	32(55.2)	0.04
5	91(74.0)	23(18.7)	9(7.3)	34(75.6)	9(20.0)	2(4.4)	42(72.4)	9(15.5)	7(12.1)	0.67
6	73(59.3)	17(13.8)	33(26.8)	21(46.7)	13(28.9)	11(24.4)	44(75.9)	5(8.6)	9(15.5)	0.01
7	38(30.9)	22(17.9)	63(51.2)	20(44.4)	13(28.9)	12(26.7)	36(62.1)	7(12.1)	15(25.9)	<0.001
8	8(6.5)	4(3.3)	111(90.2)	2(4.4)	1(2.2)	42(93.3)	5(8.6)	2(3.4)	51(87.9)	0.92
9	61(49.6)	21(17.1)	41(33.3)	28(62.2)	10(22.2)	7(15.6)	27(46.6)	10(17.2)	21(36.2)	0.19
10	10(8.1)	22(17.9)	91(74.0)	2(4.4)	5(11.1)	38(84.4)	4(6.9)	6(10.3)	48(82.8)	0.50
11	16(13.0)	53(43.1)	54(43.9)	7(15.6)	18(40.0)	20(44.4)	11(19.0)	20(34.5)	27(46.6)	0.78
12	35(28.5)	46(37.4)	42(34.1)	13(28.9)	15(33.3)	17(37.8)	12(20.7)	11(19.0)	35(60.3)	0.01
13	4(3.3)	2(1.6)	117(95.1)	0(0.0)	1(2.2)	44(97.8)	2(3.4)	0(0.0)	56(96.6)	0.61
14	7(5.7)	7(5.7)	109(88.6)	1(2.2)	3(6.7)	41(91.1)	4(6.9)	2(3.4)	52(89.7)	0.78
15	4(3.3)	7(5.7)	112(91.1)	0(0.0)	0(0.0)	45(100.0)	3(5.2)	2(3.4)	53(91.4)	0.26
16	8(6.5)	9(7.3)	106(86.2)	0(0.0)	0(0.0)	45(100.0)	3(5.2)	1(1.7)	54(93.1)	0.06
17	8(6.5)	11(8.9)	104(84.60)	0(0.0)	5(11.1)	40(88.9)	3(5.2)	5(8.6)	50(86.2)	0.53
18	6(4.9)	8(6.5)	109(88.6)	0(0.0)	1(2.2)	44(97.8)	4(6.9)	1(1.7)	53(91.4)	0.21
19	9(7.3)	7(5.7)	107(87.0)	1(2.2)	3(6.7)	41(91.1)	5(8.6)	4(6.9)	49(84.5)	0.73
20	6(4.9)	7(5.7)	110(89.4)	0(0.0)	2(4.4)	43(95.6)	5(8.6)	3(5.2)	50(86.2)	0.37

* Chi-square test was applied. P value significant at <0.05.

questionnaires were discarded, and 226 were analyzed. For the purpose of reporting we combined the responses of 'agreed' and 'strongly agreed' to report them as 'agreed', while 'disagreed' and strongly disagreed' were together reported as 'disagreed'.

Items1 to 4 were aimed at addressing students' knowledge regarding medical errors (Table-1). Although majority of students agreed that medical errors were inevitable (129; 57%), 51 disagreed (26.2%) and another 46 were neutral (20%). The vast majority agreed that best care is not always provided to patients (182; 80.5%), however, a significant 106 students thought competent physicians do not make errors (46.9%) (items 1,2,3). For item 4, a significant number of students thought most errors are not related to physicians (94; 41.6%) and this misconception was more among residents (32; 55.2%) than HOs (15; 33.3%) and UGs (47; 38.2%) (p value = 0.04) (Table-2).

Items 5 to 8 were related to perceptions about reporting of medical errors (Table 1). Majority of students thought medical errors should be reported (167; 73.9%). However, nearly one-fourth said there is no need to report a near miss event (53; 23.5%) and this misconception was more common among UGs (33; 26.8%) and HOs (11; 24.4%) compared to residents (9; 15.5%) (p value = 0.01) (Table-2).

For item 7, a significant number of students thought, only physicians can determine the causes of medical error (90; 39.8%) and this misconception was more common among UGs (63; 51.2%) than among HOs (12;26.7%) and residents (15; 25.9%) (p value = <0.001) (Table-2). Another common misconception was that reporting systems do little to reduce medical errors (Agreed: 204; 90.3%) [Item 8].

More than one-third students thought errors can be prevented by working hard and being more careful (69; 30.5%) and majority thought uncertainty should not be tolerated in patient care (177; 78.3%) (items 9 and 10). A significant number of students thought culture of medicine was supportive for dealing with errors (101; 44.7%), however, a significant number was also neutral about this (91; 40.3%), showing the uncertainty students felt about this item (item 11) (Table-1).

Item 12 asked about awareness of students regarding patient safety issues. Ninety-four students thought they were well informed (41.6%) and another 72 were neutral (31.9%). Significantly more residents compared to HOs and UGs thought they were well aware of this issue (residents: 35; 60.3%, HOs: 17; 37.8%, UGs: 42; 34.1%), however this was not borne out by the results (p value = 0.01) (Table-2).

The vast majority agreed that patient safety is an

important topic (217; 96.0%), should be taught in medical school (202; 89.4%), they would like to learn how to help friends respond to error (194; 85.8%), how to analyze errors (206; 91.2%) and how to disclose error to patients (197; 87.2%) and to faculty (203; 89.8%) (Items 13-20) (Table-1).

Discussion

Patient safety is still a relatively new concept, especially in the context of Pakistan where the 'culture' of medical training is still one of hiding medical errors, holding individuals responsible and naming, blaming and shaming them in the hope that error will not be repeated. To avoid facing this blame-game, pages are torn from case files, new notes written and documentation changed. Enquiries are held in response to complaints by patients and their families, but they are nothing more than an exercise in trying to discipline individuals.[5]

Patient safety is a key component of one of the core competencies of The Accreditation Council for Graduate Medical Education (ACGME) which is system-based care (SBC) and can be defined as the overall role and responsibility of the healthcare system to avoid harm to patients and provide high-quality care.[10] Furthermore, WHO has highlighted an urgent need for introducing patient safety programmes in undergraduate and graduate medical curriculum. This is a challenging task since the concept of patient safety is still new to medical education. Medical universities are uncertain about how to incorporate these courses into their existing curricula and hence continue to produce graduates who lack basic knowledge, skills and attitudes necessary for providing safe care.[11,12]

Several studies have compared outcomes before and after introducing patient safety education programmes in the curriculum, and have shown significant improvements in students' knowledge, skills, and attitudes related to medical error and patient safety. However, all changes may not be sustained over the long term. Moreover, the success of such programmes has been shown to depend on teaching strategies based on adult learning principles and experiential learning.[13,14]

Our study has shown several important misconceptions in medical students' knowledge related to medical error and patient safety. Although majority of students were correct in thinking that medical errors are inevitable, about a quarter did not agree with this and approximately 20% remained neutral. In addition, nearly half the students thought competent physicians do not make errors, which is a basic misconception about the nature of human error. A study from Hong Kong also reported similar results.[9]

It was encouraging to see that majority of our students supported reporting of medical errors. However, around a quarter, mostly UGs, felt there was no need to report near misses, thus missing the importance of learning from such cases. A qualitative study reported the effect of hidden curriculum on students' perceptions, where students felt that even though their ethical belief in the past was to own up to mistakes and apologise, the 'culture' of medicine has made them uncertain. Medical community may not want them to speak in view of the risk of litigation, and also to remain quiet and defend other doctors who make mistakes.[15]

The majority of students attributed the causes of error to the 'person approach' and was not aware of the importance of 'systems approach' and of reporting systems. For example, a common misconception, especially among UGs, was that only physicians can determine the causes of medical error. Furthermore, a significant number of students thought working harder and being more careful will prevent future errors. However, evidence shows that the traditional "perfectibility" model which assumed that errors can be avoided by being careful enough and working hard can be dangerous as the human infallibility is inevitable and a major contributing factor for adverse events.[3]

The vast majority of students felt uncertainty should not be tolerated in patient care, but evidence says all medical interventions have an element of uncertainty. Therefore, patients and their families have a right to receive useful information which will help them in making decisions about the care they receive.[3]

Responses to item 11 (which asked about the influence of culture of medicine on the reporting of errors) showed students' confusion about the implicit reference to the "hidden curriculum". A study which evaluated the surgical safety practices in tertiary care hospitals of Karachi, Pakistan, found significant deficiencies in implementation of WHO surgical safety checklist which may be due to a hidden curriculum at work. Ensuring safe surgical practices require an organisational structure having leadership, teamwork, evidence-based management protocols, ongoing teaching and training programmes, and a proper system of incident reporting, adverse event disclosure, and regular audit. Similar guidelines have been developed by the international medical educators at the Association for Medical Education in Europe (AMEE) 2006 conference, for prioritising areas for teaching patient safety. These include providing knowledge about patient safety, developing willingness to take responsibility, developing self-awareness of the situations when patient

safety is compromised, and developing inter-personnel communication skills, and team-working skills.[16-18]

The good news from our study is that the vast majority of students recognised the importance of patient safety education, and highly supported its inclusion in the medical curriculum. They also indicated that they would like to learn how to analyse medical errors and how to disclose these to patients and faculty members. However, introducing patient safety teaching in undergraduate curriculum poses considerable challenges as there are significant differences in the development of course design, content, stage of introduction in curriculum, and methods for assessing the outcomes.

The WHO Patient Safety Curriculum Guide for Medical Schools can serve as the standard guideline for developing a uniform patient safety curriculum. Furthermore, to make teaching of patient safety effective and fit for purpose, theory has to be linked to real practice by applying the human factor approach in order to have a positive impact on students' future clinical performance.[19,20]

The strength of this study is that we included participants from a range of specialties and across different levels of training. The main limitation is that we used a non-standardised survey questionnaire and, secondly, since the data was self-reported there could be an element of recall bias.

We recommend that the Patient Safety Curriculum Guide developed by WHO should be implemented in all medical universities of Pakistan. This is a comprehensive programme, having a Teachers' Guide as well as a ready-to-teach, topic-based programme which can be implemented as a whole or on a topic basis. This patient safety education should begin as soon as students enter their first clinical rotation so that they can apply their new knowledge and skills to real patients.[3]

Today's students will be tomorrow's healthcare professionals and it is imperative that we make them competent and safe for ourselves and our future generations.

Conclusion

A significant knowledge gap existed among medical students regarding patient safety issues, particularly about the system-based and team-based approach to management of medical errors. The teaching of patient safety was highly supported by students and needs to be included in the curriculum on an urgent basis.

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