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A study to determine patient safety awareness and attitudes among medical students in a Malaysian University

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ABSTRACT

Objective: Over the last decade, various methods to improve patient safety and to reduce medical errors are being implemented. Medical students should look into and participate in patient safety during their education. The objective of the study was to study the personal awareness, attitudes, and knowledge of patient safety measures in use in a Malaysian Medical College after implementation of the patient safety study module in the curriculum.

Material and Methods: This was a cross-sectional analysis using a validated World Health Organization questionnaire ("Patient Safety – Curriculum Guide, Topic 1 questionnaire on patient safety") on 4th-year medical students. The students' awareness, attitudes, and knowledge of patient safety measures were assessed.

Results: One hundred and thirty-four years four undergraduate students of the Faculty of Medicine were recruited for the study using a convenience sampling method. The majority of study participants were females (65.4%). The median age of study participants was 24 years of the interquartile range = 1. On analysis, a majority of study participants had a medium level of knowledge about errors and patient safety. There was a significant positive correlation between the safety of the health-care system and personal influence over safety and attitudes toward patient safety ($P < 0.05$). There was also a positive correlation between personal influence over safety and safety at the workplace ($P < 0.05$).

Conclusions: Our study indicates that student attitudes toward patient safety measures are positive, and knowledge and awareness are fair.

Keywords: Patient safety, Patient safety curriculum, Medical errors, Medical students, Malaysia

INTRODUCTION

Patient safety is defined as the "prevention of errors and adverse effects on patients associated with health care" World Health Organization (WHO). Medical errors and the consequences of medical errors in health care are becoming frequent and are now well known both within the medical profession and to the general public. More importantly, medical errors are reported routinely in the media, including social media, and directly impacting doctor-patient relationships and trust.[1]

Lately, various methods have been implemented to reduce errors by health-care personnel and to improve patient safety in practice. "To Err is Human," was an influential report produced by

the Institute of Medicine USA, in 1999. Over the past 2–3 decades, patient safety awareness has become an important part of health-care practices and commitment to patient safety methods has become imperative. However, a major hurdle to preventing errors has been the ingrained culture of refusal to accept responsibility among health-care practitioners.[2]

Errors can occur when healthcare workers care for patients. Missed follow-up on investigation reports or poor medical records is common errors seen in health care. The occurrence of medical errors is around 10% of all hospital admissions. Such errors, when they do occur, can cause harm or even death.[3]

All doctors and health-care professionals must be educated and trained in patient safety measures, and this still remains the basis for best practices in health care to prevent health care-related errors. However, education on patient safety is still a neglected field, as most educators feel that safety methods should be taught to practicing doctors and nurses only and students need not be involved in implementing or achieving patient safety. In today's climate of responsible health care, it is now increasingly important to ensure that students learn about errors in health care and the methods to improve the delivery of safe health care by incorporating safety measures for patients.[4]

At present, there are no published reports of other universities or medical schools in Malaysia having implemented patient safety into their undergraduate curriculum. International Medical University (IMU) is in the process of developing an online training module using content from MOH Malaysia's patient safety awareness course for junior health care professionals (as reported in "IMU News" dated February 28, 2019).

We felt that after a series of lectures, practical teaching at the bedside and a patient safety project report of safety measures practiced by healthcare workers (literature review or observational report), the student's knowledge and awareness of safety protocols in practice should be greatly enhanced, and their attitudes to patient safety measures should be positive. Our goal was to gather opinions through an established questionnaire, from medical students of year 4 about their ability to identify and practice patient safety issues, their confidence in meeting the relevant competencies and personal attitudes toward patient safety in healthcare.

RESEARCH METHODOLOGY

Objective

The objective of the study was to study the personal knowledge, awareness, and attitudes of patient safety measures in use in Malaysia, among medical students in a Malaysian Medical College after implementation of the patient safety study module into the curriculum. The purpose of the study was to know of any shortfalls in the curriculum.

Sample

Year 4 medical students who had already undergone training on patient safety measures in use in Malaysia from years 1 to 4, MBBS, following the implementation of the new patient safety curriculum in the 2016–2017 academic years at the Faculty of Medicine.

Inclusion criteria

All year 4 medical students of the Faculty of Medicine, MAHSA University were included in the study.

Exclusion criteria

All other medical students were excluded from the study.

This was a cross-sectional analysis using a validated WHO questionnaire, "Patient Safety – Curriculum Guide, Topic 1 questionnaire on Patient safety" given to students of year 4 of MAHSA University, Faculty of Medicine. The questionnaire is in English and was distributed to all students in the classroom, and then collected for analysis (WHO questionnaire Appendix 1a, permission to use – Appendix 1b).[5]

The questionnaire to collect data was in two parts. The first part included students' demographic information, including age, race, and gender. For part two, we used the validated WHO questionnaire survey. The WHO student questionnaire was developed to explore reflections of their experience of the implementation and delivery of patient safety teaching overall.[5]

Ethics clearance was obtained from the University Research Ethics Committee, and consent was taken from each student before the study.

The results from the questionnaire were analyzed to ascertain the level of knowledge, awareness, and attitudes developed by the students by the end of year 4.

This questionnaire is structured into five sections:

1. Error and patient safety
2. Safety of the health-care system
3. Personal influence over safety
4. Personal attitudes toward patient safety
5. Safety at the workplace.

Sections 1 and 2 are to do with knowledge and awareness and sections 3–5 address personal attitudes toward patient safety, including actions that can be taken and the confidence to do so. The responses were stated on a five-point Likert scale (very low, low, medium, high, and very high). One point was awarded for each "very low," two points for "low," three points for "medium," four points for "high," and five points

for "very high" answer. Relevant item scores were summed to give a total score and average.

The results were analyzed regarding student attitudes, knowledge, and awareness in all the five domains above and we plan to use this knowledge to improve any shortfalls in the teaching module.

Limitations

We have not done a similar study of the knowledge and attitudes of these students before the implementation of the patient safety module into the curriculum since the study was started after the initial curriculum was already in force in years 1 and 2.

Data management and statistical analysis

Before carrying out the analysis, the data entry procedure was checked. The normality of the variables was checked using the Shapiro–Wilk test. Simple descriptive methods, median and interquartile range (IQR) for continuous variables, frequencies, and percentage for the categorical variables were utilized. Any incomplete variable was treated as a missing value, and the findings were demonstrated by tabulation.

The differences in total score of the five domains (level of knowledge on error and patient safety, level of agreement on safety of the healthcare, personal influence over safety, attitudes to patient safety, and expectation of safety at the workplace) between males and females were assessed using Mann–Whitney U-tests. Spearman's correlation test was utilized to find the relationship between the level of knowledge and the other four domains (level of agreement on safety of the healthcare, personal influence over safety, attitudes to patient safety, and expectation of safety at the workplace). The result was interpreted using $P < 0.05$ as a measure of the statistical significance. SPSS version 22 was used for data analysis.

RESULTS

These results represent the data from 134 undergraduate medical students of year 4 at MAHSA University, Faculty of Medicine. All 134 responses were analyzed in the study.

In our study, the majority of study participants were females (65.4%) and 34.6% were males. The median age of study participants was 24 years (IQR = 1), the minimum age was 21 years, and the maximum was 30 years.

According to the WHO questionnaire, structured into five sections, error and patient safety and safety of the health-care system are to do with knowledge and awareness: Sections 3–5, personal influence over safety; personal attitudes to patient safety; and safety at the workplace address personal attitudes toward patient safety.

Table 1 shows that the majority of study participants had a medium level of knowledge on an error and patient safety. Of all the different aspects of errors in health care, most students knew about factors contributing to health-care errors and factors responsible for the safety of patients. However, the level of agreement of the occurrence of errors in health care was medium to high. About 48.5% of the respondents agreed that healthcare workers make errors. About 47% felt that health care was practiced safely. The agreement on medication errors occurring rarely was 48.5%. However, 50% of respondents agreed that one in ten hospital patients will experience errors [Table 2].

Table 3 shows that 47% of respondents felt they could easily tell others about an error they made, but on average, student opinion on blaming others rather than focusing on the cause of error was evenly balanced between very low, low, medium, and high. About 77% were confident (medium and high) that they could easily speak to someone showing little regard for a patient's safety. A majority of the students (83.6%) also felt that they are able to make sure that patient safety is not put in jeopardy. Moreover, a majority (53%) felt written reports will help in patient safety and talking about errors is easy.

Table 4 shows that most students felt they will learn from their mistakes and deal with their errors well (84.3%). Here, their agreement on focusing on the cause of the error and remedying that was high (57.5%).

Furthermore, the expectation on safety at the workplace was medium to high among all our study participants [Table 5].

Table 1: Level of knowledge with regard to error and patient safety.

Error and patient safety	Frequency and percentage *n*(%)				
	V. Low	Low	Medium	High	V. High
Different types of human error?	3 (2.2)	10 (7.5)	93 (69.4)	28 (20.9)	0 (0)
Factors contributing to human error?	3 (2.2)	9 (6.7)	76 (56.7)	45 (33.6)	1 (0.7)
Factors influencing patient safety?	3 (2.2)	8 (6.0)	80 (59.7)	37 (27.6)	6 (4.5)
Ways of speaking up about error?	4 (3)	33 (24.6)	71 (53)	22 (16.4)	4 (3)
What should happen if an error is made?	4 (3)	13 (9.7)	74 (55.2)	37 (27.6)	6 (4.5)
How to report an error?	7 (5.2)	26 (19.4)	73 (54.5)	28 (20.9)	0 (0)
The role of health-care organizations (e.g., hospitals, and general practitioners) in error reporting?	3 (2.2)	23 (17.2)	67 (50)	33 (24.6)	8 (6)

Table 2: Level of agreement on the safety of the health-care system.

Safety of the health-care system	Frequency and percentage *n* (%)				
	V. Low	Low	Medium	High	V. High
Most healthcare workers make errors	1 (0.7)	15 (11.2)	65 (48.5)	43 (32.1)	10 (7.5)
In my country there is a safe system of healthcare for patients	2 (1.5)	4 (3)	44 (32.8)	64 (47.8)	20 (14.9)
Medical error is very common	2 (1.5)	2 (1.5)	55 (41)	56 (41.8)	19 (14.2)
It is very unusual for patients to be given the wrong drug	8 (6)	21 (15.7)	65 (48.5)	33 (24.6)	7 (5.2)
Health-care staff receives training in patient safety	1 (0.7)	6 (4.5)	39 (29.1)	71 (53)	17 (12.7)
About one in ten hospital patients across the world will experience some kind of adverse event	1 (0.7)	3 (2.2)	67 (50)	51 (38.1)	12 (9)

Table 3: Personal influence over safety among study participants.

Personal influence over safety	Frequency and percentage *n* (%)				
	V. Low	Low	Medium	High	V. High
Telling others about an error I made would be easy	4 (3)	31 (23.1)	63 (47)	31 (23.1)	5 (3.7)
It is easier to find someone to blame rather than focus on the causes of error	25 (18.7)	39 (29.1)	36 (26.9)	32 (23.9)	2 (1.5)
I am confident about speaking to someone who is showing a lack of concern for a patient's safety	4 (3)	17 (12.7)	64 (47.8)	41 (30.6)	8 (6)
I know how to talk to people who have made an error	2 (1.5)	29 (21.6)	63 (47)	37 (27.6)	3 (2.2)
I am always able to ensure that patient safety is not compromised	2 (1.5)	13 (9.7)	52 (38.8)	60 (44.8)	7 (5.2)
I believe that filling in reporting forms will help to improve patient safety	2 (1.5)	5 (3.7)	34 (25.4)	71 (53)	22 (16.4)
I am able to talk about my own errors	2 (1.5)	6 (4.5)	54 (40.3)	63 (47)	9 (6.7)

Table 4: Personal attitudes toward patient safety.

Personal attitudes to patient safety	Frequency and percentage *n* (%)				
	V. Low	Low	Medium	High	V. High
By concentrating on the causes of incidents I can contribute to patient safety	0 (0)	2 (1.5)	35 (26.1)	77 (57.5)	20 (14.9)
If I keep learning from my mistakes, I can prevent incidents	1 (0.7)	4 (3)	19 (14.2)	72 (53.7)	38 (28.4)
Acknowledging and dealing with my errors will be an important part of my job	0 (0)	2 (1.5)	19 (14.2)	74 (55.2)	39 (29.1)
It is important for me to learn how best to acknowledge and deal with my errors by the end of medical school	0 (0)	4 (3)	17 (12.7)	70 (52.2)	43 (32.1)

Median score of level of knowledge was 21 (IQR = 4, min. 7 max. 30), while the median score of level of agreement on safety of the health-care system was also 21 (SD = 3, min. 6 max. 35); median score of personal influence over safety was 23 (IQR = 4, min. 7, max. 30); and the median score of attitudes to patient safety and the expectation on safety at the workplace were 16 (IQR = 3, min. 6, max. 20) and 28 (IQR = 5, min. 17, max. 47), respectively.

Mann–Whitney U-tests showed no significant differences in the score of five domains between males and females ($P > 0.05$) [Table 6].

There was a definite positive correlation between the awareness of the safety of the health-care system and personal influence over safety and attitudes to patient safety ($P < 0.05$). In addition, there was a positive correlation between attitudes to patient safety and safety at the workplace ($P < 0.05$). There was no significant correlation between the level of knowledge and the other three domains [Table 7].

DISCUSSION

The cornerstone of improved patient care in practice is to educate medical students about patient safety. An investigational study was performed in the USA to ascertain the present status of patient safety in medical education curricula and also identify areas for improvement. The results of this study found that <50% of all medical schools in North America offer formal teaching on medical safety. This remains a major gap in medical education.[6]

In a systematic review performed by Nie *et al*. from Medline and Chinese databases, they found that there was appreciable variation in content, methods of teaching as well as teaching staff knowledge on patient safety. They concluded that the

Table 5: Safety at the workplace.

Safety at the workplace	Frequency and percentage *n* (%)				
	V. Low	Low	Medium	High	V. High
The nurses will be committed to identifying and addressing patient safety risks	1 (0.7)	12 (9)	64 (47.8)	51 (38.1)	6 (4.5)
The nurses will not criticize me for making mistakes	15 (11.2)	63 (47)	40 (29.9)	16 (11.9)	0 (0)
The doctors will be committed to identifying and addressing patient safety risks	1 (0.7)	2 (1.5)	55 (41)	69 (51.5)	7 (5.2)
The doctors will not criticize me for making mistakes	27 (20.1)	57 (42.5)	35 (26.1)	13 (9.7)	2 (1.5)
Managers in the health-care system will make it easy to report errors	1 (0.7)	13 (9.7)	60 (44.8)	51 (38.1)	9 (6.7)
Managers in the health-care system will be more interested in meeting performance targets than in patient safety	7 (5.2)	16 (11.9)	71 (53)	34 (25.4)	6 (4.5)
Managers in the health-care system will expect us to focus on patient safety	1 (0.7)	6 (4.5)	56 (41.8)	57 (42.5)	14 (10.4)
Being open and honest about the mistakes I make will be acceptable at my place of work	2 (1.5)	8 (6)	51 (38.1)	54 (40.3)	19 (14.2)
Admitting an error I had made would lead to just and fair treatment by management	1 (0.7)	4 (3)	56 (41.8)	51 (38.1)	22 (16.4)

Table 6: Mann–Whitney U-tests comparing scores in relation to gender.

Domains	Mean rank		Mann–Whitney U	*P*-value
	Male	Female		
Level of knowledge error and patient safety	60.07	70.67	1682.0	0.124
Level of agreement safety of the health-care system	72.0	64.0	1771.0	0.271
Thinking about your own ability to influence patient safety personal influence over safety	69.47	65.70	1887.5	0.588
Personal attitudes to patient safety	74.48	63.05	1657.0	0.092
Expectations about safety at the workplace	63.51	68.84	1840.5	0.445

Table 7: Spearman's correlations among five domains.

Spearman's rho	Level of knowledge	Safety of the healthcare system	Personal influence over safety	Personal attitudes to patient safety	Safety at the workplace
Level of knowledge					
Correlation coefficient	1.000	0.051	0.161	0.107	0.008
Sig. (two-tailed)	.	0.556	0.063	0.221	0.931
n	134	134	134	134	134
Safety of the health-care system					
Correlation coefficient	0.051	1.000	0.228**	0.300**	0.022
Sig. (two-tailed)	0.556	.	0.008	0.000	0.805
n	134	134	134	134	134
Personal influence over safety					
Correlation coefficient	0.161	0.228**	1.000	0.332**	0.190*
Sig. (two-tailed)	0.063	0.008	.	0.000	0.028
n	134	134	134	134	134
Personal attitudes to patient safety					
Correlation coefficient	0.107	0.300**	0.332**	1.000	0.218*
Sig. (two-tailed)	0.221	0.000	0.000	.	0.012
n	134	134	134	134	134
Safety at the workplace					
Correlation coefficient	0.008	0.022	0.190*	0.218*	1.000
Sig. (two-tailed)	0.931	0.805	0.028	0.012	.
n	134	134	134	134	134

**Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 level (two-tailed)

existing curriculum in medical schools all over the world still has sizeable challenges.[7] Madigosky *et al*. studied the knowledge, attitudes, and skills of the effects of medical errors on year 2 medical students at the School of Medicine, the University of Missouri, Columbia in 2003–2004. The study found that of the students who undertook patient safety teaching as part of their medical curriculum, attitudes improved after instruction, but those improvements had declined after a year. They concluded that the methodology of instruction needed to be reassessed to see sustainable results.[8]

In a study performed in South Korea, the researchers found that many students had difficulty opening up about medical errors. They concluded that error reporting guidelines and educational methods aiming to develop better communication skills need to be taught at the undergraduate level to improve patient safety.[9] Awareness of the protocols of safety being used in a health-care organization is the first step to identifying any areas for improvement, since the knowledge, attitudes, and behaviors of health-care staff are critical in the culture of safety, as seen in an Italian study.[10]

In a study published in the Journal of Surgical Education, the authors delivered a patient safety course for 1 week–2nd-year medical students. Students completed a questionnaire on their awareness of patient safety before and after the delivery of the module. They found that the course on patient safety increased the medical students' awareness of safety in patient care and the occurrence of medical errors. The authors concluded that the application of a patient safety curriculum will make medical students better prepared for correct practices and safer health-care services.[11]

Patient safety is essentially detection, prevention, and restoration of adverse outcomes or injuries occurring during health care. It also refers to medical interventions to deal with any medical error that has occurred. There is the added need to care for and support the unfortunate staff involved (called the "second victim of medical errors").[12] This can only occur when the young doctor is aware of their approach to errors committed. Therefore, the best time to teach doctors about patient safety is when they are still undergraduate students. Then, once they graduate, their knowledge, awareness, and attitudes toward observing patient safety measures to prevent errors will be positive, right from the beginning of their medical careers.

To ensure some uniformity into the methods and content of teaching patient safety in medical education, the WHO has developed a comprehensive patient safety curriculum. The WHO curriculum guide topics include: What is patient safety; why applying human factors is important for patient safety; understanding systems and the effect of complexity on patient care; being an effective team player; learning from errors to prevent harm; understanding and managing clinical risk; using quality-improvement methods to improve care; engaging with patients and carers; infection prevention and control; patient safety and invasive procedures; and improving medication safety.[4]

The Declaration of Helsinki on patient rights has now recommended education in patient safety: "Education plays an important role in improving the safety of patients and we entirely support patient safety teaching."[13]

To assess the effectiveness of the WHO curriculum, the WHO data collected and analyzed from ten schools in the six WHO regions that have implemented the WHO patient safety curriculum. The ten schools came from nine different countries. On analysis, this data showed that even though these students came from many different backgrounds, their knowledge, and perception about patient safety issues (WHO questionnaire section 1) had increased tremendously after the implementation of the WHO curriculum into the students' existing MBBS curriculum.[14]

Therefore, medical students can be taught about how different health-care systems affect the safety of patients, how adverse events can be caused by poor communication, and how errors can be made inadvertently. Students can learn to manage these challenges at an early stage of their education so that their awareness level is high in mitigating medical errors. A healthy educational environment and opportune training on patient safety matters are necessary to improve health care and respond to present public expectations.[15]

In Malaysia, the Ministry of Health has a "Vision for Health" which mandates the development of a safe health-care system implemented through the coordinated efforts of all the major health-care stakeholders. In recognition of errors by health-care staff, the Patient Safety Council was set up in 2003 by the Malaysian Cabinet. This council has been entrusted with the responsibility of looking into and encouraging all hospitals, clinics and health-care institutions in ensuring a safe Malaysian health-care system. In Malaysia, the first national patient safety campaign was started on June 24, 2013. "Malaysian Patient Safety Goals: Guidelines on Implementation and Surveillance" lists in detail the national patient safety goals as well as the methods of implementation and related surveillance for each of their key performance indicators. At present, the Patient Safety Council of Malaysia explains 13 patient safety goals. A safe culture can only be incorporated when health-care staff accept a fair and non-blame culture. It is more important to look into the causes and preventive methods of the error rather than stand judgment on the person who committed it. One of the important points in a non-blaming culture is an "Incident Reporting and Learning System" where a "Root Cause Analysis" is investigated into the incidents to ascertain all the contributory factors causing the incident. The Malaysian

Ministry of Health believes that "A wise person learns from the mistakes of others while a clever person learns from only his or her own mistake."[16]

Willingness to take responsibility for any error committed depends on the knowledge that the focus will be on prevention rather than blame, and this can be improved by improving education in medical schools.[17] Medical students should not be overlooked as participants in the implementation of patient safety. Unfortunately, their inexperience, limited clinical knowledge, and fear (of negative evaluation in exams or of being scolded by their teachers) can lead to hesitation to speak up. Education is the best strategy to improve student knowledge and attitudes toward patient safety at an early stage before any ingrained biases can occur. Faculty and nursing staff who are involved in teaching students should encourage students to observe and actively convey to responsible staff when they see any errors or near misses. This will help all healthcare workers to work toward eliminating errors in patient care and allow and empower students to become advocates of patient safety.[18]

MAHSA University, Faculty of Medicine, has introduced a module called "patient safety" into the MBBS curriculum. This module's learning objectives focus on developing students' knowledge, and attitudes relevant to patient safety. The module has been developed in a spiral learning platform where incremental knowledge is inculcated into the existing curriculum to gradually increase student awareness of patient safety methods. During Phase 1 (years 1 and 2 – preclinical phase), students are taught basic safety measures such as the importance of correct patient identification, consent taking, communicating risk, truth-telling, the importance and techniques of hand-washing, and adhering to safety in positioning a patient during examination procedures during their early clinical exposure module. These issues are also assessed at objective structured clinical examination sessions.

In year 3, students attend lectures or are shown videos followed by discussion on: Health and safety in health care; medical records and record keeping; patient safety in invasive procedures; errors in health care (WHO video); and medication safety, rational prescribing; and prescription writing. (Appendix 2a, Personal and Professional Development [PPD] study guide year 3, patient safety topics). In year 4, keeping the WHO and Malaysian society for quality in health goals in mind, the students have to study a topic of their choice, highlighting any ONE aspect of patient safety. (Appendix 2b, PPD study guide patient safety project lists the areas that are given to the students for their study). This module is compulsory for all medical students and they need to complete the project and present their report by the end of year 4 of their study.

Our analysis shows that with respect to the generation of medical errors, most of our respondents students felt that medical errors are common and inescapable, and as students, they were confident in their ability to influence those who are committing errors.

Level of knowledge on error and patient safety (knowledge and awareness)

We found that a majority of our students felt that their knowledge level on errors was only average (medium). Of all the different aspects of errors in health care, most students knew about factors contributing to health-care errors and factors responsible for the safety of patients. This implies that our teaching methodology needs to look into improving knowledge either by better delivery and/or improved self-learning during patient interactions. Teaching staff may need to highlight relevant patient safety measures during bedside and small group teaching rather than depending on lectures alone in year 3 of the medical curriculum [Table 1].

Level of agreement on the safety of the health-care system (knowledge and awareness)

The level of agreement of the occurrence of errors in health care was medium to high. About half of the respondents agreed that healthcare workers make errors. Again, about half of the respondents opined that health care was practiced safely and medication errors occurred rarely. However, half of the respondents also agreed that one in ten hospital patients will experience errors. In conclusion, a majority of the students felt that health care was practiced safely most of the time, even though errors can occur in a tenth of all hospitalized patients. The students gave this opinion after having performed a study on hospital safety protocols and procedures during their elective project on patient safety during year 4 of their MBBS study [Table 2].

Student view on personal influence over safety (attitudes)

The results of feedback on personal influence over safety were mixed. Nearly half of respondents felt they could easily tell others about an error they made, but on average, student opinion on blaming others rather than focusing on the cause of error was evenly balanced between very low, low, medium, and high [Table 3].

Most students were confident (medium and high) that they could easily speak to someone showing little regard for a patient's safety. This indicates that students in this study feel safe about discussing medical errors in the present circumstances (when they are not responsible for patient care).

A majority of the students (83.6%) also felt that they are able to make sure that patient safety is not put in jeopardy. This in contrast to the first point (level of knowledge on error and patient safety) where student knowledge levels on

types of errors and factors affecting errors was only average. This factor needs to be explored further, to understand why students feel they will not commit errors at present. They may require more exposure to hands-on patient handling to realize the reasons for error and the reason to re-focus attention to causes rather than blame.

Again, many of the students felt written reports will help in patient safety and talking about errors is easy.

Personal attitudes with regard to patient safety (attitudes)

The data on student attitudes to safety were very encouraging. Most students felt they will learn from their mistakes and deal with their errors well. Here, their agreement on focusing on the cause of the error and remedying was high [Table 4].

The authors hope that as students mature in their awareness of patient safety, their focus will remain on finding the causes of medical errors and addressing them, or finding remedies.

Personal expectations for safety at the workplace (attitudes)

Students of year 4 are not responsible for patient care and therefore do not face criticisms from other healthcare workers. Therefore, their opinions are entirely theoretical here [Table 5].

At the same time, it is interesting to see that the students do expect to be treated fairly if they make a mistake. This implies either that they are unaware of the work culture or have seen positive role models in patient care. This particular issue needs further exploration in qualitative analysis in the future.

CONCLUSIONS AND RECOMMENDATIONS

A majority of students in this survey had developed a good level of knowledge, awareness, and a positive attitude toward safety measures observed in the health-care system at the hospital they were attached to for their studies. They also had a high expectation of fair play in workplace safety.

Our study therefore indicates that our teaching-learning methods are on average, helping to create awareness and knowledge of patient safety protocols in practice and the students' attitudes to patient safety measures are positive.

We recommend that a further follow on the study should be performed on these same students once they start their clinical practice as housemen to know whether their attitudes change during practice.

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Declaration of patient consent

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Conflicts of interest

There are no conflicts of interest.

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APPENDIX

APPENDIX 1A: PATIENT SAFETY FEEDBACK FORM AND CONSENT FORM

PERSONAL AND PROFESSIONAL DEVELOPMENT 4

Patient Safety Module Feedback Form Year 4
2018 -2019

This questionnaire is designed for evaluation of the Patient safety curriculum at MAHSA Faculty of medicine.

The questionnaire is designed to evaluate medical students' awareness of patient safety issues and expectations of how patient safety is being managed in the healthcare system.

We anticipate it will take around 10 minutes to complete the questionnaire. Please respond to the questions honestly, and if you would prefer not to respond to a particular question then just leave it blank.

You are being asked to complete this form as part of a study.

This will not form part of your final assessment.

Introductory Questions

Name:
Age:
Gender:
BMS number:
Group:

Questionnaire

Please highlight in RED, your answer clearly.

Section 1 Error and Patient Safety

Please circle the number that best describes your level of knowledge for each item.

What is your level of knowledge regarding:

V. Low Low Medium High V. High

Different types of human error? 1 2 3 4 5

Factors contributing to human error? 1 2 3 4 5

Factors influencing patient safety? 1 2 3 4 5

Ways of speaking up about error? 1 2 3 4 5

What should happen if an error is made? 1 2 3 4 5

How to report an error? 1 2 3 4 5

The role of healthcare organisations (e.g. hospitals, general practitioners) in error reporting? 1 2 3 4 5

Section 2 Safety of the Healthcare System

Please circle the number that best describes your level of agreement for each statement.

Strongly disagree Disagree Neutral Agree Strongly agree

Most healthcare workers make errors. 1 2 3 4 5

In my country there is a safe system of healthcare for patients. 1 2 3 4 5

Medical error is very common. 1 2 3 4 5

It is very unusual for patients to be given the wrong drug. 1 2 3 4 5

Healthcare staff receive training in patient safety. 1 2 3 4 5

About one in ten hospital patients across the world will experience some kind of adverse event. 1 2 3 4 5

Section 3 Personal Influence Over Safety

Thinking about your own ability to influence patient safety, please circle the number that best describes your personal view for each statement.

Strongly disagree Disagree Neutral Agree Strongly agree

Telling others about an error I made would be easy. 1 2 3 4 5

It is easier to find someone to blame rather than focus on the causes of error. 1 2 3 4 5

I am confident about speaking to someone who is showing a lack of concern for a patient's safety. 1 2 3 4 5

I know how to talk to people who have made an error. 1 2 3 4 5

I am always able to ensure that patient safety is not compromised. 1 2 3 4 5

I believe that filling in reporting forms will help to improve patient safety. 1 2 3 4 5

I am able to talk about my own errors. 1 2 3 4 5

Section 4 Personal Attitudes to Patient Safety

Thinking about your personal attitudes with regard to patient safety, please circle the number that best describes your own attitude for each statement.

Strongly disagree Disagree Neutral Agree Strongly agree

By concentrating on the causes of incidents I can contribute to patient safety. 1 2 3 4 5

If I keep learning from my mistakes, I can prevent incidents. 1 2 3 4 5

Acknowledging and dealing with my errors will be an important part of my job. 1 2 3 4 5

It is important for me to learn how best to acknowledge and deal with my errors by the end of medical school. 1 2 3 4 5

Section 5 Safety at the Workplace

Thinking about your expectations about patient care when you begin working, please circle the number that best describes your expectations for each statement.

Strongly disagree Disagree Neutral Agree Strongly agree

The nurses will be committed to identifying and addressing patient safety risks. 1 2 3 4 5

The nurses will not criticise me for making mistakes. 1 2 3 4 5

The doctors will be committed to identifying and addressing patient safety risks. 1 2 3 4 5

The doctors will not criticise me for making mistakes. 1 2 3 4 5

Managers in the healthcare system will make it easy to report errors. 1 2 3 4 5

Managers in the healthcare system will be more interested in meeting performance targets than in patient safety. 1 2 3 4 5

Managers in the healthcare system will expect us to focus on patient safety. 1 2 3 4 5

Being open and honest about the mistakes I make will be acceptable at my place of work. 1 2 3 4 5

Admitting an error I had made would lead to just and fair treatment by management. 1 2 3 4 5

Thank you for taking the time to complete this questionnaire

Ref: Evaluation

APPENDIX 1B: WORLD HEALTH ORGANIZATION PERMISSION.

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Use of questionnaire

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APPENDIX 2A: PERSONAL AND PROFESSIONAL DEVELOPMENT STUDY GUIDE YEAR 3 PATIENT SAFETY TOPICS

STUDY GUIDE FOR MBBS PROGRAMMME

Personal and Professional Development Year 3 (Patient Safety Topics)

MPPD 6352

REFERENCES

Patient Safety Guidelines

1. https://www.england.nhs.uk/patientsafety/never-events/natssips/
2. http://www.jointcommission.org/topics/patient_safety.aspx
3. http://www.ncbi.nlm.nih.gov/books/NBK2681/

Lesson 3

Medical Records and Record Keeping

(Lecture) At the end of this lesson the student wiil be able to:
Explain what constitutes health records
Describe the importance of retention and storage of medical records
Explain the ownership of different types of health records
Discuss the legal and ethical issues regarding medical record keeping
List the rights of employees and employers

Teaching Method Lecturer Teaching Material Assessment Methods Time Learning Outcome

Lecture Dr M Sen PPT Formative 2 hours 1 – 5

Lesson 10

Rights and Responsibilities of Patients

Lecture At the end of this lecture the student will be able to:
Explain the basic rights of a patient
Discuss the patient values of truth, trust and confidentiality
Describe patient responsibilities towards their own health care decisions.
Describe patient rights and responsibilities in a consultation

Teaching Method Lecturer Teaching Material Assessment Methods Time Learning Outcome

Lecture Dr M Sen PPT Formative 2 hours 1 – 5

Lesson 12

Health and Safety in Healthcare

Lecture
At the end of this session the students will be able to discuss
Define patient safety and state facts about patient safety.
Explain the causes of medical errors.
List the International and Malaysian Patient Safety goals.
Models of patient safety

Teaching Method Lecturer Teaching Material Assessment Methods Time Learning Outcome

Lecture Prof Dr Ravi PPT Formative 2 hours 3 - 7

Lesson 13

Medication Safety, Rational Prescribing and Prescription Writing

(Pharmacology) At the end of this lecture the student should be able to:
Explain the legal contexts of prescribing drugs and devices
Consent and mental capacity in prescribing
Regulation of medicines
Importance of record keeping in prescription writing
Avoiding errors in medication delivery

Teaching Method Lecturer Teaching Material Assessment Methods Time Learning Outcome

Lecture Dept. of Pharmacology PPT Formative 2 hours 3 - 7

Lesson 14

Patient Safety in Surgical Procedures

Dept. of Surgery At the end of the lecture the student will be aware of: the main types of adverse events associated with surgical and invasive procedures; the verification processes for improving surgical and invasive procedures. follow a verification process to eliminate wrong patient, wrong side and wrong procedure; practise operating room techniques that reduce risks and errors (time-out, briefings, debriefings, stating concerns) avoiding infections and postoperative sepsis; cardiovascular complications; respiratory complications; thromboembolic complications.

Teaching Method Lecturer Teaching Material Assessment Methods Time Learning Outcome

Lecture Dept. of Surgery PPT Formative 2 hours 3 – 7

Lesson 15

Errors in Healthcare

(Video) Reflective learning and self assessment from a Video : LEARNING FROM ERROR
the introduction of new technology or products
the outcome of risk assessments on healthcare hazards
the planning and organisation of health and safety training,
the engagement of health and safety experts or consultants.

Teaching Method Lecturer Teaching Material Assessment Methods Time Learning Outcome

Video Dept. of PPD Video Reflective essay

Formative 2 hours 3 – 7

STUDY GUIDE FOR MBBS PROGRAMMME

PERSONAL AND PROFESSIONAL DEVELOPMENT

Patient Safety Project

PART A: INTRODUCTION

Commitment to patient safety worldwide has grown since the late 1990s. This was prompted by two influential reports: 'To Err is Human,' produced by the Institute of Medicine in the USA, in 1999 and 'An Organization with a Memory,' produced by the United Kingdom Government's Chief Medical Officer in 2000. Both reports recognized that error is routine during the delivery of health care and occurs in around 10% of hospital admissions. In a proportion of cases, the harm produced is serious, even fatal.

WHO Definition: Patient safety

"The simplest definition of patient safety is the prevention of errors and adverse effects to patients associated with health care."

Medical error—The third leading cause of death in the US

BMJ 2016; 353 doi: http://dx.doi.org/10.1136/bmj.i2139 (Published 03 May 2016)

Patient Safety Council of Malaysia

Ist National Patient Safety campaign was launched on 24th June 2013

"Malaysian Patient Safety Goals: Guidelines on Implementation and Surveillance" explains the details of the Goals as well as the implementation and surveillance for their associated Key Performance Indicators. It describes the 13 Patient Safety Goals.

Ref: HYPERLINK "http://www.patientsafety.moh.gov.my/" www.patientsafety.moh.gov.my/

MALAYSIAN PATIENT SAFETY GOALS

Intent of the Malaysian Patient Safety Goals

To stimulate healthcare organizations to improve key patient safety areas as well as patient safety in general

To outline important patient safety areas that need to be focused on and improved upon

To provide a measurable (and improvable)"bird's eye view"or"dashboard"of the status of patient safety in public as well as private health carefacilities in Malaysia

Their associated KPIs will act as"Performance Measurement Tools"in areas that are critical toasafe healthcare system

An objective means for the Patient Safety Council of Malaysia to monitor and evaluate as well as improve the status of patient safety in the country.

Malaysian Patient Safety Goals and Key Performance Indicator (KPI)

No Goal Specification KPI

Patient Safety Goal No. 1 Clinical governance defined as corporate accountability for clinical performance. Implementation of Clinical Governance (i.e. good clinical governance will be manifested as compliance to the patient safety goals)

Patient Safety Goal No. 2 To implement theWHO's 1st Global Patient Safety Challenge: " Clean Care is Safer Care" Hand Hygiene Compliance Rate

Patient Safety Goal No. 3 To implement theWHO's 2nd Global Patient Safety Challenge:

"Safe Surgery Saves Lives" Number of "Wrong Surgeries" Performed and Number of Cases of "Unintended Retained Foreign Body"

Patient Safety Goal No. 4 To implement the WHO's 3rd Global Patient Safety Challenges-

"Tackling Antimicrobial Resistance" Incidence Rate of MRSA Infection; Incidence Rate of Extended-Spectrum Beta-Lactamase (ESBL) producing Klebsiella pneumonia infection and Incidence Rate of ESBL- E.coli Infection

Patient Safety Goal No. 5 To improve the accuracy of patient identification Compliance Rate For "At least 2 identifiers Implemented"

Patient Safety Goal No. 6 To ensure the safety of transfusion of blood and blood products Number of Transfusion Errors ("Actual") and Number of Transfusion Errors ("Near Misses")

Patient Safety Goal No. 7 To ensure medication safety Number of Medication Errors ("Actual"); Number of Medication Errors ("Near Misses")

Patient Safety Goal No. 8 To improve clinical communication by implementing critical value programme Percentage Of Critical Values Notified Within 30 Minutes or Less;

Patient Safety Goal No. 9 To reduce patient falls Percentage reduction in the Number of falls (adults); Percentage reduction in the Number of falls (paediatric patients)

Patient Safety Goal No. 10 To reduce the incidence of Healthcare Associated Pressure Ulcers Incidence Rate of Pressure Ulcers

Patient Safety Goal No. 11 To reduce Catheter-Related Blood Stream Infections in the ICU Rate of CRBSI (number of CRBSI per 1000 catheter-days)

Patient Safety Goal No. 12 To reduce Ventilator Associated Pneumonia In the ICU Rate of VAP (Number of VAP per 1000 ventilator days)

Patient Safety Goal No. 13 To implement an Incident Reporting and Learning System Implementation of A Facility-Wide Incident Reporting System

(Including Root Cause Analysis) Or Other Methods To Investigate

Incidents (e.g. Clinical Audit, Enquiries Etc.)

WHO Patient Safety Goals

WHO Patient Safety Goals Malaysian Patient Safety Goals

1 Identify patient correctly G5 To improve the accuracy of patient Identification
2 Improve effective communication G8 To improve clinical communication by implementing a critical test and critical value program
3 Improve the safety of high-alert medications G7 To improve Medication Safety
4 Ensure correct-site, correct-proced