ORIGINAL ARTICLE

PATIENT SAFETY AWARENESS AMONG DENTAL STUDENTS IN LAHORE, PAKISTAN: A MULTI–CENTRE STUDY

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Background: Awareness of key issues associated with patient safety is vital for improving patient care in all fields of medical sciences including dentistry. This study was done to assess awareness among dental undergraduates towards patient safety in different dental institutions of Lahore, Pakistan **Methods:** It was a cross-sectional analytical study **c**onducted at Combined Military Hospital Lahore Medical College & Institute of Dentistry from 1st May to 30th November, 2020. Two hundred third and fourth year BDS students (149 females and 51males; mean age 21.91±1.08) of 4 dental institutions of Lahore, mostly from private institutions (79.5%) completed Awareness of Patient Safety Questionnaire (APSQIII) to assess awareness of patient safety in dental undergraduates. Data was analyzed through SPSS 21. **Results:** Teaching and learning about patient safety got the highest item scores while "Team functioning" got the highest 6.1 mean domain score. "Professional incompetence as an error cause" got the lowest 3.1 mean score followed by "Disclosure responsibility" (4.3). No significant difference was seen with respect to gender. Fourth year students were found to be more aware about error disclosure and error reporting confidence with statistically significant difference. All reverse coded items were scored in disagreed range by participants. **Conclusion:** Despite positive attitudes towards patient safety, lack of awareness was seen in key issues. Incorporation of patient safety in undergraduate curriculum may help in improving patient care and health services.

Keywords: APSQ III; dental students; Error disclosure; Patient safety; Surgical errors

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INTRODUCTION

Patient Safety (PS) education is beginning to gain importance in the form of a new discipline in medical and dental curricula which may help in reducing the occurrence of adverse events.[1,2] The importance of patient safety was realized when the report "To Err is Human," was released in late 1990s, which shocked the public on account of the statistics showing that the number of deaths due to medical errors surpassed the number of deaths due to automobile accidents in the United States.[3]

There is a lack of efficient system of incident reporting, medical record keeping, drug reactions and error disclosures which can be a cause of casualties of patients in Pakistan.[4] Lack of awareness and lack of systems dealing with such important issues related to patient safety calls for timely measures by the medical educationists. Hence the emphasis on incorporation of PS education in undergraduate curricula to gain maximal benefit.[5] A curriculum guide has also been developed by World Health Organization to assist in designing and upgrading medical schools' curriculum transformation.[6]

Although many strategies have been devised to improve PS measures in medical practice due to the associated morbidity and mortality, such strategies are only slowly being adopted in dental practice. The reason could be due to the low associated morbidity and mortality in dentistry. However, many organizations, medical educators and dentists are now appreciating and discussing the importance of patient safety education and culture in dentistry.[7,8]

Several instruments have been developed to investigate medical students' perceptions and attitudes towards PS, namely: Madigosky *et al* questionnaire and Awareness of Patient Safety Questionnaire-III (APSQ-III). These instruments provide the base line data and information about PS which can help in planning, developing and implementing need specific programs for the curriculum by instructional designers.[9]

Recently, in Pakistan, many medical and dental colleges have planned to include PS content into their curricula. Before designing and implementing such programs, it is essential that the attitude of students towards PS issues is well recognized and understood. As there is not enough local published data, the aim of the study was to explore the awareness of dental students towards patient safety concepts. The gaps in ideal and current awareness about the patient safety in the students may help in redefining their curriculum and preparing a better lot of dentists for the future.

MATERIAL AND METHOD

It was a cross-sectional analytical study carried out in 4 dental institutions in Lahore namely CMH Lahore Medical College and Institute of Dentistry, University of Lahore, De'Montmorency College of Dentistry and Sharif Medical and Dental College. Sample size was calculated with Open-Epi sample size calculator. The total number of third and fourth year BDS students in 4 dental colleges was 420. Keeping the confidence interval 95% and 5% margin of error, a sample size of 200 was obtained. Convenient sampling technique was followed. The study was started after approval from the Ethical Review Committee (No 55/ERC/CMHLMC). A validated instrument, Awareness of Patient Safety Questionnaire (APSQIII)[9] was used. Permission for the use of APSQ III was taken from the developer of the questionnaire through email. It contains nine domains with a total of twenty-six items, with eight of the items having reversed coding. Students of third and fourth year BDS with patient interaction of at least 3 months were included while foreign students and detainees of second and third professional BDS were excluded from the study. The dental students fulfilling the inclusion criteria were approached during their on-line teaching sessions and APSQIII was sent to 250 students. The purpose of study was explained to students. Informed verbal consent was obtained while ensuring anonymity. Questionnaires were emailed to students and they were told about the confidentiality and anonymity of the data. A soft reminder was sent via email 2 weeks later.

The items were scored on seven-point Likert scale. "Strongly Agree" was given score of 7, "Unsure" being 4 and "Strongly Disagree" being 1. Reverse scoring was used for items 11, 13–18 and 25. A response was considered a "positive" response in case it was "strongly agree, agree or somewhat agree in positively worded questions and strongly disagree, disagree and somewhat disagree in reverse coded questions. Data was analyzed through SPSS 21. Frequency and percentage were computed for qualitative variables, and mean±SD was presented for quantitative variables. Student t test was used to compare the responses across domains.

RESULTS

The questionnaire was sent to 225 students of 4 dental colleges, 200 responses were received making a response rate of 80%. Cronbach's alpha calculated for APSQIII was 0.7. Majority of participants were females (149, 74.5%). Mean age of participants was 21.91±1.08 with 76.38% of participants being 22 years of age. There were only 41 (20.5%) students of public dental college while the rest (159, 79.5%) belonged to private medical colleges with almost equal preponderance of 3rd year and 4th year students (Table-1).

The mean scores of the questionnaire items are shown in Table-2. The highest score (6.45) was obtained for need for learning about PS issues before qualification. High scores above 6 were seen for six items regarding regular breaks, competent doctors make errors, team work, teaching teamwork skills, teaching students about patient safety and learning about PS issues before qualification. Majority 89% agreed that "Even the most experienced and competent doctors make errors" and that "Human error is inevitable" (84%). "All medical errors should be reported" was agreed by 77% students. The lowest scores were obtained for the item about lack of attention by the health care workers during work (2.40) and medical errors from careless doctors (2.97), followed by 3.20 for the reverse coded item "Patient safety issues cannot be taught".

Highest domain mean score (6.1) was seen for the domain concerned with "Team functioning" (Table-3) while the lowest mean domain score (3.1) was obtained for the domain of "Professional incompetence as an error cause" followed by "Disclosure responsibility" (4.3).

The scores of both genders were almost similar in all items. Comparison of scores of academic years showed statistically significant difference in scores of 8 items related to error inevitability, error reporting and error disclosure. In reverse coded questions, 3rd year students scored higher mean score (3.75) than 4th year students (3.38).

Table-1: Characteristics of UG Dental Students (n=200)

Category	Undergraduate Dental Students	n (%)
Gender	Male	51 (25.5)
	Female	149 (74.5)
Academic year	Third Year	99 (49.5)
	Fourth Year	101 (50.5)
Age	<22	73 (36.5)
	22	76 (38)
	>22	51 (25.5)
Name of College	CMH Lahore Medical College &Institute of Dentistry	55 (27.5)
	University of Lahore	56 (28)
	De Montmorency College of Dentistry*	41 (20.5)
	Sharif Medical and Dental College	48 (24)

*Public medical college

Table-2: Responses of UGDS in APSQ-III

Domains	S No	Questions	Score Mean±SD
PS training received	1	My training is preparing me to understand the causes of medical errors	5.51±1.25
	2	I have a good understanding of patient safety issues as a result of my undergraduate medical training	5.56±1.37
	3	My training is preparing me to prevent medical errors	5.45±1.51
Error reporting Confidence	4	I would feel comfortable reporting any errors I had made, no matter how serious the outcome had been for the patient	5.56±1.34
	5	I would feel comfortable reporting any errors other people had made, no matter how serious the outcome had been for the patient	5.16±1.25
	6	I am confident I can talk openly to my supervisor about an error I had made even if it resulted in potential or actual harm to my patient	5.52±1.39
Working hours as an error cause	7	Shorter shifts for doctors will reduce medical errors	5.86±1.06
	8	By not taking regular breaks during shifts, doctors are at an increased risk of making errors	6.13±0.94
	9	The number of hours doctors work increases the likelihood of making medical errors	5.84±0.97
Error Inevitability	10	Even the most experienced and competent doctors make errors	6.26±0.79
	11	A true professional does not make mistakes or errors	4.92±1.80
	12	Human error is inevitable	5.86±1.37
Professional incompetence as an error cause	13	Most medical errors result from careless nurses /technicians	3.48±1.44
	14	If people paid more attention at work, medical errors would be avoided	2.40±1.20
	15	Most medical errors result from careless doctors	2.97±1.21
	16	Medical errors are a sign of incompetence	3.79±1.56
Disclosure Responsibility	17	It is not necessary to report errors which do not result in adverse outcomes for the patient	4.36±1.83
	18	Doctors have a responsibility to disclose errors to patients only if the errors result in patient harm	3.41±1.76
	19	All medical errors should be reported	5.36±1.66
Team Functioning	20	Better multidisciplinary teamwork will reduce medical errors	6.07±1.02
	21	Teaching students' teamwork skills will reduce medical errors	6.13±0.91
Patient involvement in reducing error	22	Patients have an important role in preventing medical errors	5.58±1.10
	23	Encouraging patients to be more involved in their care can help to reduce the risk of medical errors occurring	5.76±1.06
Importance of PS in the curriculum	24	Teaching students about patient safety should be an important priority in medical students training	6.40±0.85
	25	Patient safety issues cannot be taught, they can only be learned through clinical experience, which is gained when one is qualified	3.20±1.74
	26	Learning about patient safety issues before I qualify will enable me to become a more effective doctor	6.45±0.80

Table-3: Domains scores regarding patient safety

Domain	Item No	Domain Score	Mean
PS training Received	1–3	16.5±3.75	5.5
Error reporting confidence	4–6	16.2±3.52	5.4
Working hours as an error cause	7–9	17.8±2.55	5.7
Error Inevitability	10–12	17.0±2.51	5.6
Professional incompetence as an error cause	13–16	12.6±3.98	3.1
Disclosure responsibility	17–19	13.1±3.99	4.3
Team Functioning	20–21	12.2±1.66	6.1
Patient involvement in reducing error	22–23	11.3±1.90	5.6
Importance of PS in the curriculum	24–26	16.0±2.29	5.3

DISCUSSION

The main goal of patient safety is to avoid potential adverse outcomes witnessed in 10% of hospitalized patients.[10] The clinicians need to know the principles of patient safety in order to be skilled enough to deal with this issue. However, in developing countries, only a limited budget is allocated towards any activities and interventions to improve PS training.[11] Patient safety is important both in dentistry and in medical profession. The study was carried out to assess the awareness among dental undergraduates about patient safety issues in dental colleges of Lahore. Response rate of 80% was seen in the study which is comparable to local and international studies with response rates above 70%.[1,12]

There were two notable findings of the study. Firstly, it depicted insufficient knowledge of the students about patient safety and secondly, it highlighted their desire to learn and receive formal training about PS issues. Highest score for the item about learning PS shows that students are well aware of the importance of and are keen to learn PS issues. The finding is comparable to a local study where this item was among the ones receiving the best score.[13] Dental students should be treated as adult learners and dearth of such training at undergraduate level is being well appreciated by the learners. The students strongly believed that such training can be very well incorporated and serve the purpose as is evident from the low score (3.20) for the reverse coded item "Patient safety issues cannot be taught".

Awkward positions for prolonged durations are a major part of a dentist's work. This was appreciated by the students as majority (88%) believed regular breaks may reduce work errors. Similar perception was found in studies of West and Baldwin where students believed that long working hours and lack of regular breaks were responsible for medical errors.[14,15] The effective reduction of medical errors depends on an environment of safety for patients nurtured by effective formal team work and training. It was concluded by Kuehster in 2010 that formal teamwork training resulted in significant reduction of medical errors.[16] Comparable findings were seen in our study where 88% students believed that better teamwork and teamwork training can reduce medical errors. Highest mean domain score of 6.1 for "Team functioning" in the current study also reflects this finding.

Although positive attitude was found towards most of the items, only 77% students believed in reporting all medical errors. Similar attitude was seen in other local studies where students failed to score positively in the domain of error disclosure.[1,9] This consistent finding in 3 local studies acknowledges the unawareness of our undergraduates towards this important domain and again points towards the emerging need of PS training at undergraduate level.

Majority 89% students believed that even the most experienced doctors make errors and this was confirmed by high domain score of 5.6 for error inevitability domain. Our results are even higher than those obtained from a study in Karachi where 60% students agreed with the item[17]. Similar results were reported by Yahia whose study revealed a score of 5.9 for this domain.[18] However, the findings are in contrast to a study by Nebilou in 2015 who found that a quarter of participants believed that experts do not make errors.[19] The lowest mean score 3.1 obtained in the "Professional incompetence" domain highlights the misunderstanding of students who believe that medical errors are a personal affair. The "Disclosure Responsibility" domain was the next lowest mean score 4.3 domain. Similar findings are found in multiple international studies with even lower scores found in one study.[20–23] A local study also found even lower mean score 3.0 confirming our results.[24] Poor error disclosure could be due to personal reasons for fear of litigation or could be due to the lack of an appropriate error reporting system. The low scores obtained emphasize the need to fill the knowledge gap of students about the causes leading to medical errors and how to deal with them. High mean domain score 5.6 regarding patient involvement in reducing error depicted the positive attitude of students. Similar finding is seen in studies carried out both locally and internationally.[9,21,25,26]

All the reverse coded items were scored in disagreed range by the participants. This finding is comparable with studies.[13,19,27] This stresses the importance of formal teaching of patient safety issues. Lack of formal teaching results in lack of awareness about error disclosure and error responsibility among the undergraduates.[28]

The item scores were statistically insignificant (p value >0.05) for most of the items when compared in both genders suggesting that similar awareness exists and hence teaching of patient safety teaching seems to be widely applicable. Similar findings were seen in a local study where no difference in results was seen in both genders.[1]

The comparison of item scores between the academic years showed statistically significant difference in 8 items revealing increased awareness with greater clinical exposure over time. Also, the 4th year students were found to be much clearer about the error disclosure as compared to the 3rd year students scoring higher in items regarding error disclosure with statistically significant values (p-value 0.001). As the 3rd year students scored higher than the 4th year students in the reverse coded items, this could be due to the comparatively lesser clinical exposure than the 4th year students.

This was a first ever local study carried out as an endeavor to gain a deeper understanding about the awareness of dental students. Although it was a multi-centre study using a validated inventory of APSQ III, but poor response rate of 35.7% was seen. Moreover, majority of the studies have been carried out on medical students. Further studies involving dental students with larger sample size are therefore needed to corroborate the evidence.

CONCLUSION

Overall, students showed a positive attitude for patient safety. However, desired behaviors were less common and misconceptions of students about the role of professional incompetence and error disclosure cannot be disregarded. Patient safety is a multi-faceted entity. In order to reduce errors and improve patient care, it is imperative that a patient safety culture should be inculcated in institutions. This calls for formal training about patient safety at an undergraduate level with implementation of a proper system of error reporting and error analysis.

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AUTHORS' CONTRIBUTION

ST: Literature search, conceptualization of study design, data collection, data analysis, write-up, proof reading. SB: Data interpretation, write-up, proof reading. NM: Data analysis, data interpretation, write-up, proof reading. RK, SMT, AA: Data interpretation, write-up, proof reading.

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