Research Article

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Patient Safety Culture In A Private Indian Dental Institute- A Pilot Study

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ABSTRACT

Context: Patient safety in dentistry is a critical dimension of healthcare. Dentistry cannot remain on sidelines on the issue of patient safety.

Aims: The objective of this study was to describe the patient safety culture among faculty, students (postgraduates, undergraduates and interns) and dental assistants in a private Indian dental Institute.

Settings and Design: A survey on patient safety culture developed by the Agency for Healthcare Research and Quality (AHRQ) was used to measure attitudes of faculty, students and dental assistants working in the clinics of a South Indian Dental Institute, towards the patient safety.

Methods and Material: The questionnaire was distributed among faculty, students and dental assistants with printed instructions for completion. Statistical analysis used: SPSS 11.5 was used for statistical analysis. Percentages of responses were calculated for each of the 12 dimensions for safety culture survey among the groups. Item total likert scores were calculated for each dimension.

Results: 86% response rate was seen in this survey. 'Overall Perceptions of safety' was reported positive by 59% of the respondents. 75% of the respondents reported positive for the category of 'adverse effects reporting'. 'Supervisor expectation and actions promoting patient safety' were reported positive by 65% of respondents. 64% respondents reported positively for 'Organisational learning/continuous process'. 'Team works within units' were reported positive by 71% of individuals. 'Communication openness' and 'Feedback and communication about errors' were reported positive by 76% and 68% of individuals respectively. 'Management support' and 'team work across units' were reported positive by 64% and 60% respectively. Categories of 'Non punitive response to errors', 'Staffing' and 'transition of patients' were reported positive by only 26%, 37% and 44% of respondents.Significant differences were seen for age for the dimensions of Organisational learning/continuous process and staffing (p<0.03).Dimensions of 'Teamwork within units', 'Communication openness' and 'Feedback and communication about errors' were significantly higher among males. (p<0.01).

Conclusions: Positive perception regarding patient safety was less amongst interns and undergraduate students as compared to the faculty.

Key-words: Patient safety, Dental institute, Patient Safety culture.

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Introduction

Patient safety is increasingly being recognized as a critical dimension of quality in healthcare. Concepts of patient safety have evolved from safety of products and procedures to their safe delivery.[1] Till recently, discussions on patient safety were largely limited to drug safety, blood safety, injection safety and health care waste management. The term 'patient safety', and its role in minimizing adverse events, and maximizing recovery from them, was practically unknown, except in small healthcare quality circles. Today, the concept of 'patient safety and safety culture' is better understood and discussions about it, in the near future, are more likely to be about system design, organization and operation. Safety culture is increasingly recognized as an important strategy and perhaps a necessary precursor in improving the widespread deficits in patient safety.[2]

Healthcare experts believe that most patient safety errors are due to errors with systems rather than "bad" individuals, and that some systems are more prone to errors than others. System in hospital settings can be appropriately explained as the group of interconnected individuals and infrastructure involved in the care of patient. In its attempts for prevention of errors in health care, the healthcare industry has begun to focus on development of measures of safety, mostly the components of a safety culture which can be quantified such as management and leadership behavior of a organization, effective team functioning in hospital settings, inter and intradepartmental communication, and employee perceptions of safety.[3]

The Flexner report[4] on medical education written by Flexner A, published in 1910, and the Carnegie Foundation report[5] on dental education in the United States and Canada, written by William J. Gies published in 1926 stressed the need for greater attention to patient safety. The Gies report called for "better cooperation between professions of dentistry and medicine, expansion of dental research, and greater appreciation by dental teachers of the biological and medical side of dentistry".[5]

The chances of complications in a health care system increases proportionally with the increasing complexity of the procedure. Despite the recent published research work on the issue of patient safety[6], the attitude towards the same is still being neglected in dental institutions. Dentistry must become more active in dealing with everything involved in patient safety. As dental care worker handle potentially dangerous pharmaceuticals, dental procedures are becoming more invasive to the patients, dental care worker and patient is constantly exposed to ionizing radiation, lasers, etc. which may be harmful, and the contact of instruments with the blood and bodily fluids of patients may constitute potential sources for the transmission of diseases.[7]

Safety culture assessment is important for any dental care institution as it provides a basic understanding of the safety related issues, perceptions and attitudes of its students, management and faculty. Assessment of safety culture can be used as a diagnostic tool to identify various fields for improvement. It can help an organization to identify the areas that are considered more problematic than others. Most of the research on patient safety culture has been reported from developed nations. Patient safety is a new field in India. There is no national level body looking after this aspect, neither are there any rules or regulations. The objective of this study was to describe the patient safety culture among faculty members, students (postgraduates, undergraduates and interns) and dental assistants in a private Indian dental Institute.

Subjects and Methods:

This cross-sectional survey was conducted in the clinics of a South Indian Dental Institute. Prior permission for conducting this study was obtained from the institutional review board. A questionnaire titled "Hospital Survey on Patient Safety Culture" developed by the U.S. Agency for Healthcare Research and Quality (AHRQ)[3] was used in this study as survey instrument. It was developed by the agency in pursuance of its goal of supporting a culture of safety and quality improvement in the health care system. This survey was conducted among faculty, students (post graduates, undergraduates and interns) and dental assistants who were involved in patient care. Masters' degree holders were Senior faculty, and Bachelors' degree holders were Junior faculty.

The questionnaire with printed instructions was distributed to the full-time faculty, postgraduates, interns, dental assistants and final-year undergraduate students. Each survey instrument was to be completed anonymously. To ensure anonymity, questionnaires were distributed and collected by a person not involved in study. The Questionnaires and informed consent forms were hand-distributed to 340 subjects, out of which 295 responded, 18 subjects did not fill it completely, hence were not included in analysis, giving a response rate of 277 out of 340. Adjusted response rate calculated as per the recommendations of AHRQ[3] was found to be 86%.

The survey consisted of forty-two randomly sorted questions from twelve areas of concern.[3] Apart from that, five more questions were asked regarding 'designation', 'working years in the hospital', 'working hours in a week', 'overall grade of safety ratings' and 'number of adverse events reported past 12 months'. Out of 48

questions 20 were reverse worded. Responses were measured on a 5 point likert scale which was, strongly disagree, disagree, neither, agree and strongly agree. Based on the methodology used by the AHRQ[3], the percentage of positive responses for each group, defined as 'agree' or 'strongly agree' for a positive statement or 'disagree' or 'strongly disagree' for a negative statement, was determined by dividing the number of positive responses to the items in the dimension by the total number of responses to the items (positive, neutral or negative) in that dimension.

As we used this instrument in dental school, modifications were made to the wording of items where it made sense. The word 'hospital' was replaced by 'Dental school '. Some of the words which can be confusing to students were changed accordingly such as 'unit' was replaced with 'department'. No other changes were made to the instrument. This survey instrument was pilot tested and face validated in twenty respondents and internal reliability of the scores was assessed using Cronbach's α.

Data analysis

Data analysis was done using SPSS 11.5. Internal reliability was examined for each of the 12 safety culture dimensions. Since items were worded in both positive and negative directions, negatively worded items were first reverse coded, so that a higher score would indicate a more positive response in all cases. Percentages of responses were calculated for each of the 12 dimensions for safety culture survey among the groups. Item total scores of likert scales were added for all the dimensions of safety culture. For reverse worded questions, negative response score was taken as positive response score and added in that way. Mean likert scores were compared for various categories by one way ANOVAs and student t test. Post hoc tukey test was done for intergroup comparison.

Results:

The final sample included 34 senior faculty, 17 junior faculty, 60 postgraduate students, 71 interns, 74 final year undergraduates and 21 dental assistants.(Table1) The Cronbach's-α scores for all the safety culture dimensions ranged from 0.63-0.82. The average positive responses to each dimension were analyzed for all the participants as a group.(Table2) Then the mean likertscores were analyzed for each group (senior faculty, junior faculty, postgraduate students, interns, undergraduates and dental assistants) separately. (Table 3)

Mean positive scores were statistically significant for all the twelve dimensions ($p<0.05$). The groups which consistently showed significant differences were interns and undergraduates with faculty and postgraduates respectively. On comparing age groups statistically significant differences were seen for the dimensions of 'Organisational learning/continuous process' and 'staffing'($p<0.03$). (Table 4)

Dimensions of 'Teamwork within units', 'Communication openness' and 'Feedback and communication about errors' were significantly higher among males. ($p<0.01$).(Table 5)

On being asked to grade the hospital on overall grade of patient safety, (Table 6), majority of the respondents (50.9%, N=141) reported it as acceptable, followed by 32.9% (N=91) as very good, and 14.4% (N=40) as excellent.

Table 1.Demographic characterstics of study population.

Variables	N=277	Percentages
Age		
Below 35 years	222	80.14
35years and above	55	19.85
Gender		
Males	114	41
Females	163	59
Designation		
Senior faculty	34	12.3
Junior faculty	17	6.1
Postgraduates	60	21.7
Interns	71	25.6
Undergraduates	74	26.7
Dental Assistants	21	7.6
Qualification		
BDS	88	31.8
MDS Students	60	21.7
MDS	34	12.27
BDS Students	74	26.7

Table 2. Total positive responses along various categories

Comparison of responses among respondent groups percentage of responses that were positive						
Patients safety culture dimensions	Senior faculty(N=34) n(%)	Junior faculty (N=17) n(%)	Post graduates (N=60) n(%)	Under Graduates (N=74) n(%)	Interns (N=71) n(%)	Dental assistants (N=21) n(%)	Total positive responses n(%)
Overall perception of safety	22 (66)	10(60)	45(75)	38(52)	33(46)	13(61)	163(59)
Frequency of adverse effects reported	26 (77)	15(88)	48(80)	60(81)	45(64)	14(69)	208(75)
Supervisor expectation and actions promoting patient safety	23 (69)	11(64)	51(85)	41(56)	39(55)	14(69)	180(65)
Organisational learning/ continuous process	24 (72)	12(70)	48(80)	41(55)	34(48)	18(88)	177(64)
Team work within units	26(77)	14(85)	52(87)	45(61)	43(61)	15(73)	197(71)
Communication openness	24(71)	15(88)	48(80)	55(75)	54(76)	17(79)	211(76)
Feedback and communication about errors	29(84.31)	16(92.15)	56(93.33)	61(82.43)	43(61)	20(95.43)	189(68.35)
Non punitive response to errors	15(44)	5(29)	21(35)	14(19)	12(17)	4(19)	72(26)
Staffing	14(43)	5(30)	26(43)	23(31)	28(39)	6(29)	102(37)
Management support for patient safety	29(79)	13(78)	49(81)	41(56)	30(42)	17(80)	177(64)
Teamwork across units	22(66)	13(78)	42(70)	41(55)	32(45)	15(71)	166(60)
Handoffs and transition of patients	13(40)	9(54)	37(61)	31(42)	18(25)	11(50)	122(44)

Table3. Item total positive scores of likert scales for all the dimensions of safety culture

Patients safety culture dimensions	Senior faculty (N=34) Mean(SD)	Junior faculty (N=17) Mean(SD)	Post graduates (N=60) Mean(SD)	Under Graduates (N=74) Mean(SD)	Interns (N=71) Mean(SD)	Dental assistants (N=21) Mean(SD)	p-value
Overall perception of safety	14.85 (2.64)[a]	15.00 (1.77)[b]	15.78(2.47)[c,d]	13.47(2.22)[c]	13.12(2.55) [a,b,c]	13.8 (1.88)[d]	0.001
Frequency of adverse effects reported	9.76 (2.75)[a]	10.17(2.43)[b]	10.7 (2.92)[c,d]	10.12 (2.54)[e]	8.14(2.32)[a,b,c,e]	8.57(2.42)[d]	0.001
Supervisor expectation and actions promoting patient safety	15.38 (2.72)[a,b]	14.76(2.76)	16.46(2.41)[c,d,e]	13.62(2.13)[a,c]	13.87(1.87)[b,d]	14.61(2.57)[e]	0.001
Organisational learning/ continuous process	11.20 (2.04)	11.53(1.32)	11.65(1.94)[a,b]	10.33 (2.07)[a,c]	10.8 (1.97)[b,d]	11.9(1.18)[c,d]	0.001
Team work within units	15.76(2.86)[a,b]	16.18(1.70)[c,d]	16.53(2.40)[e,f]	14.05(2.95)[a,c,e]	14.04(2.94)[b,d,f]	15.19(1.4)	0.001
Communication openness	10.76(2.68)	12.18(1.91)[a,b]	11.68(1.97)[c,d]	10.54(1.83)[a,c]	10.18(2.19)[b,d]	11.19(1.53)	0.001
Feedback and communication about errors	11.38(2.62)[a]	11.94(1.88)[b]	12.33(1.81)[c,d]	10.85(1.94)[c]	8.91(2.16)[a,b,d,e]	11.52(1.32)[e]	0.001
Non punitive response to errors	9.70(2.87)[a]	9.52(1.50)	9.36(2.71)[b]	8.02(2.20)[a,b]	8.42(2.19)	8.23(1.67)	0.001
Staffing	12.73(2.10)[a]	11.58(1.62)	12.66(1.86)[b,c]	11.71(2.03)[b]	12.61(1.65)[d]	10.14(2.10)[a,c,d]	0.001
Management support for patient safety	11.38(1.66)[a]	11.70(1.57)[b]	12.23(2.02)[c,d]	10.47(1.69)[c]	9.63(2.31)[a,b,d,e]	11.52(1.91)[e]	0.001
Teamwork across units	14.58(2.37)[a]	15.41(2.12)[b]	15.58(2.46)[c,d]	14.02(2.32)[c]	13.11(2.74)[a,b,d,e]	14.90(1.89)[e]	0.001
Handoffs and transition of patients	12.94(3.02)	13.88(2.61)	14.51(3.11)[a,b]	12.86(2.58)[a]	12.35(2.79)[b]	12.71(3.30)	0.001

One way anova intergroup comparison, tukey post hoc test, p<0.05 as statistically significant.

[a, b,c,d, e, f] Same superscript represent significant differences between the groups (Only Intergroup comparison).

Table 4. Influence of age on patient safety culture dimensions.

Safety culture dimensions	AGE	N	Mean	Std. Deviation	p-value
Overall perception s of safety	Less than 35 years	222	14.18	2.59	0.898
	35 and above	55	14.12	2.50	
Frequency of adverse effects reported	Less than 35 years	222	9.67	2.72	0.167
	35 and above	55	9.02	2.84	
Supervisor expectation and actions promoting patient safety	Less than 35 years	222	14.63	2.49	0.614
	35 and above	55	14.85	2.64	
Organisational learning/ continuous improvement	Less than 35 years	222	10.74	2.06	0.03*
	35 and above	55	11.50	1.67	
Teamwork within units	Less than 35 years	222	14.94	2.96	0.299
	35 and above	55	15.45	2.15	
Communication openness	Less than 35 years	222	10.90	2.10	0.528
	35 and above	55	10.67	2.39	
Feedback and communication about errors	Less than 35 years	222	10.75	2.34	0.086
	35 and above	55	11.45	2.33	
Nonpunitive responses to errors	Less than 35 years	222	8.72	2.40	0.905
	35 and above	55	8.77	2.50	
Staffing	Less than 35 years	222	12.25	1.90	0.033*
	35 and above	55	11.52	2.54	
Management support for patient safety	Less than 35 years	222	10.82	2.20	0.139
	35 and above	55	11.37	1.87	
Teamwork across units	Less than 35 years	222	14.33	2.62	0.792
	35 and above	55	14.45	2.38	
Handsoff and transition of patients	Less than 35 years	222	13.28	2.89	0.073
	35 and above	55	12.37	3.26	

Student t test, p<0.05 as statistically significant

Table 5. Influence of Gender on patient safety culture dimensions.

Safety culture dimensions	Gender	N	Mean	Std. Deviation	P-value
Overall perception s of safety	Male	114	14.05	2.45	0.568
	Female	163	14.24	2.64	
Frequency of adverse effects reported	Male	114	9.80	2.60	0.297
	Female	163	9.44	2.83	
Supervisor expectation and actions promoting patient safety	Male	114	14.89	2.55	0.244
	Female	163	14.52	2.48	
Organisational learning/ continuous improvement	Male	114	10.91	2.00	0.720
	Female	163	10.82	2.05	
Teamwork within units	Male	114	15.61	2.81	0.007**
	Female	163	14.66	2.83	
Communication openness	Male	114	11.32	2.03	0.007**
	Female	163	10.60	2.17	
Feedback and communication about errors	Male	114	11.32	2.049	0.012*
	Female	163	10.58	2.48	
Nonpunitive responses to errors	Male	114	8.94	2.44	0.269
	Female	163	8.60	2.39	
Staffing	Male	114	12.00	1.88	0.337
	Female	163	12.24	2.09	
Management support for patient safety	Male	114	11.18	1.84	0.100
	Female	163	10.74	2.32	
Teamwork across units	Male	114	14.66	2.39	0.114
	Female	163	14.16	2.68	
Handsoff and transition of patients	Male	114	13.32	2.97	0.466
	Female	163	13.05	2.95	

Student t test, p<0.05 as statistically significant

Table 6.Overall perception of the grade of patient safety to the hospital by various respondents.

Hospital an overall grade of safety					
	Excellent	**Very good**	**Acceptable**	**Poor**	**Falling**
Senior staff	14.7%, (n=5)	44.1%, (n=15)	41.2%, (n=14)	0.0%, (n=0)	0.0%, (n=0)
Tutors	11.8%, (n=2)	76.5%, (n=13)	11.8%, (n=2)	0.0%, (n=0)	0.0%,(n=0).
Post graduates	31.7%, (n=19)	40.0%, (n=24)	21.7%, (n=13)	6.7%, (n=4)	0 .0%, (n=0)
Graduate students	5.4%, (n=4)	29.7%, (n=22)	64.9% (n=48)	0.0%, (n=0)	0.0%,(n=0)
Interns	7.0%, (n=5)	16.9%, (n=12)	74.6%, (n=53)	0.0%, (n= 0)	1.4%, (n=1)
Dental assistants	23.8%, (n=5)	23.8%, (n=5)	52.4%, (n=11)	.0.0%, (n=0)	0.0%, (n=0)
Total	14.4%, (n=40)	32.9%, (n=91)	50.9%, (n=141)	1.4%, (n=4)	0.4%, (n=1)

Discussion:

This study was done to describe patient safety culture in a dental school. Positive responses to 'Perceptions of safety' were reported more by postgraduates and less by interns. Although most responses were consistent with a culture of patient safety, a few were negative.

Positive responses for 'Frequency of adverse effects reported' were higher in our study as compared to other studies[6]. Many previous studies[8,9] have stated that reporting of adverse effects are important for collection of facts regarding errors and complications in an organizational structure.

Perceptions for 'Non punitive response to errors' was reported positive by very less respondents (26%). The belief of the respondents that reporting an adverse event would be problematic for them due to fear of punishment, may explain this finding. There is considerable evidence that one of the main barriers to report errors is fear of the consequence. Maxfield et al[10] reported a culture of silence in which doctors, nurses and other staff avoid confronting their coworkers about shortcuts, judgment errors and other actions that can, and sometimes cause harm to patients. Another culture problem is the culture of blame in health care organizations in which employees hesitate to identify and report medical error and patient safety problems for fear of blame and punishment. Henriksen and Dayton[11] reported that these cultures are breeding grounds for medical errors and patient safety problems. The results of the survey do indicate that there is plenty of work to be done for improvement in this area.

'Organizational learning /continuous improvement' in the safety culture was reported positive by majority of respondents except the interns. This suggested that respondents felt the need for a continuous improvement in the patient safety issues by organizational learning. Firth-Cozens[12]reported that improvements in patient safety result primarily from organizational and individual learning.

Positive perceptions for 'communication openness' was reported by all the respondents. Communication openness is a very important parameter of safety culture as Reith[13]has very well described that "real" teamwork including interdepartmental cooperation and effective communication between various departments is very effective in reducing adverse events reported.

Most respondents reported positive attitudes regarding 'feedback and communication about errors'. Communication about errors in event reporting is an important dimension of safety culture. Early feedback and communication about errors in health care settings underlies early and effective feedback to staff. There should be sharing of information on the identification of risks, the rationale behind resultant procedural changes, and mutual identification of risk behaviors and the factors encouraging them which can reinforce the engagement of staff. Sexton JB et al.[14] suggested that negative perception of teamwork by any team member, is enough to change the dynamics within that team.

'Hands-off and transition of patients' were reported positive by only 44% of the respondents. These were reported positive by only 25% of interns. A possible explanation for this finding can be due to less time and experience of clinical procedure to the interns.

'Teamwork across units' was given less positive responses (60%) by majority of the respondents. Study found that those categories which reported less positive responses for 'teamwork across units' reported lower positive responses for 'hands off and transition of patients'. Many studies have revealed a relationship of poor coordination between healthcare teams and problems in the transition of patients.[15] Singer et al.[16]reported that safety culture is a major determinant of safety for organizations; they reported that perceptions of patient safety differed between types of personnel.

The overall results of this survey indicated that most of the respondents had positive perceptions of patient safety culture in the clinical area. It is of concern, however, that some of the respondents gave negative responses to important questions related to some dimensions of patient safety culture. These results could imply that there is a scope for further improvement in communication between various departments and an increased commitment to patient safety.

However this study has its limitations. First limitation is the generalized ability of the findings as survey was done in only one dental institute, however data may be of some use in a curriculum development in dental schools. Since we cannot fully exclude non-response biases in our study, future studies using intensive surveying of a subsample of non-responders are needed. Weaknesses of the cross-sectional survey method also include the fact that surveys are just a snapshot of the behavior at one place and time.

Conclusions

The present study clearly indicates that awareness regarding the issue of patient safety has to be increased in dental health care providers, but it will be too early to draw any valid conclusions based on a pilot study of a single dental institute, hence more elaborate research in the field of patient safety is required.

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