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A Study On Surgical Safety Culture Among Health Care Professionals in a Tertiary Care Hospital of Bihar.

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Abstract

Background: This is an era of health care revolution and is witnessing a radical and paradigm shift in health care quality and services. Each passing day we see newer and more aggressive treatment modalities being offered to ever increasing population.**Aim & objective**: was to study attitude of health care professionals towards surgical safety culture. **Material & Methods**: This was a cross sectional descriptive study using safety culture survey questionnaire. A total of 200 nurses and physicians returned the questionnaire out of 232 achieving a response rate of 86.2%. Nurses and physicians were randomly selected using a proportionate random sampling. Data analysis performed using SPS software. **Results**: The study results showed male to female ratio was 1.6:1, and the mean age was 31.1 +/- 4 years. The mean score of safety culture survey was 3.9 and SD was 0.45. The percentage of respondents holding a positive attitude was 99 % overall. **Conclusion**: The study concluded that overall safety culture was good and further studies involving other specialties and centres are needed.
Keywords: Health care, surgical safety, services.

Introduction

This is an era of health care revolution and is witnessing a radical and paradigm shift in health care quality and services. Each passing day we see newer and more aggressive treatment modalities being offered to ever increasing population. This has led to a marked variation in quality of treatment especially in surgical specialties. In this world of competitiveness and consumerism, safe surgical practices sometimes take a back seat and are often a bone of contention between surgeon and their patients. Safe surgery is fundamental duty of a surgeon and right of the patients.An estimated 234 million major surgical operations are performed annually worldwide.As volume and importance of surgery in global healthcare increase, patient safety and quality in surgical care gain more attention[1-3].Major morbidity complicates 3-16% of all inpatient surgical procedures in developed countries, with death rates of about 0.4-0.8%. In developing countries, death rates are estimated to be between 5-10% for major surgeries[4]. Mortality related to general anaesthesia is as high as 0.6% in parts of Sub-Saharan Africa[5]. Medical errors are inherently of great concern in modern health care. Approximately 1-in-10 hospital in-patients experience an adverse event, and nearly two-thirds of these are associated with a surgical provider[6].Adverse events in surgical patients are estimated to be highly preventable in 48% of the cases[7]. Incorrect surgery, which is defined as wrong patient, wrong site, or wrong procedure occurs infrequently and devastating events to experience.Safety culture refers to the way patient safety is thought about and implemented within an organization and the structures and processes in place to support this[8].Measuring surgical safety culture is important because the safety culture of an organization and the attitudes of teams have been found to influence patient safety outcomes and these measures can be used to monitor change over time. One of the benefits of measuring surgical safety culture is that it provides a tangible indicator of the current status and progress over time of hospitals and surgical teams implementing improvements. The concept of safety culture has been variously conceptualized. Cox and Cox[9] have operationalized safety culture as the anthology of "attitudes, beliefs, perceptions, and values that employees share in relation to

safety". Neva & Sorra[10] have perceived safety culture as a pro-social behavior that has direct bearing on safety measures practiced in organization settings. The *U.K. Health and Safety Commission* have defined safety culture as an amalgamation of 'individual and group values, attitudes, perceptions, competencies, and patterns of behavior that determine the commitment to, and the style and proficiency of, an organization's health and safety management."[11]The most important aspect of patient safety culture is its applicability within healthcare settings. The entrance of 'culture' in patient safety came into prominence within the background that 'that the majority of errors and adverse events more accurately stem from a complex chain of events that jointly contribute to the cause rather than human errors,[12] and therefore gestalt phenomena appears to be at work in that the 'whole is greater than the sum of the parts'.In recognizing that culture has direct bearing on organizational functions, patient safety culture has come to prominence with a plethora of studies that have documented patient safety culture in many parts of the world[13]. Such an undertaking has been essential for auditing the integrity of health systems, and for providing a venue for further improvement in addition to fulfilling benchmarks relevant to accreditation and quality assurance. While there is a plethora of studies on patient safety, most of them have employed measurements that has no heuristic value for international comparison. On this ground, there is a need to identify instruments or a set of benchmarks that could capture variations of patient safety culture in different countries as well as having potential for instituting baseline assessment[14]. Even though there are different ways of measuring safety climate (e.g. interviewing, observation), it is mainly done by means of standardized questionnaires. Many instruments have been developed to measure safety climate recently.The instruments differ regarding the dimensions of safety climate considered, the area of application [e.g. primary care, hospital, operating room (OR)], length, level of validation and national context of development or validation of translations.Among the instruments broadly known and tested are the 'Hospital Survey on Patient Safety Culture' (HSoPS), the 'Safety Attitudes Questionnaire' (SAQ),and the 'Safety Climate Survey' (SCS). The HSoPS and SAQ are probably the most frequently used questionnaires on an international level. Comparing the instruments, the SCS is shortest in length and thus takes less time to complete. Moreover, the SCS is a one dimensional scale in contrast to the

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others.Besides shortness and one dimensionality, the Safety Climate Survey shows good psychometric properties.For these reasons, we decided to use the Safety Climate Survey – an instrument recommended by the Institute for Healthcare Improvement – for the purpose of our project: providing a sound and easy-to administer measurement instrument of safety climate.Several factors that influence safe surgical practice includes organizational factors such as safety climate and morale, work environment factors such as staffing levels and managerial support, team factors such as teamwork and supervision, and staff factors such as carelessness, overconfidence and being overly self-assured.Despite considerable interest, there is limited data available to measure these attitudes especially in our part of world. This study aims to be a bench mark study to throw light on this vital topic.

Aims and Objectives
1. To study the level of awareness of health care workers regarding surgical safety.
2. To measure the safety climate in our hospital, compare it with benchmarking data.

Materials and Methods
Study Area:The study was done in Indira Gandhi Institute of Medical Sciences ,Patna .It is a State government funded tertiary care teaching hospital with approximately 1000 beds. The hospital caters to the population of Bihar especially Patna area along with patients from other states. The hospital provides general and super speciality facilities to the patients.
Study Design: Descriptive explorative study.
Method of Data Collection:The study subjects were interviewed and the questionnaire filled.
Type of Data Collection: It was a prospective study.
Type of Interview: Interview was done indirectly through questionnaire
Type of Questionnaire: It was structured and a modification of safety attitude questionnaire
Study Period: The study was carried out between 20-10-2019 to 20-11-2019 (1 Month)
Study Population:Health care workers of IGIMS ,BIHAR.A cross sectional study among the health care workers regarding attitude towards surgical safety culture .The study will include senior residents, junior residents and staff nurse of surgical and anaesthesia department.
Sample Size:A total of 200 HCWs were interviewed for the study.
Mode of Sample Selection: Random selection.
Informed Consent: The subjects were fully informed about the study design and purpose of study. Informed consent was taken from the subjects before starting the interview. A sample informed consent form is attached with protocol.Subjects were chosen for the study according to following inclusion / exclusion criteria.

Inclusion Criteria
1. Health care workers of department of anesthesia and surgical disciplines of IGIMS Hospital.
2. Both male and female
3. The professionals who are normally involved in perioperative care of patient i.e, SR, JR and Staff nurse.

Exclusion Criteria
Consultants, specialists and interns.
Doctors and staff of non-anesthetic/non-surgical departments.
All fourth grade health care workers like sweepers.

Survey Instrument
The questionnaire consisted of the 19 items of the Safety Climate Survey, to be rated on a 5- point Likert-scale from 1 = 'disagree strongly' to 5 = 'agree strongly'. The category 'not applicable', which is presented in the original instrument, was not included. In addition, participants were asked to answer some questions on their personal and professional background (age, gender, training, years in practice, managerial function).

Data Collection
A print version of the questionnaire was distributed to the health care professionals (HCPs). The interviewer got the entire questionnaire filled and collected from the HCPs back individually.

Data Analyses: Negatively worded items were recoded to insure that higher scores indicated a more positive assessment of safety climate for every item. On item level, we calculated a percentage of 'problematic response' (PPR) following the approach of Singer et al.PPR refers to the number of individuals that scored low on the respective item, indicating a low level of reported safety climate. Negative answers, that is, answers $\leq$ 2 on the 5-point Likert scale were treated as 'problematic' response. Accordingly, 'a low PPR is indicative of a high safety climate.'36 Furthermore, a PPR higher than 10% is assumed to be inconsistent with an optimal level of safety climate within an organization, which points to a need of enhancing safety climate.

Intervention: All the subjects satisfying the afore mentioned criteria will be randomly sampled. After taking consent, information in Questionnaire will be filled. The study will be carried out with the help of an anonymous self-reporting.The Safety culture survey questionnaire is a modification of Safety attitude questionnaire developed by university of Texas and elicits caregiver attitudes towards safety climate.The present study is specifically focused on the safety climate aspect of patient safety. Safety climate is defined as perceptions of a strong and proactive organizational commitment to safety.The results was analyzed and compared with relevant published reports. The study tried to find out the level of safety climate in our hospital.

Interpretation of data: Content analysis of responses to questionnaire was structured in to master chart inciting the features for each subject group and will be analysed for various aspects.The Institutional ethics committee clearance was not required.Informed Consent Form (ICF) is attached with protocol

Data Analysis and Observation
Response rate: Of the total 232 questionnaires distributed to different departments in the hospital 200 completed and valid questionnaires were returned, which gives a response rate of 86.2 %.
Demographic and socio-economic characteristics of the study participants From the total respondents, 125 (62.5 %) were males and 75 female (37.5%).Among 200 respondents, 86 (43. %) were nurses and 114 (57 %) were doctors.
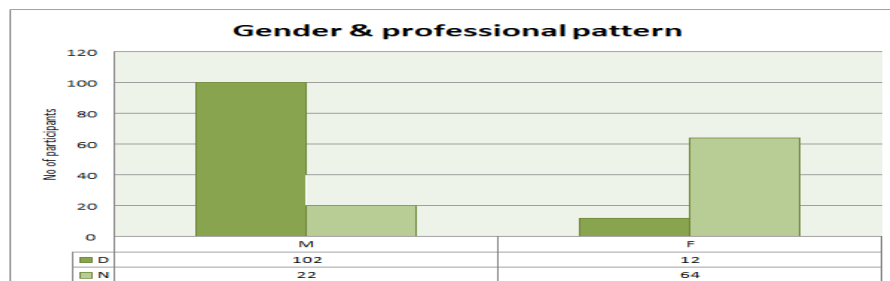

Fig 1: Gender and professional distribution of respondents

The mean age with standard deviation of the respondents was 30.1 ± 4 years and the age of the study participants ranged from 22 to 45 years.
Work Area Distribution

The nurses worked either in ward or operating room (OR) whereas all doctors worked in both.

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Among the study participants, all114 doctors (15.4 %) works in both wards and OR, 39 (%) nurses worked in surgical ward and 47 nurses (15.3 %) worked in OR. Of the total 200 study participants, all of them had direct interaction or contact with the patients.
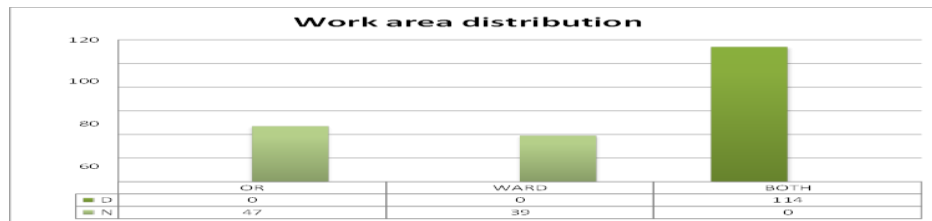

Fig 2: Depicting work area distribution

Work experience: Majority of doctors (49.1%) had 2-5 years of work experience followed by 5-10 years (42.9%) ,10-20 years (7%) and 0-2 years (4%). Nearly 40% nurses had experience of 5-10 years whereas 23.2 had 2-5 years, 20.9% had 10-20 years and 11.6% had less than 2 years of experience.

Table 1: Work experience pattern of participants.

Experience years	<2	2 to 5	5 to 10	10 to 20
Doctors	5(4%)	56(49%)	49(42%)	7(6%)
Nurses	10(11.6%)	20(23.2%)	35(40.6%)	18(20.9%)

Managerial function:A total of 15 out of 114 doctors performed managerial functions whereas 11 out of 75 nurses had managerial roles.

Table 2: Participants with managerial function

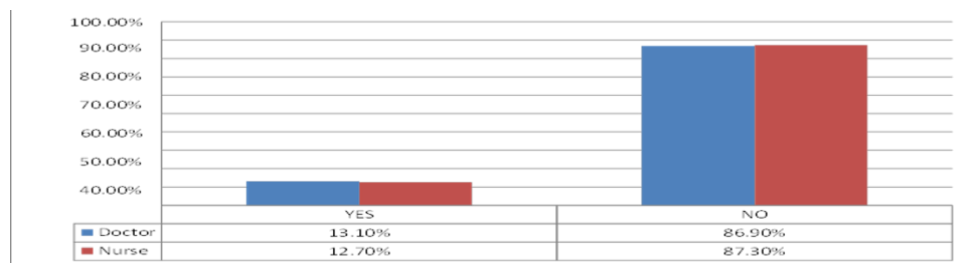| Managerial function	Yes	No
Doctor	15(13.1%)	99(86.9%)
Nurse	11(12.7%)	75(87.3%)

Fig 3: Pattern of managerial function among aprticipants.

Table 3: Shows positive, neutral and negative response

	Positive	Neutral	Negative
Safety Climate Scale	3515(92.5%)	264(6.9%)	24(0.63%)
Items:			
(1)The culture of this clinical area makes it easy to learn from the mistakes of others	184(0%)	14(0%)	2 (1%)
(2) Medical errors* are handled appropriately in this clinical area	159(0%)	28(0%)	13(6.5%)
(3) The senior leaders in my hospital listen to me and care about my concerns.	189(0%)	11(0%)	0(0%)
(4) The doctor and nurse leaders in my area listen to me and care about my concerns	193(0%)	07(0%)	0(0%)
(5) Leadership is driving us to be a safety- centered institution	158(0%)	42(0%)	3(1.5)
(6) My suggestions about safety would be acted upon if I expressed them to management	156(0%)	38(0%)	6(3%)
(7) Management/leadership does not knowingly compromise safety concerns for productivity.	196(0%)	4(0%)	0(0%)
(8) I am encouraged by my colleagues to report any safety concerns I may have	168(0%)	32(0%)	0(0%)
(9) I know the proper channels to direct questions regarding patient safety.	179(0%)	21(0%)	0(0%)
(10) I receive appropriate feedback about my performance	179(0%)	21(0%)	0(0%)
(11) I would feel safe being treated here as a patient	182(0%)	18(0%)	0(0%)
(12) Briefing personnel before the start of a shift (i.e. to plan for possible contingencies) is an important part of patient safety	200(0%)	0(0%)	0(0%)
(13) Briefings are common here	192(0%)	8(0%)	0(0%)
(14) I am satisfied with the availability of clinical leadership	194(0%)	6(0%)	0(0%)
(15) This institution is doing more for patient safety now than it did 1 year ago	190(0%)	10(0%)	0(5%)
(16) I believe that most adverse events occur as a result of multiple system failures and are not attributable to one individual's actions	199(0%)	1(0%)	0(.5%)
(17) The personnel in this clinical area take responsibility for patient safety	198(0%)	2(0%)	0(1%)
(18) Personnel frequently disregard rules or guidelines that are established for this clinical area	199(0%)	1(0%)	0(.5%)
(19) Patient safety is constantly reinforced as the priority in this clinical area.	200(0%)	0(0%)	0(0%)

Table 3 shows the positive, neutral and negative responses for all the items of the questionnaire. There were no missing values for the individual items.Table 4 shows mean scores, standard deviations and PPR at item and scale level. The mean value of the Safety Climate Survey was 3.9 (SD = 0.45). At item level means ranged from 1.6 to 4.8.The two items with the lowest scores are 'Personnel frequently disregard rules or

guidelines that are established for this clinical area' (1.6, SD = 0.48) and 'Leadership is driving us to be a safety centred institution' (3.8, SD = 0.54).Items showing the highest ratings are 'Briefing personnel before the start of a shift (i.e. to plan for possible contingencies) is an important part of patient safety' (4.8, SD = 0.31) and 'Management/leadership does not knowingly compromise safety concerns for productivity' (4.3, SD = 0.49).Comparing the mean scores at item level showed that items referring to the institutional level/hospital leadership (items no 5, 6) were rated more negatively than items referring to the safety climate in the individual's work area, that is, ward/OR (item no 12).Furthermore, there

was a clear discrepancy between the importance attached to briefings as part of patient safety (item no 12: mean = 4.8) and the actual practice of briefings in daily work (item no 13: mean = 3.9).The PPR of the Safety Climate Survey was 0.63 %, that is, nearly 1% of the HCPs reported a 'problematic safety climate'.At item level, 15 out of 21 items showed a PPR value of 0%,and two items returned a PPR higher than 3% ('Medical errors are handled appropriately in this clinical area' and'My suggestions about safety would be acted upon if I expressed them to management').

Table 4: shows mean scores, standard deviations and PPR at item and scale level

	M	SD	PPR
Safety Climate Scale	3.9	.45	.63%
Items:			
(1)The culture of this clinical area makes it easy to learn from the mistakes of others	4.2	.62	1%
(2) Medical errors* are handled appropriately in this clinical area	3.9	.79	6.5%
(3) The senior leaders in my hospital listen to me and care about my concerns.	4.1	.45	0%
(4) The doctor and nurse leaders in my area listen to me and care about my concerns	4.1	.39	0%
(5) Leadership is driving us to be a safety- centered institution	3.8	.54	1.5%
(6) My suggestions about safety would be acted upon if I expressed them to management	3.8	.56	3%
(7) Management/leadership does not knowingly compromise safety concerns for productivity.	4.3	.49	0%
(8) I am encouraged by my colleagues to report any safety concerns I may have	3.9	.54	0%
(9) I know the proper channels to direct questions regarding patient safety.	3.9	.40	0%
(10) I receive appropriate feedback about my performance	3.9	.45	0%
(11) I would feel safe being treated here as a patient	3.9	.38	0%
(12) Briefing personnel before the start of a shift (i.e. to plan for possible contingencies) is an important part of patient safety	4.8	.31	0%
(13) Briefings are common here	3.9	.18	0%
(14) I am satisfied with the availability of clinical leadership	4.0	.30	0%
(15) This institution is doing more for patient safety now than it did 1 year ago	4.0	.42	0%
(16) I believe that most adverse events occur as a result of multiple system failures and are not attributable to one individual's actions	4.2	.45	0%
(17) The personnel in this clinical area take responsibility for patient safety	4.1	.38	0%
(18) Personnel frequently disregard rules or guidelines that are established for this clinical area	1.6	.48	0%
(19) Patient safety is constantly reinforced as the priority in this clinical area.	4.2	.42	0%

A total of 26 HCPs were working with managerial function and the mean was 4.02 and SD was 0.40. There was higher mean score among the managerial function group than the overall population.

Table 5: Shows mean and SD value with SCS total and with HCPs with managerial function

	Mean	SD
Total	3.91	0.45
Managerial function	4.02	0.4O

Conclusion

This study explored patient safety culture, using a standardized tool, the safety culture survey. The sample consisted of health workers from a tertiary care hospital in Bihar. The study compared the average positive scores on the safety culture survey with other relevant studies. The overall average positive response rate for the patient safety culture dimensions of the safety culture survey was 92.5%.The indices from SCS that were endorsed the highest included 'Briefing personnel before the start of a shift (i.e. to plan for possible contingencies) is an important part of patient safety' while conversely, 'Personnel frequently disregard rules or guidelines that are established for this clinical area' was ranked the least. Our hospital appears to fare well on the international indices of patient safety culture. This study indicates the merit of exploring cross-cultural differences in indices of patient safety culture.Various measures important for increasing the safety culture in hospital are fixed hours duties worked per week, adverse event reporting, good communication, teamwork within hospital, level of staffing, exchange of feedback about error and participating in patient safety program While shortage of resource, healthcare professional attitude toward patient safety and patient involvement are important factors that influence patient safety culture.

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