

Original Research Article

Cornerstone of healthcare: awareness and compliance of patient safety measures in a large tertiary care hospital

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ABSTRACT

Background: The study was done to assess the awareness and compliance of patient safety measures among healthcare providers and patients in a tertiary care hospital in India, ascertain the gap in both the aspects, if any and recommend the measures to improve the same.

Methods: Cross sectional study in which patient safety survey was administered to random sample of 400 healthcare providers and 200 inpatients. The awareness was assessed through predefined questionnaires and compliance was assessed by observation, demonstration of processes, audit of patient files and interview of patients. Descriptive statistics analyzed with SPSS. Data was analyzed using frequencies, percentages and using Chi-square test.

Results: The level of awareness was acceptable among healthcare providers, but the compliance was not satisfactory. Thus, gap was significant for certain parameters. The range of awareness among the patients was wide as study included patients of varying demographic and educational level. The range of compliance was also wide but was low. Thus, the gap was significant.

Conclusions: As a result of continuous training of the healthcare providers, the awareness was satisfactory but on the other hand, they were not complying which may be due to workload, forgetfulness, lack of resources etc. On the other hand, the level of awareness was found to be low among patients and compliance was further lower down the ladder which may be due to difference in education, socioeconomic status, hesitation to enquire etc.

Keywords: Awareness, Compliance, Patient safety

INTRODUCTION

Patient safety is a new healthcare discipline that emphasizes on reporting, analysis, and prevention of error that often leads to adverse healthcare events. Error is “a preventable event leading to an adverse outcome being either an act of commission (doing something wrong) or omission (failing to do the right thing) that leads to an undesirable outcome or having significant potential for such an outcome”.¹⁻⁴ Errors can result in adverse event, defined as “an incident that results in harm to a patient” or near misses i.e. “an incident which did not reach the patient”.^{5,6}

Who is responsible for the errors?^{7,8}

- 66% of the accidents are caused entirely by the patients.
- 16% of the accidents are due to the error by hospital staff.
- In 14% of the accidents both staff and patient are equally responsible.
- 4% of the accidents are due to physical, mechanical or electrical errors.

The frequency and magnitude of avoidable adverse patient events was not well known until 1990's, it's then that when multiple countries reported staggering numbers

of patients harmed and killed by errors. Recognizing that healthcare errors impact 1 in every 10 patients around the world, the 'World Health Organization' called patient safety an endemic concern.⁹

The situation in developing countries and countries in economic transition merits particular attention. World Health Organization (WHO) figures suggest that developing countries account for around 77% of all reported cases of counterfeit and substandard drugs.¹⁰ It is also reported that at least half of all medical equipment in most of these countries is unusable or only partly usable, at any given time, resulting in neglect of patients or increased risk of harm to them and to health workers.¹¹

Enhancing the safety of patients includes three complementary actions: preventing adverse events; making them visible; and mitigating their effects when they occur. This requires: (a) increased ability to learn from mistakes, through better reporting systems, skilful investigation of incidents and responsible sharing of data; (b) greater capacity to anticipate mistakes and probe systemic weaknesses that might lead to an adverse event; (c) identifying existing knowledge resources, within and outside the health sector; and (d) improvements in the health-care delivery system itself, so that structures are reconfigured, incentives are realigned, and quality is placed at the core of the system.

Although several reporting systems have been developed and implemented by different countries, but they vary in their nature, scope and complexity. The primary purpose of reporting system is to learn from experience as reporting does not improve safety but the response to report can lead to change.

By definition, patients and consumers of health care are at the very centre of the quest to improve patient safety as when things go wrong, they are the victims of the harm induced. Furthermore, no specific measures of patient or organizational safety exist that ask for the views of customers or patients. Thus, viewing the true needs of patients who are harmed generates an impetus for much fundamental work with patients. Participation of patients could play a vital role in helping to identify risks and to devise solutions. The scales measuring patients' perceptions of healthcare are available, for example measures of patient satisfaction, but these have been criticized for being subjective, unreliable and with little validity.¹²⁻¹⁶ Therefore, there is a need for reliable tools that allow patients the opportunity to provide feedback on the safety of their care environment. The authors here discuss the general awareness about patient safety among healthcare providers as well as patients in a tertiary care hospital and their compliance for the same.

METHODS

The study was conducted in a 675 bedded multi-specialty tertiary care hospital. This was a cross sectional study

conducted over a period of 12 months in the following category of study population:

Healthcare providers,

- Doctors-112
- Nurses- 131
- Technicians- 119
- Housekeeping staff-38.
- Patients admitted under various departments in a healthcare facility- 200.

Sample size

It was expected that the prevalence of awareness and compliance of patient safety measures among healthcare providers is about 90%. Hence, the sample size of 400 would be adequate to estimate the prevalence of awareness and compliance of patient safety measures among healthcare providers within 3% of actual prevalence (87-93%). The significance level of test was targeted at α 0.05.

The prevalence of awareness and compliance of patient safety measures among the patients is expected to be about 20%. Hence, the sample size of 200 would be adequate to estimate the prevalence of awareness and compliance of patient safety measures among patients within 5% of actual prevalence (15-25%). The significance level of test was targeted at α 0.05.

Data collection tools and techniques

Open and close ended well structured & pre-defined questionnaires, interview of the patients, demonstration of procedures, observation and audit of patient files.

Data Analysis or statistical tools

Descriptive statistics was analyzed with SPSS version 17.0 software. Continuous variables are presented as Mean \pm SD. Categorical variables are expressed as frequencies and percentages. Nominal categorical data between the groups were compared using Chi-square test. $p < 0.05$ was considered statistically significant.

Inclusion criteria

Doctors, nurses, housekeeping staff and technicians with more than 6 months working experience in the same hospital.

Patients with more than 48hrs. stay in the hospital and those who give consent and are in sound state of mind.

Exclusion criteria

- Healthcare providers with less than 6 months experience in same hospital.

- Patient who do not give consent to fill the questionnaire.
- Any patient less than 16 years.
- Patient who are not mentally stable.

collected in the 2nd phase of the study. Responses to the variables in the questionnaire were compiled and tabulated. The data was analyzed using standard statistical methods.

Methodology

The study, conducted over a period of 12 months, was divided in three phases. Each phase spanned over a period of four months, first phase involved review of literature and making questionnaire which was followed by the second phase which included enrolment of the study population and distribution of the questionnaires. The compliance among healthcare providers was measured by interviewing the patients, demonstration, observation and auditing the inpatient files. The third phase involved reviewing and analyzing the information

RESULTS

The patient safety awareness survey using a questionnaire was conducted for 400 healthcare providers and 200 inpatients. To assess the awareness and compliance of patient safety measures among 112 doctors, the parameters used, and methods of assessment are detailed in Table 1. The assessment of awareness and compliance is shown in Table 2.

Table 1: Awareness and compliance assessment method among doctors.

S.no.	Questions	Awareness (Tick appropriate)	Compliance (Assessed by author)
1.	What abbreviations can be used while prescribing the medication	<ul style="list-style-type: none"> • Any abbreviation can be used • Abbreviations approved by the organization • Abbreviations should not be used at all 	Audit of files
2.	From whom should one take the drug history or history of drug/ food/ any other type of allergy and document the same?	<ul style="list-style-type: none"> • Not required for all the patients • Only required for severely ill patients • Required for all patients, irrespective of disease 	Audit of files
3.	How often should one ensure that the surgical safety checklist is completely filled?	<ul style="list-style-type: none"> • Always • Frequently • Sometimes • Never 	Audit of files
4.	How important it is to document the written consent for surgery?	<ul style="list-style-type: none"> • Always documented • Sometimes documented • May not be documented in case of emergency • Not required at all 	Audit of files
5.	How often one should change/ replace the cannula?	<ul style="list-style-type: none"> • Every day • Atleast every 48 hrs. • Only when some symptoms develop • If cannula not functioning properly or every 72 hrs. if still in use 	Observation and interview of 112 patients admitted beyond 72hrs

Table 2: Awareness and compliance measurement among doctors.

Assessment of	Parameters (n=112)				
	Use of abbreviations	Documentatio n of history	Completeness of Surgical safety checklist	Documentatio n of consent	Replacement of cannula
Awareness	103(92%)	112(100%)	112(100%)	112(100%)	106(95%)
Compliance	17(15%)	23(26%)	63(56%)	99(88.5%)	70(62.5%)

The questionnaire for 131 nursing staff and 119 laboratory technicians was designed keeping in view the

infection control practices. The awareness and compliance assessment method is detailed in Table 3.

The awareness and compliance for nursing staff is shown in Table 4 and for technicians is depicted in Table 5.

The awareness and compliance of 38 housekeeping staff enrolled under the study was assessed only with respect

to the practices they are concerned with. Table 6 shows the methods of assessment of awareness and compliance and Table 7 shows the outcome.

Table 3: Awareness and compliance assessment method among Nursing staff and Lab technicians.

S.no.	Questions	Awareness (Tick appropriate)	Compliance
1.	How often should one use the same syringe and needle for giving injections?	<ul style="list-style-type: none"> One needle and one syringe for one patient Same needle and syringe can be re-used for the same patient Same needle and syringe can be re-used for other patient 	Observation of nurses and technicians and interview of 131 patients in wards (for nurses) and 119 patients (for technician) in laboratory
2.	How often should you wash your hands/use handrub?	<ul style="list-style-type: none"> Before and after the procedure Before and after touching the patient After exposure to body fluid After touching patients surroundings All 	Observation of 131 nurses and 119 technicians while they were treating the patients
3.	How do you discard the used syringes and needles?	<ul style="list-style-type: none"> Re-capping and discarding it in a bin Separating the needle and destructing it Destroying the needle, placing them in puncture proof container and burning the hub of syringe Destroying the needle, separate it from syringe and place it in puncture proof container and burning the hub of syringe and dip in hypochlorite 	Observation of 131 nurses and 119 technicians through demonstration of the process
4.	How to treat a blood spillage of >10mm	<ul style="list-style-type: none"> Put 1% hypochlorite for 10 mins Put 5% hypochlorite for 10 mins Put 5% hypochlorite for 20 mins Put 1% hypochlorite for 20 mins 	Observation of 131 nurses and 119 technicians through demonstration of the process
5.	How should be look alike and sound alike (LASA) drugs stored?	<ul style="list-style-type: none"> Can be placed together Should be segregated and stored Should be segregated, labeled and stored Should be segregated, labeled & stored separately 	Observation for separate storage of labeled LASA drugs in different areas of the hospital, particularly in emergency, OTs and ICUs.

Table 4: Awareness and compliance measurement among nursing staff.

Assessment of	Parameters (n=131)				
	Use of single syringe and needle	Hand washing practice	Discarding used needles and syringes	Treatment of blood spillage	Storage of look alike sound alike drugs
Awareness	131(100%)	115(87.8%)	126(96.2%)	74(56.5%)	123(93.9%)
Compliance	131(100%)	86(65.6%)	110(84%)	65(49.6%)	Full(100%)

Table 5: Awareness and compliance measurement among Lab technicians.

Assessment of	Parameters (n=119)				
	Use of single syringe and needle	Hand washing practice	Discarding used needles and syringes	Treatment of blood spillage	Storage of look alike sound alike drugs
Awareness	111(93.2%)	89(74.8%)	113(95%)	27(22.7%)	97 (81.5%)
Compliance	109(91.6%)	66(55.5%)	88(74%)	20(16.8%)	Full (100%)

Table 6: Awareness and compliance assessment method among housekeeping staff.

Questions	Awareness (Tick appropriate)	Compliance
Safety belts in wheelchairs or stretchers and side rails should be used for transferring	<ul style="list-style-type: none"> Elderly patients Psychiatric patients Pediatric patients All the patients 	Observation of 38 patients which were being transferred by the housekeeping staff.
How often should you wash your hands/use handrub?	<ul style="list-style-type: none"> Before and after the procedure Before and after touching the patient After exposure to body fluid After touching patients surroundings All 	Observation of 38 housekeeping staff while they were handling the patients or their surroundings.
How is the infected linen handled?	<ul style="list-style-type: none"> Sent to laundry with the other linen Segregated and sent to laundry in a bag Segregation of infected linen, sluicing in the ward then sent to laundry 	Observation of 38 housekeeping staff while handling patient linen
How to treat a blood spillage of >10mm	<ul style="list-style-type: none"> Put 1% hypochlorite for 10 mins Put 5% hypochlorite for 10 mins Put 5% hypochlorite for 20 mins Put 1% hypochlorite for 20 mins 	Observation of 38 housekeeping staff through demonstration of the process

Table 7: Awareness and compliance measurement among housekeeping staff.

Assessment of	Parameters (n=38)			
	Use of safety belts to transfer patients	Handling of infected linen	Hand washing practice	Treatment of blood spillage
Awareness	38 (100%)	38 (100%)	16 (40%)	29 (76.3%)
Compliance	32 (84.2%)	33 (86.8%)	4 (10.5%)	27 (71%)

Table 8: Awareness and compliance assessment method among patients.

Questions	Awareness (How often should you do it?)	Compliance (How often do you follow it?)
How often should one ask about the diagnosis and the treatment plan?	Always Frequently Sometimes Never	Always Frequently Sometimes Never
How often should one ask about purpose of each medicine prescribed?	Always Frequently Sometimes Never	Always Frequently Sometimes Never
How often should one ask about likely side effects of the medicine prescribed?	Always Frequently Sometimes Never	Always Frequently Sometimes Never
How often should one ask about drug-food and drug-drug interaction?	Always Frequently Sometimes Never	Always Frequently Sometimes Never
How often should one check the expiry of medicines before taking it?	Always Frequently Sometimes Never	Always Frequently Sometimes Never
How often should one communicate to doctor if the condition worsens or does not follow the expected course?	Always Frequently Sometimes Never	Always Frequently Sometimes Never
How often should one ask the healthcare worker	Always	Always

to open the syringe and needle in front of you to prevent re-usage and infections?	Frequently Sometimes Never	Frequently Sometimes Never
How often should one ensure that the caregiver washes hands or uses handrub before touching you?	Always Frequently Sometimes Never	Always Frequently Sometimes Never
How often should one ensure that the staff changes gloves before attending/ examining?	Always Frequently Sometimes Never	Always Frequently Sometimes Never

Table 9: Awareness and compliance measurement among patients.

Assessment of	Parameters (n=200)								
	Asking about diagnosis and treatment plan (1)	Asking about purpose of medicine prescribed (2)	Asking about the side effects of medicines prescribed (3)	Asking about drug-food and drug-drug interaction (4)	Checking expiry date of medicines (5)	Communicating to the doctor if condition worsens (6)	Asking the healthcare worker to open the syringe and needle in front of you	Ensuring that caregiver washes hands/ uses handrub before touching patient (8)	Ensuring that the staff changes gloves before attending/ examining (9)
Awareness	178 (89%)	143 (71.5%)	91 (45.5%)	93 (46.5%)	182 (91%)	167 (83.5%)	102 (51%)	130 (65%)	119 (59.5%)
Compliance	130 (65%)	868 (44%)	47 (23.5%)	57 (28.5%)	107 (53.5%)	142 (71%)	68 (34%)	109 (54.5%)	93 (46.5%)

To assess the awareness and compliance of patient safety measures among 200 patients, questionnaire was used which is shown in Table 8. The results are shown in Table 9. Study shows that the awareness regarding medication safety such as asking doctor about diagnosis, treatment plan, purpose of each medicine prescribed, likely side effects, drug interaction ranged between 40% to 90% but the compliance was found to be between 23% to 65%, indicating significant difference between the two. It was also observed that although 43% to 65% of patients understand the importance of infection control measures but only 34% to 55% were found to follow the same. Thus, there is dire need to increase awareness about the safety measures among patients and also make them realize the importance of applying their knowledge as it can prevent errors to large extent.

DISCUSSION

Patient safety is all about preventing medical errors that might lead to adverse events and harm. When entering a healthcare facility, patient expects to receive appropriate care in safe environment. Thus, health care providers from the beginning of their training are taught that errors are unacceptable, no diagnosis, allergy or previous history can be missed, every medication dose must be right. Therefore, to prevent errors only awareness about

patient safety issues is not enough but it should be followed as well.

The present study is an attempt to assess the awareness and compliance of patient safety measures among healthcare providers and patients in a large tertiary care hospital. The healthcare providers enrolled under the study included doctors, nurses, technicians, and housekeeping personnel’s and also patients, thus making the study more valuable as patients are directly concerned with their care. The awareness about the patient safety measures among healthcare providers was conducted using questionnaires and compliance was measured by auditing case files, interviewing the patients, demonstration of procedures and through observation. However, the awareness and compliance among patients was measured using questionnaire.

The study revealed that doctors being highly qualified were aware about all the patient safety measures to be adopted whereas compliance is significantly low, thus creating a significant gap between awareness and compliance. All (100%) doctors were aware of the medication and surgical safety measures to be adopted but while auditing files, it was observed that documentation was incomplete in almost half to three-fourth of the files audited. The reason observed was basically work overload, lack of adequate number of

doctors and staff to handle the load of patients, lack of resources etc. Explaining patient about the pros and cons of surgery or any procedure, providing them the alternatives and then taking consent provides legal protection to the treating doctor as well as it is the ethical right of every individual. In view of this, there is an urgent need to make doctors aware about the importance of documentation by organizing orientation classes. The Center for Disease Control and Prevention (CDC), advised replacing catheters every 72 - 96 hours to limit the risk of infections. However, in the study it was observed that 95% doctors were aware about the protocol for replacement of cannula but only 62.5% were actually doing it.^{17,18}

The nursing staff and technicians were assessed basically for infection control measures. The study reveals that the awareness among both the cadres was good ranging between 88% to 100% among nursing staff and 75% to 95% for technicians for various parameters adopted except for the guidelines followed for treatment of blood spillage. The compliance which was measured through observation ranged between 66% to 100% among nurses and 56% to 100% for technicians. The awareness is at par as regular classes are conducted for biomedical waste management rules and hand hygiene practices. The compliance was low especially for hand hygiene practices which may be due to workload, time pressure, understaffing or forgetfulness. The study also revealed that the awareness and compliance was significantly low for treatment of blood spillage among nursing staff (56.5% and 49.6% respectively) and technicians (22.7% and 16.8% respectively) whereas more than three-fourth (76.3%) of housekeeping staff enrolled in the study was aware of the protocol and 71% were following the protocol. Lack of awareness about the protocol and following the wrong practice can lead to increase in infections. Use of regular mop to clean the blood spilled on floor can further lead to increase in infections. Simple measure of disinfecting the spill with sodium hypochlorite can prevent propagation of infection. All (100%) housekeeping staffs were aware of use of safety measures while transferring patients on wheelchair and importance of discarding biomedical waste as per rules and compliance was also considerable. The gap was significant for hand hygiene practices where only 40% were aware and only 10.5% were complying. Most of the infections in the hospital are transmitted through dirty or infected hands and therefore, it is very necessary to wash hands before and after each act i.e. before and after any procedure, before and after touching patients and even after touching patient's surroundings and also to follow steps of hand washing. Posters demonstrating the steps of hand washing are displayed in various areas of the hospital but still the compliance is low. To improve upon this, frequent sensitization is required.

Recently, there has been a growing interest in involving patients in safety initiatives. Safety will be improved if patients are included as full partners in reform initiatives,

and learning can be used to bring about systemic quality and safety improvement initiatives. Thus, realizing the importance of involvement of patients in their safety, survey was conducted for the patients as well.

Study shows that the awareness regarding medication safety such as asking doctor about diagnosis, treatment plan, purpose of each medicine prescribed, likely side effects, drug- drug interaction, drug-food interaction ranged 40% to 90%, but the compliance was found to be 23% to 65%, indicating significant difference between the two.

Measures to control infection should always be practiced by the healthcare providers but patients can play significant role in preventing infections by making sure that always a new syringe and needle is used, caregiver washes hands before touching them and changes gloves every time. In the study, it was observed that although many of the patients understand the importance of infection control measures but still very few were found to follow the same. The patients and their relatives today are well aware of the care which should be provided to them in hospital as a result of high level of education but on the other hand, compliance is low which may be due to hesitation in asking caregivers to follow patient safety measures or maybe they are afraid that their care will be compromised if they do so.

Recommendations

- Follow 5R's- Right drug, right dose, right patient, right route, right time.
- The prescription should be legible and use of non-standard abbreviations should be avoided. Complete history should be taken from patient to prevent errors.
- Carefully complying with surgical safety checklist can prevent most of the surgical errors.
- To prevent infections, hand washing is the primary preventive measure. Use of personal protective equipments, environmental disinfection, proper treatment of linen and proper biomedical waste disposal can reduce the incidences of infection in hospital.
- Patients can contribute to their safety by keeping a check at all the levels of care being provided to them in the hospital. Patients should be encouraged to ask questions, to communicate and actively participate in their treatment.
- Upon error detection, all incidents should be reported as it can be a learning opportunity to prevent such errors in future.
- Continuous training and orientation classes should be conducted to emphasize the importance of patient safety.
- Patient safety and its importance should be included in medical and nursing curriculum.
- Patient safety parameters should be incorporated in quality assurance system of hospital.

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