

Risk Management and Patient Safety Culture Analysis

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ABSTRACT

Patient Safety is an important aspect of health care and is an issue of high concern nationally and globally, The Patient safety culture is defined as the integration of safety thinking and practices into clinical activities. Health care organization becoming aware of safety culture improvement and assessment has grown-up in parallel with increasing focus on different aspects of safety performance through providing a well-managed patient safety and Risk Management system.

Background: Since the magnitude of the harm done to patients by preventable errors is alarming in India. It is essential for every health care institution, to instill Patient safety culture amongst all staff and has proper patient safety, risk management process in the hospital and its departments.

Aim: The study is aimed to measuring the change in the magnitude of patient safety culture among healthcare providers, as an impact of Patient Safety Risk Management implementation & awareness program in H&GH Hospital, also measures the impact of safety awareness on patient safety culture

Method: Analytical design of study includes pre and post intervention patient safety culture assessment by using AHRQ Survey tool, crosssectional survey conducted among health care professionals for Post Intervention phase. Data analyses were done by using SPSS software version 16. Data analyzed across safety culture dimensions in both before and after implementation of safety risk mitigation initiatives.

Result: The research finding shows rise in patient safety culture from moderate to high level. The composite mean score at the beginning of the departments was 2.58 out of 5 which increases upto 3.82 after implementation of patient safety and Risk Management initiatives and awareness program. The t-test suggest difference between pre and post intervention means is highly significant (p value is less than <0.05), some of safety culture dimensions increases significantly like safety perception, error reporting attitude and continuous improvement, The comparison of patients safety culture among different categories of staff shows comparatively high culture among nurses (M=3.95) and compression of safety culture among department shows high score in ICU (M=3.89) and less in General ward (M=3.68) , Pearson correction test suggest significant positive association observed between awareness and safety culture.

Conclusion: The finding of study revealed rejection of null hypothesis and acceptance of alternate hypothesis that is significant change occurs in magnitude of patient's safety culture after implementation of patient safety risk management system and safety awareness.

Key words: Risk Management, Patient Safety Culture, Patients Safety, Hospital safety climate, Safety culture dimensions, Safety perception

INTRODUCTION

Hospital setting provides healing, care and comfort but it involves intrinsic risk related to patient care, hospital contains various hazardous and infections material and other threatening items, therefore implementation of comprehensive patient safety risk management system enhance patients' safety, prevent accidents, ensure compliance with law, and avoid legal exposure, which could lead to loss or litigation . Patient Safety and Risk management is a vital component of hospital and, to be most effective part of an organization's culture therefore it essential to have effective safety culture in hospitals. Establishing culture of patient safety requires an understanding of the values, beliefs, attitudes and behaviors related to patient safety are supported, rewarded and expected.

Study on “**Risk Management and Patient Safety Culture Analysis**” is able to enforcing exhaustive risk control measure related to environmental, Operational & Clinical risk & in the Hospital, for preventing potential risk, errors / events and harm. The patient safety culture assessment before and After Risk Process intervention provides an organization with a basic

understanding of the change in safety related perceptions and attitudes of its staff for preventing harm & risk. It requires a culture that is characterized by effective communications, shared values about the importance of safety, and the presence of systems that help the organization learn from errors and prevent them from occurring. Higher patient safety culture scores are associated with lower rates of employee turnover, infections, other complications related to treatment and care. The patient safety culture analysis has a corollary effect, intended or not, of raising awareness levels about the role of culture in promoting a safer patient environment.

The National , International Accreditation process whether NABH , JCI etc. emphasize on effective risk management programme and promoting patients safety culture

Patient Safety Culture

The safety culture of an organization is the product of individual and group values, attitudes, perceptions, competencies, and pattern of behavior that determine the commitment to safety management.

Safety Culture Dimension

A lot of researchers have generated various dimensions of safety culture. In 2004 the Agency for Healthcare Research and Quality (AHRQ) provide conceptual framework to measure patient safety and developed a survey tool it consist 13 dimension to measure the all aspect of patient safety culture , those were details as follow:

Figure 1: Patient Safety Culture Dimensions As defined by AHRQ



Table: 1 Description of AHRQ Patient Safety Culture Dimensions

Patient Safety Culture Dimensions	Statement / Questions	Definition
1. Teamwork within units	5	Staff supports each other, treat each other with respect, and work together as a team.
2. Stress Recognitions	3	Staff working in crisis mode , having high work load or stress
3. Organizational learning- Continuous improvement	3	Mistakes have led to positive changes and changes are evaluated for effectiveness.
4. No punitive response to error	3	Staff feels that their mistakes and event reports are not held against them and that mistakes are not kept in their personnel file.
5. Overall perceptions of patient safety	4	Procedures and systems are good at preventing errors and there is a lack of patient safety problems.
6. Supervisor / manager expectations and actions promoting safety	4	Supervisors / managers consider staff suggestions for improving patient safety, praise staff for following patient safety procedures, and do not overlook patient safety problems.

Patient Safety Culture Dimensions	Statement / Questions	Definition
7. Communication openness	6	Staff freely speaks up if they see something that may negatively affect a patient and feel free to question those with more authority.
8. Management support for patient safety	6	Hospital management provides a work climate that promotes patient safety and shows that patient safety is a top priority.
9. Teamwork across units	4	Hospital units cooperate and coordinate with one another to provide the best care for patients.
10. Handoffs and transitions	3	Important patient care information is transferred across hospital units and during shift changes.
11. Staffing	3	There is enough staff to handle the workload and work hours are appropriate to provide the best care for patients.
12. Error /Event Reporting	3	Staffs are informed about errors that happen, given feedback about changes implemented, and discuss ways to prevent errors.
13. Frequency of events reported	1	Mistakes of the following types are reported: (1) mistakes caught and corrected before affecting the patient, (2) mistakes with no potential to harm the patient, (3) mistakes that could harm the patient but do not.
14. Safety Knowledge/ Awareness	14	Awareness related to safety issues like, medication error , Infection control practices, radiation safety , surgical errors , fire management plan , disaster management plant , safety program, team , codes , drills etc.

Risk Management

Risk management is a process of identifying, evaluating, prioritizing, and controlling / alleviating of risks, which can impact the resources, including the members and the activities of an organization in order to minimize the detrimental effects on that organization.

1. Risk Identification: Identification of Possible Adverse Events:

a. Prospective Risk

Identification: Potential risks identified before they present challenges to minimizing risk. Through risk identification checklist.

b. Retrospective Risk

Identification: The identification of risk in a retrospective manner - looking back over past event & errors

2. Risk Analysis: Once risks have been identified, they are analyzed on likelihood of occurrence, impact and the severity of risk, Root Cause Analysis be conducted to identify the factors that contributed to an adverse patient outcome or near miss events.

3. Risk Mitigation / Control: Implement full range of control measures that may be used to limit, reduce, or eliminate anticipated hazards, even if the event does not occur.

4. Treating Risk: An unacceptable risk requires treatment, treatment options which are not necessarily mutually exclusive or appropriate in all circumstances, are driven by outcomes that include:

- Avoiding the risk,
- Reducing (mitigating) the risk,
- Transferring (sharing) the risk, &
- Retaining (accepting) the risk

5. Risk Alleviation / Control: Risk management incorporates a full range of control measures that may be used to limit, reduce, or eliminate anticipated hazards, even if the event does not occur. Risk management measures may address the probability of the occurrence, the

probable magnitude of the outcome, or both.

6. Risk Monitoring: Monitoring & Continuous Review of risk is essential, to implementing and maintaining risk reduction activities & Techniques.

Since the Initiation of NABH Accreditation process the Heart & General Hospital is continuously being working towards patient Safety. The Hospital runs a Patient Safety Risk management Programme, which also includes patient safety awareness among the hospital staff.

The components of Heart & General Hospital Patient Safety Risk Management Programs are :

- Hospital safety & Risk Management Committee : work on patient and hospital safety issues, meets once in two months ,overseeing an implementation of the patient safety and risk management programme
- Safety Management Team : monitor the implementation of safety and risk management steps and procedure
- Safety Code & Safety Teams : Safety codes and teams defined for major

- risk like fire, disaster, CPR etc for immediate actions
- Safety Training & Mock Drills : Periodic training and drills conducted to aware staff of safety issues, also to make them aware about their responsibilities during major risk
 - Safety Inspection / Patient Safety Goals Audits : Frequent audit and inspection by committee and team members to monitor the effectiveness
 - Electical HVAC System and Bio Medical Equipment Safety /: Equipment plan as per scope of service , proper installation, periodic maintenance , AMC, and regular testing , proper log , training to staff for operating
 - Medical gas Safety: Medical gas handled, stored, distributed in a safe manner , automation system , availability of alternate source, periodic maintenance.
 - Hazardious Material Handling and Bio Medical Waste Maganagement: As per government laid down rules Hazardioiuos waste segregated, handled , transported and disposed.
 - Fire Safety : Fire Management Plan, Fire fighting , extinguishment and Evacuation Instuments Installations, training and mock drills
 - Disaster Management : Disaster Management plan, code, team, training , mock drills
 - Infection Control practices and Protocols : Hospital run infection control programme and praticies
 - Clinical Safety : Define and develop procedure and process of clinical safety which includes High Risk Medication Administration procedure , Narcotic drug policy , drug prescription policy, Wrong Patient wrong site Prevention procedure ,Safe Medication and Food Drug interaction procedure , Vulnerable Patient Care Policy, Medication Errors Reporting process, Adverse drug reaction prevention and handling procures, safe blood transfusion process ,Bio Medical Waste Management Protocols ,Hazardous Material handling & Spill Management , Radiation Safety safe Infusion Practices , Safety during Nursing care etc.

STUDY PURPOSE / AIM

The study aimed to understand the change in the magnitude of patient safety culture among healthcare providers, as an impact of Patient Safety Risk Management implementation & awareness program in the newly established departments (General Ward, CCU, Laboratory) of new building, also measures the impact of safety awareness on patient safety culture.

OBJECTIVES

- To identify the risk related to environment, operations & clinical process in the hospital by using retrospective data of last two years also through checklist based on NABH Standards
- To implement the risk control measures based on identified risk in the study area
- To measure the change in level of patient safety culture before and after intervention of patient safety risk management initiatives and awareness. The safety culture among the health care providers /employees be measured based on AHRQ culture dimensions by using AHRQ Survey Questioner

- To measure the awareness level on Patient Safety among the health care providers /employees and Measure the correlation between the awareness and patient safety culture.
- Analyze the shortcoming/area of improvement and for improvement and reducing lacunas.

HYPOTHESIS

Null Hypothesis (H_0)

Patient Safety Risk Mitigation Initiatives & awareness on patient safety issues does not create any change in the level of patient safety culture among health care worker in the study area.

$$H_0 = \mu - \mu = 0$$

Alternate Hypothesis (H_A)

Patient Safety Risk Mitigation Initiatives & awareness on patient safety issues create any significant change/ increase in the level of patient safety culture among health care worker in the study area.

$$H_A = \mu - \mu \neq 0$$

METHODOLOGY

Study Design:

Operational Analytical design of study in which Cross sectional survey design was used to carried out for the Post Intervention (Patient safety risk mitigation initiatives and awareness) patient safety culture assessment among the healthcare professionals in the study area.

Study Area:

The study carried out in the clinical and non-clinical of Heart & General Hospital

Study participants:

Some existing and newly recruited staff deputed in the departments, for a minimum period of six months, the study subjects encompasses different category of healthcare professionals, who were willing to participate in the study and available at the time of data collection either doctors, nurses, paramedical and non-clinical staff.

Sampling

Pre Intervention – Random – Sample size =50 employee

Post Intervention – Stratified
Random sampling - 70 employee

Data Collection

- **Patient Safety Culture Assessment –**
Primary data collected from different category of staff by using AHRQ Survey tools response by using 5 point likerate scale

- **Scoring Pattern**

- 1 = Strongly Disagree
- 2 = Disagree
- 3= Neutral
- 4 = Agree
- 5 = Strongly Agree

- **Risk Identification data collection during Intervention phase:**

- Primary Data from direct observation of all departments by filling checklist base on NABH Standards.
- Secondary Data through retrospective study of past event / errors

Study execution approach and steps:

To execute this project the following steps had been taken-

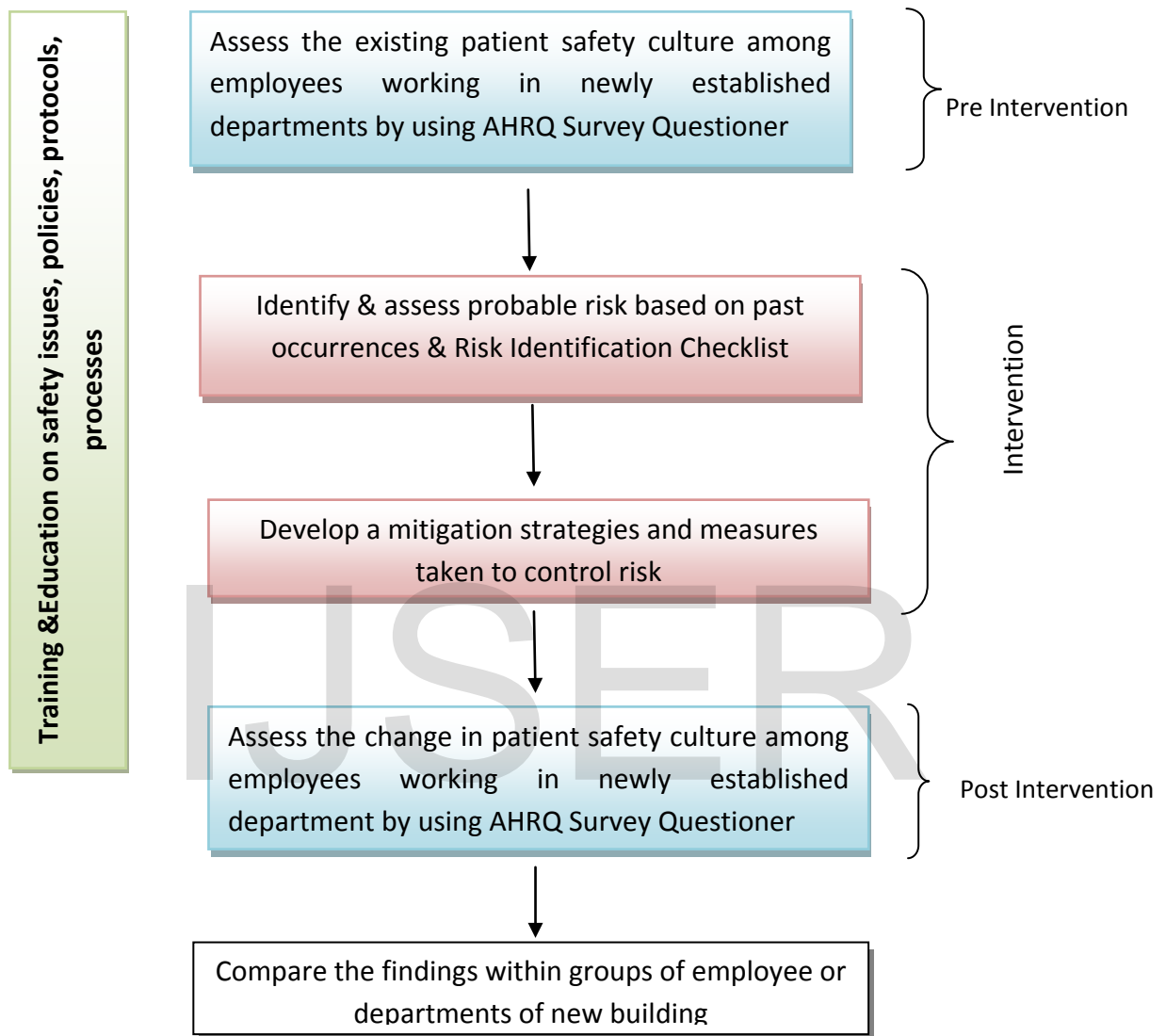


FIGURE 2: STUDY EXECUTION STEPS

STATISTICAL DATA ANALYSAIS

The data analysed by using MS Excel and SPSS Software version 16 .The each cultural dimension comprises few questions/statements the single

composite score (Mean) for that dimension calculated by combining likerate scale response of group of questions consisting in a particular dimension. Calculated the composite mean score for the all patient safety dimensions, Calculate the

overall safety culture Mean Score by combining composite mean score of all the dimensions. In post phase composite mean score on all the safety culture dimensions and overall culture ,calculated among the different category of health care professionals and departments , Compare the Composite mean score on patient safety culture dimensions

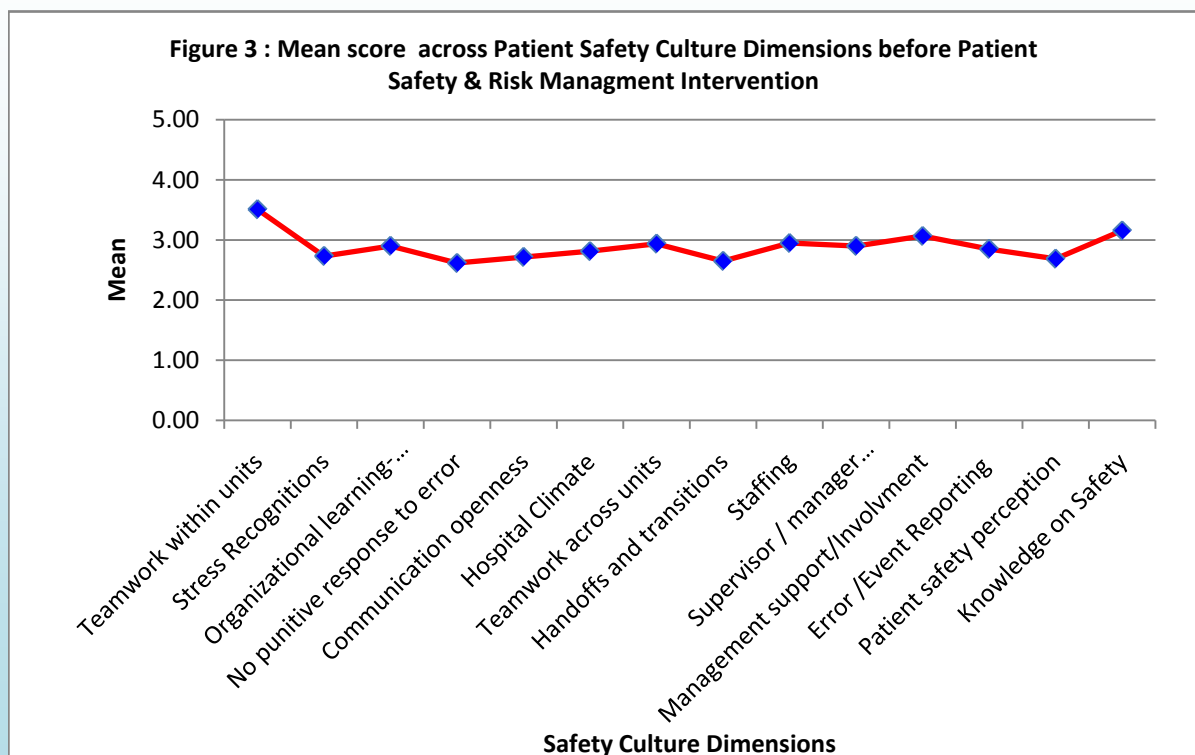
before and after interventions, Applied t test for hypothesis testing and for measuring significance of change in pre and post safety culture dimensions ,The Pearson correlation test applied for measuring association between knowledge and patient safety culture dimension and overall patient safety culture

RESULT

PHASE 1: PATIENT SAFETY CULTURE AT BEFORE RISK MANAGEMENT AND PATIENT SAFETY PROGRAMME

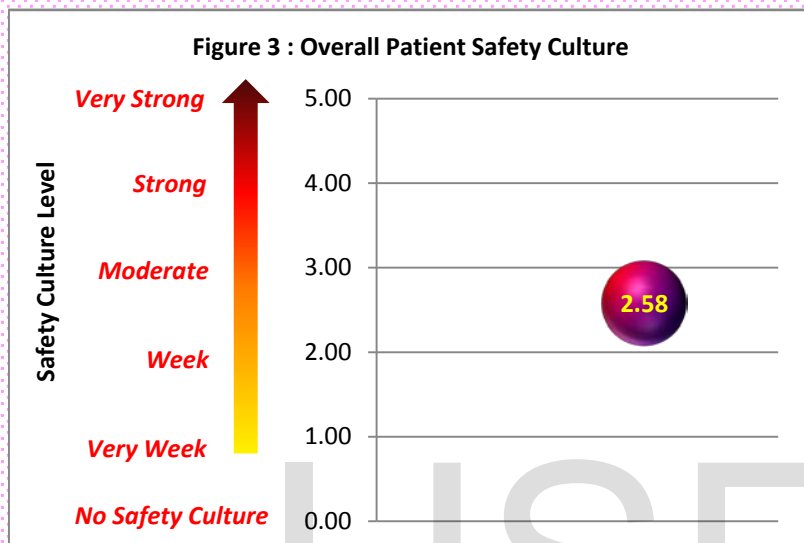
The patient safety culture assessment survey conducted in the month of July 14 before implementation of risk management initiative and NABH Safety standard in hospital department Mean average score of the employee responses on five rating scale across all the safety culture dimension, it is depicted from the graph that the means score is laying in between 2.6 to 3.5 out

Figure 2: Graphical representation of Mean Score of employee responses on safety culture dimension by Employee of H&GH before implementation of Patient Safety & Risk Management initiatives.



of 5 which is not very high, the graph shows some of the dimension like patient safety perception, organization learning - continuous Improvement, Team work across hospital Units and Departments, stress recognition and knowledge on safety issues are very weak and

Figure 3: Overall Patient Safety Culture before implementation of Patient Safety & Risk Management



these areas need to be strengthened for creating strong patient safety culture

The overall patient safety culture among the employees of the Hospital, The graph shows that although there is an existence of patient safety culture but at a very low level, the overall culture is 2.58 out of 5 which is below the moderate level.

Therefore hospital management needs to look into the matter for

developing strong patient safety culture in the new departments of hospital.

PHASE -2 PATIENT SAFETY & RISK MANAGEMENT IMPLEMENTATION APPROACH

Risk Identification Approach

- For the Risk Identification the Hospital Safety Management Committee Members Visited CCU, General Ward, Laboratory and nonclinical departments. Based on NABH Standards and retrospective review of past events, the risk

identification checklist were framed in the year of 2014, which is used for identification of environmental and operation risk in the new departments

- Hospital has record of all the reported past events and errors, therefore review the “Accident / Incident & Sentinel Event Record” & “Hospital Statistics” on Adverse Event” also “safety inspection and audit reports” of Last Two Years to

identify potential risk that could occur in the newly established department.

Risk Evaluation Approach

- Risk identified evaluated Prioritized(Refer Annexure 4) on the base of likelihood of occurrence & severity of consequence, the criteria for evaluation (Refer Annexure: 4) is defined in by the “Hospital Safety & Risk Management Committee”. Also based on the evaluation of past events occurs in the hospital

Patient Safety & Risk Mitigation & Control Approach

- Brainstorming done together by the safety management committee members and Top management for avoiding, mitigating and controlling identified risks in the study area.
- Root cause of identified risk discussed with top management for developing strategies for reducing risk
- Implement the risk mitigation strategies for reducing identified

risk (Refer Annexure 5) in following ways ;

- Improve Risk reporting system
- Structural changes
- Modification in the current process and practices
- Technical / Engineering controls
- Purchases and Installations
- Training and Education to staff.

Patient Safety & Risk Monitoring Approach

- Safety Inspection Round - Monthly
- Patient safety Goals , Medical, death , Prescription, Clinical Audits- Monthly
- Accident / incident / sentinel event Post Event evaluation
- Patient Safety Device Testing periodically

Patient Safety Awareness Approach

- Providing training & continuous training to health care providers (Refer Findings & Annexure 6) on following issues

- Medication Errors Reporting
- High Risk Medication Administration procedure
- Narcotic drug policy
- Wrong Patient , Wrong site Prevention procedure
- Safe Medication & Food Drug interaction Policy
- Vulnerable Patient Care Policy
- Bio Medical Waste Management Protocols
- Hazardous Material handling & Spill Management
- Disaster Management Plan
- Fire Management Plan
- Infection Control Protocols
- Sentinel Event Policy etc.

- Mock Drills conducted for disaster, fire , CPR once in two month

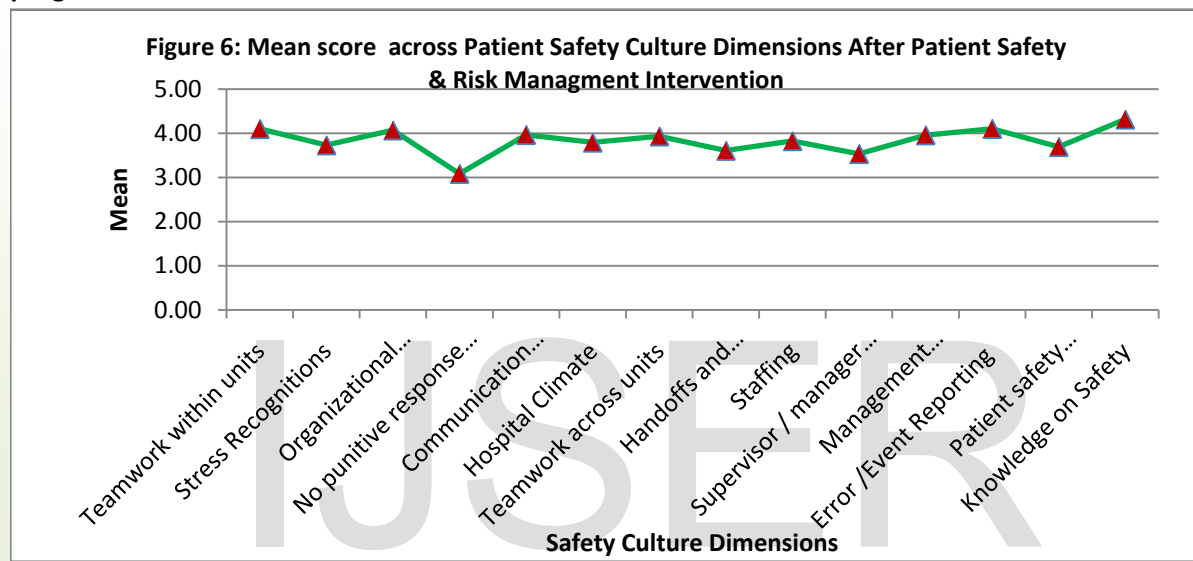
Promoting Patient Safety Culture Approach

- Communicating adverse event and creating a reporting system: reporting – analysis-solution-implementation – monitoring/auditing and feedback
- Try to remove the culture of blame and shame, give assurance to staff that reports are dealt with fairly and that the appropriate learning and action takes place.
- Teamwork training based on roles and responsibilities of individuals
- Improve the handoff process by standardizing handoffs
- Conducting patient safety leadership round
- Creating adverse event response team
- Conducting safety briefing

PHASE 3: PATIENT SAFETY CULTURE AFTER IMPLEMENTATION OF SAFETY & RISK MANAGEMENT PROGRAMME

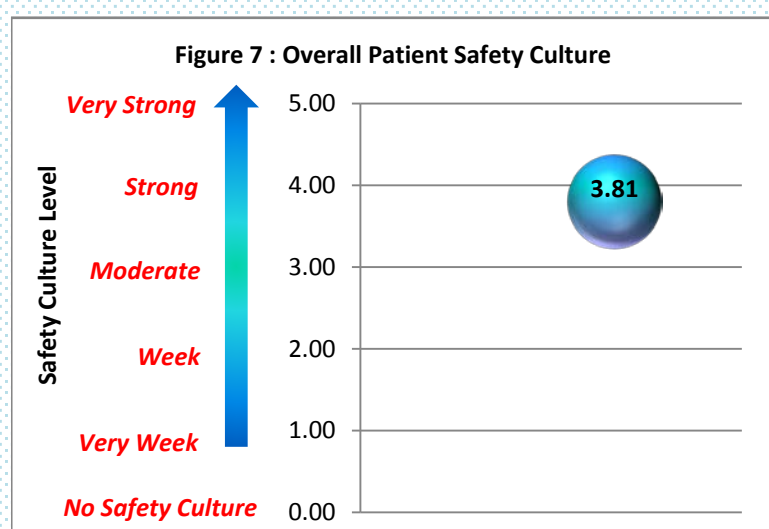
After Patient Safety Risk Management program implementation which includes risk mitigation initiatives, continuous awareness, patient safety culture promoting initiatives, The patient safety culture assessment survey conducted in the month of February 2015

Figure 4: Graphical representation of Mean Score response on safety culture dimension by employee working in the H&GH after implementation of Patient Safety & Risk Management program and awareness



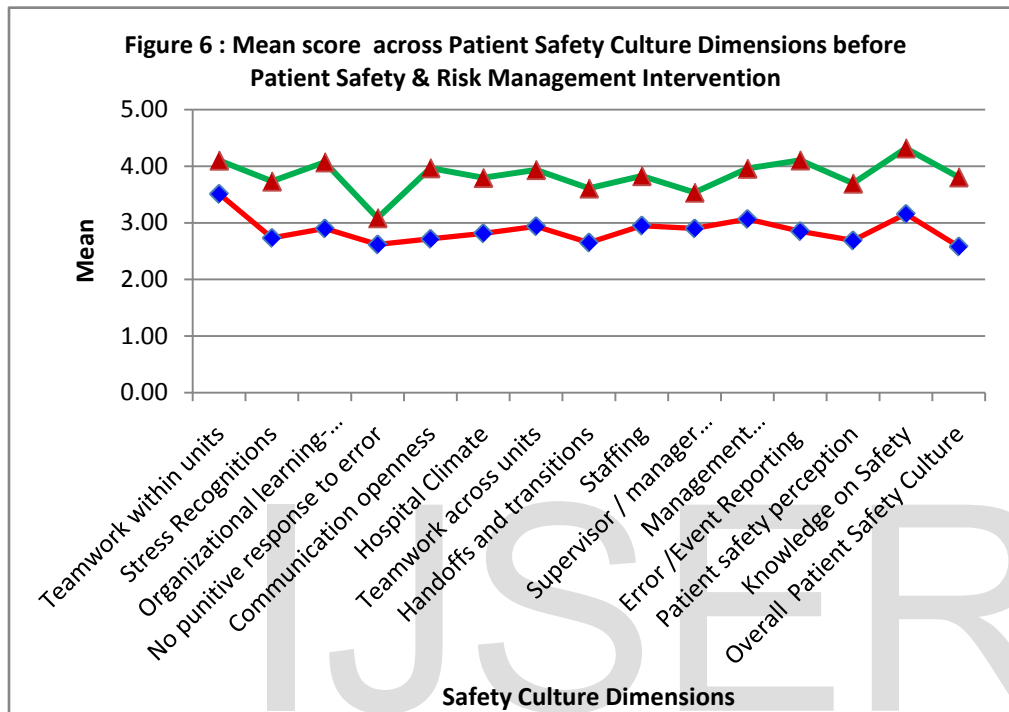
After implementation of patient safety and risk management program implementation initiatives, it is depicted from the graph the means score is laying in between 3.0 to 4.5 out of 5 which at high level. The graph shows that overall culture is 3.81 out of 5 which is at high level denotes to comparatively strong culture as previous assessment. Further the score among different category of staff shows nurses are great contributor in creating safety culture compare to doctors and paramedics

Figure 5: Overall Patient Safety Culture after implementation of Patient Safety & Risk Management



COMPARISON OF PATIENT SAFETY CULTURE PRE & POST IMPLEMENTATION OF PATIENT SAFETY RISK MITIGATION & AWARENESS PROGRAMME

The Comparison of both before (Pre) and After (Post) Implementation of Patient Safety Risk Management program initiatives and Awareness highlighted difference in the mean values



across all dimensions but significance of the difference need to be further tested. Graph 6 shows dimension like error reporting attitude, knowledge on safety issues, communication

openness have high difference also the change in the composite mean score of employee responses on overall patient safety culture. Before intervention of patient safety risk management initiatives the overall culture was below the moderate level which is 2.58, after patient safety risk management interventions the patient safety culture was reassessed and found that the mean score increases and placed at the level (M=3.81) of strong patient safety culture.

FIGURE 7: Overall Patient Safety Culture Means Score Before & After Implementation of Patient Safety & Risk Management Programme & Awareness

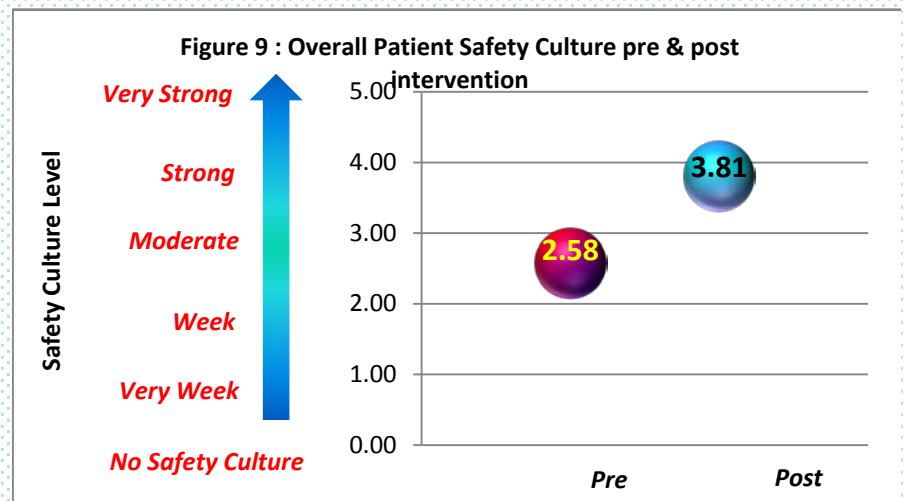


Table 2: Comparison of Patient Safety culture at pre and post implementation of patient safety risk management initiatives and awareness(Independent t Test) across patient safety culture dimensions

Patient Safety Culture Dimensions	Pre Test		Post Test		t- value	p
	N=50		N=70			
	Mean	SD	Mean	SD		
Teamwork within units	3.51	± 0.6	4.10	± 0.61	-3.54	0.00
Stress Recognitions	2.73	± 1.2	3.73	± 0.80	-2.32	0.03
Organizational learning-Continuous improvement	2.90	± 0.7	4.07	± 0.63	-3.01	0.01
No punitive response to error	2.62	± 1.0	3.09	± 0.93	-2.17	0.04
Communication openness	2.72	± 0.6	3.97	± 0.59	-3.25	0.00*
Hospital Climate	2.81	± 1.0	3.80	± 0.61	-3.36	0.00*
Teamwork across units	2.94	± 1.0	3.94	± 0.67	-3.22	0.00*
Handoffs and transitions	2.65	± 1.1	3.61	± 0.81	-4.37	0.00*
Staffing	2.95	± 0.9	3.83	± 0.67	-5.04	0.00*
Supervisor / manager expectations and actions promoting safety	2.90	± 1.0	3.54	± 0.81	-5.51	0.00*
Management support/Involvement	3.07	± 0.8	3.96	± 0.57	-1.56	0.13
Error /Event Reporting	2.85	± 0.8	4.10	± 0.62	-1.55	0.13
Patient safety perception	2.69	± 0.9	3.70	± 0.60	-2.59	0.02
Knowledge on Safety	3.16	± 0.8	4.32	± 0.50	-1.85	0.07
Overall Patient Safety Culture	2.58	± 0.7	3.81	± 0.39	-2.66	0.01

* p 0.05 at 5% level denotes a significant difference

The table2 : presents safety culture dimensions between two different phases the Pre Risk Management programme Intervention & Post Risk Management programme Intervention among the employee of new departments, the mean score of post culture dimensions was significantly more than pre culture dimension , The significantly($p < 0.5$) higher mean recorded in post intervention phase in the dimensions like communication openness , hospital climate and continuous learning , the t-testsuggest the difference between mean of pre & post phases is not by chance probably due to interventions.

To know the impact of intervention (Risk Management Program & Awareness) more precisely, the common employee were selected those were present,both during pre and post intervention survey. The sample size during pre-implementation phase was $N=50$, out of these twenty 14 employee were present in the post phase survey and paired t – test run among these employee to see the change in their responses after intervention across the safety culture dimensions.

Table 3: Comparison of Patient Safety culture responses by selected employee at pre and post implementation of patient safety risk management initiatives and awareness (paired t Test) across patient safety culture dimensions

Patient Safety Culture Dimensions	N=14		N=14		t- value	P
	Mean	SD	Mean	SD		
Teamwork within units	3.43	± 0.64	4.07	± 0.75	-3.2	0.007
Stress Recognitions	2.48	± 1.1	3.52	± 1.12	-8.1*	0.000
Organizational learning-Continuous improvement	2.76	± 0.8	4.07	± 0.79	-9.2*	0.000
No punitive response to error	2.42	± 1.0	3.30	± 0.9	-4.0	0.002
Communication openness	2.42	± 0.4	3.83	± 0.53	-15.4*	0.000
Hospital Climate	2.45	± 0.8	3.81	± 0.60	-8.4	0.000
Teamwork across units	2.64	± 0.9	3.96	± 0.66	-6.7	0.000
Handoffs and transitions	2.19	± 0.9	3.60	± 0.86	-8.5	0.000
Staffing	2.83	± 0.9	3.64	± 0.89	-7.8	0.000

Supervisor / manager expectations and actions promoting safety	2.48	± 0.8	3.32	± 0.97	-3.8	0.002
Management support/Involvement	2.89	0.7	3.79	0.49	-5.9	0.000
Error /Event Reporting	2.57	± 0.8	4.10	± 0.50	-10.1*	0.000
Patient safety perception	2.27	± 0.4	3.80	± 0.44	-18.7*	0.000
Knowledge on Safety	2.87	± 0.7	4.44	± 0.40	-12.9*	0.000
Overall Patient Safety Culture	2.62	± 0.5	3.76	± 0.41	-10.7	0.000

* p 0.05 at 5% level denotes a significant difference

Table 11 presents safety culture dimensions at pre and post implementation of safety program. The table highlighted that a statistical significant relation was documented between pre and post safety culture dimensions. The mean score of overall safety culture dimensions ($t = -10.7 < p0.05$) was significantly high in the post phase after implementation. Moreover it was indicated that safety perception ($t = -18.7 & < p0.05$), knowledge on safety ($t = -12.9 & < p0.05$), error reporting attitude ($t = -10.1 & < p0.05$), dimension recorded significantly higher mean score at post implementation (Patient safety risk Management program and awareness) phase as compare to pre intervention phase followed by organization learning / continuous improvement ($t = -8.1 & < p0.05$).

Table4 : Hypothesis Testing Table (Manual) & SPSS Method

Manual Method		
Hypothesis Testing	Pre –Implementation of Risk Management Initiatives	Post –Implementation of Risk Management Initiatives
N	20	70
Mean	2.58	3.81
SD	0.70	0.39
Pooled SD	0.34	
Degree of freedom	88	
Calculated t value	2.63	
Table t value	1.66	

Through SPSS (t test)									
Overall culture	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
	2.648	.107	2.429	88	.012	-.69286	.28530	-1.25983	-.12589

The Manual method interpret at the degree of freedom 88 at under point 0.05 the table t value is 2.63 and calculated t value is 1.23, the table t value is lesser than calculated t value therefore we reject the null hypothesis and accept the alternate hypothesis

the independent t test conducted for hypothesis testing for the comparison of two mean at pre and post condition the table 12 presents there is significant difference in the value of Pre (M= 2.58, SD =0.70) and Post (M=3.81, SD =0.39) Overall safety culture assessment score, t value at degree of freedom 88 is t = -2.49 and p value is 0.012 (at two tailed significance). The result depicts that the p value is <0.05 thus concludes high significant difference in both the mean of pre and post condition therefore we reject the null hypothesis and select the alternate hypothesis. That is after patient safety risk management programmed implementation significant change (increase) occur in patient safety culture and at 95 % confidence interval this difference is not by chance probably due to intervention.

Table 5 Correlation coefficient value for relationship between knowledge/ awareness on patient safety culture and overall patient safety culture

Patient Safety Culture Dimensions (N=70)	Knowledge/ Awareness on patient safety culture	
	r	p
Teamwork within units	.335**	0.005
Stress Recognitions	0.015	0.9
Organizational learning- Continuous	.654**	0.00

improvement		
No punitive response to error	.268	0.03
Communication openness	.589	0.00
Teamwork across units	.396**	0.01
Handoffs and transitions	0.72	0.55
Management support/Involvement	0.287	0.016
Error /Event Reporting	.258	0.03
Patient safety perception	.654	0.00
Knowledge on Safety	.725**	0.01
Overall Patient Safety Culture	.559	0.00

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

Table 5 represents the correlation coefficient value between safety awareness and safety culture dimensions. The table shows the culture dimensions are positively correlated with the safety awareness. The teamwork, and continuous improvement, communication openness, teamwork within units, safety perception statistically significantly correlate with the safety knowledge /awareness

The table shows statistically significant positive linear correlation ($r=.59$ & $p=0.00$) the r value is less than 1 and p value is less than 0.05 therefore it depicts as safety awareness increases the overall patient safety culture increases

CONCLUSIONS

The present study revealed week patient safety culture among the employee just after beginning of Risk Management Initiatives The culture dimensions like patient safety perception, organization learning - continuous Improvement, Team work across hospital Units / Departments, stress recognition and knowledge on safety issues are very week and these area need to be

strengthen for creating strong patient safety culture

Patient safety risk management process implemented from identification of risk to mitigation initiatives in these department for six month, simultaneously rigors training provided to staff on safety issues for increasing awareness and promoting safety culture thereafter again cross-sectional

safety culture study among different category of employee conducted and compare the results for measuring impact of patient safety risk management program and its initiatives

patient safety culture before and after intervention shows effectiveness of the Patient Safety Risk Management program initiatives and Awareness. The comparison depicts high level of change in the pre and post patient safety culture, the overall safety culture before intervention was scored at moderate level Mean score 2.58 (51.6% positive response), after intervention mean score increases and placed at the high level ($M = 3.81$ & Percentage positive response 76.2 %) of strong patient safety culture.

Also comparison of the safety culture among the different category of employee working in the new building show that the overall safety culture is high among nurses followed by paramedical staff and doctors,

Also comparing safety culture among different departments shows overall safety culture high in ICU followed by non-clinical and laboratory, laboratory found less support from the supervisor on safety issues also responses on the non-punitive atmosphere was less among all the departments.

The significance of the difference tested by applying t test across all dimension and found that the responses at overall safety culture and few safety culture dimensions improved significantly. Measuring the impact of intervention more precisely by applying paired t test, The result highlighted that the mean score of overall safety culture dimensions ($t = -10.7 < p0.05$) was significantly high in the post phase after implementation. Moreover it was indicated that safety perception ($t = -18.7 & < p0.05$), knowledge on safety ($t = -12.9 & < p0.05$), error reporting attitude ($t = -10.1 & < p0.05$), dimension recorded significantly higher mean score after (post) risk management program implementation phase as compare to pre intervention phase followed by organization learning / continuous improvement ($t = -8.1 & < p0.05$). But still few dimension are not improved very much these are non-punitive response to error, supervisor manager expectation and actions for promoting safety also handoff and transition and coordination among hospital units

The hypothesis tested by applying t test which reveals significant change in pre and post overall safety culture therefore reject the null hypothesis and select the alternate hypothesis. That is after patient safety risk

management programmed implementation significant change (increase) occurs in patient safety culture.

The study concludes that although there is significant increase observed in the patient safety culture before and after patient safety risk management programme implementation and awareness, but still scope for improvement exist and some areas need to be strengthen more stringently these are High stress among the staff , staff have fear of punitive action when error and mistakes occurs, the culture of no blame and shame not minimized upto high extent , problems in the handoff and transitions exists also team work within unit is good but across hospital unit need improvement.

4. BMC Health Services Research Journals at IJHMR
5. Journal : Health Research and Educational Trust : Advancing Measurement of Patient Safety Culture
Source: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2669635/>
6. 'Patient Safety in Hospitals: Principles & Practice' – An informative read
Source: <http://archivehealthcare.financialexpress.com/201101/healthcarelife02.shtml>
7. Safety and risk management in hospitals
Source: http://patientsafety.health.org.uk/site/s/default/files/resources/safety_and_risk_management_in_hospitals.pdf
8. Risk Management in Hospitals
Source: <http://www.ijimt.org/papers/266-CM244.pdf>
9. Agency for Healthcare Research & Quality
Source: <http://www.ahrq.gov/>
10. Risk management in healthcare
http://www.slideshare.net/mckandy/risk-management-in-health-care-01?next_slideshow=1

BIBLIOGRAPHY & REFERENCES

1. World Journal of Medical Sciences 6 (1): 17-26, 2011 : A Baseline Assessment of Patient Safety Culture among Nurses at Student University Hospital
Source: [http://www.idosi.org/wjms/6\(1\)11/3.pdf](http://www.idosi.org/wjms/6(1)11/3.pdf)
2. Journal : Middle-East Journal of Scientific Research 14 (5): 641-649, 2013 : Patient Safety Culture Challenges: Survey Results of Iranian Educational Hospitals
Source: [http://www.idosi.org/mejsr/mejsr14\(5\)13/8.pdf](http://www.idosi.org/mejsr/mejsr14(5)13/8.pdf)
3. Journal : IOSR Journal of Dental and Medical Sciences (IOSR-JDMS): A Study to Assess Patient Safety Culture amongst a Category of Hospital Staff of a Teaching Hospital
Source: <http://www.iosrjournals.org/iosr-jdms/papers/Vol13-issue3/Version-4/C013341622.pdf>