



Original Research Article

Assessment of Safety Culture and Work Place Hazards With Respect To Sharp Injuries Existing In a Tertiary Care Rural Hospital: A Cross-Sectional Study

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ABSTRACT

Background: Having a culture that supports and promotes safety efforts has been identified in healthcare and other industries as a key element in improving safety. This study was undertaken to assess the existing safety culture and work place hazards in a tertiary care rural hospital with a aim of identifying opportunities to improve systems and to prevent harm from sharps. **Objectives:** 1)To measure the Perception of a Culture of Safety with respect to the prevention of sharp injuries among the health care workers of a tertiary care hospital .2)To conduct work place walk through survey to identify the work place hazards with respect to sharp injuries in the hospital. **Materials and methods:** A cross-sectional study was conducted with a anonymous self-reporting questionnaire to measure perceptions of a Culture of Safety among the Healthcare Personnel and walk through survey in the work place to identify work place hazards in a tertiary care rural hospital. Analysis was done using Kruskal Wallis test statistic to compare different categories of health care workers. **Results:** the prevalence of sharp injuries in the work place in the previous 12 months was 252/441(57%); Reporting rate was only 15% and 92% of them were unaware of the formal reporting system; recapping and bending of needle before disposal was agreed to be followed by 66.8% of them; the perceptions of health care workers regarding the existing culture of safety reflects low safety consciousness and low organization commitment to safety. The walk through survey of the workplace noted the use of only conventional sharp devices and substantial logistical issues related to manpower and protective equipments.

Keywords: Health care workers/personnel (HCW/HCP), safety culture, walk through survey, needle stick injuries (NSI), sharp injuries.

INTRODUCTION

Occupational exposure to blood borne pathogens from needle sticks and other sharps injuries is a serious problem for the health care personnel, but it is often preventable. The CDC estimates that each year 385,000 needle sticks and other sharps-related injuries are sustained by hospital-

based healthcare personnel; an average of 1,000 sharps injuries per day. ^[1]

One organization level factor, known as safety culture, has been found to be notably important in reducing exposures to blood borne pathogens. ^[2] The U.S. Occupational Safety and Health Administration (OSHA) found that a strong

safety culture is the best approach to preventing incidents. OSHA noted organizations that demonstrate the following characteristics in a strong safety culture had a few at-risk behaviours, low accident rates, low employee turnover, low absenteeism, high productivity, and success in all aspects of business and excellence. [3]

An organizational culture is the accepted norms that each place of work establishes for day-to-day tasks. It is shown to be strongly associated with workers' perceptions of job characteristics and organizational functioning. [4,5]

CDC, workbook for designing, implementing, and evaluating a sharps injury prevention programme describes a series of 6 essential organizational steps for an appropriate injury prevention programme. [2] Assessing the Culture of Safety is one of the important organizational steps which determines how safety is valued in the organization and what processes are in place to promote a safe work environment for the protection of patients and healthcare personnel.

The concept of institutionalizing a culture of safety is relatively new for the healthcare industry and there is limited literature on the impact of such efforts. This study was undertaken to study the existing workplace hazards and safety culture in a tertiary care rural hospital in view of identifying opportunities to improve our system and prevent harm due to contaminated sharps.

MATERIALS AND METHODS

The study hospital is a 600 bed tertiary care hospital that serves as a teaching hospital for colleges of medicine and nursing located in a rural area.

The total population of health care workers (484) includes the doctors (300), nurses (132), lab technicians (22) and sanitary staff (30). A cross-sectional study

was undertaken and data was collected using an anonymous, self-reporting pretested structured questionnaire to measure the burden of Needle stick injuries among the health care workers in the last 12 months while working in the study hospital only. The questionnaire sought information on prevalence of sharp injuries in last 12 months, reporting rate, percentage of people put on post exposure prophylaxis, practice of recapping the needle etc.

Another anonymous, self-reporting pretested structured questionnaire with 10 questions was also used to measure perceptions of a Culture of Safety on a likert scale among the Healthcare Personnel. The questionnaire was obtained from A-2 Survey to Measure Healthcare Personnel's Perceptions of a Culture of Safety. [3]

A walk through survey in the work place was undertaken to identify work place hazards in the hospital. The Survey team consisted of 3 members who were trained and standardized to ensure objectivity and 10 units were surveyed (minor procedure room, casualty, operation theatre and 7 wards). Each unit was surveyed 3 times during morning, noon and night shifts respectively. The check list of 14 items for walk through survey was adopted from American Nurses Association's Needle stick Prevention Guide which was modified appropriately to suite our requirements. [6]

The data was scrutinized and analysis (SPSS) was done by calculating the percentages and proportions for questionnaire 1; for questionnaire 2 median for likert scale was calculated and Kruskal Wallis test statistic was obtained. A p value <0.05 was taken as statistically significant.

RESULTS

441 out of 484 health care personnel returned the questionnaire 1, the doctors (280), nurses (115), lab technicians (22) and sanitary staff (24). Response rate was 91%

Reported NSI in the previous 12 months was 252(57%) which included doctors 143(56.7%); nurses 93(36.9%);lab-technicians 6(2.3%) sanitary staff 10(3.9%); NSI reporting rate was only 15%; 2.3% of the health care personnel were put on PEP;92% of them unaware of the formal reporting system which existed in the

hospital; recapping and bending of needle before disposal was agreed to be followed by 66.8% of them;86% of the HCW felt the injury was avoidable.

Regarding the perception of culture of safety, 113 HCW returned the questionnaire 2; doctors (66), nurses (39), lab technicians (8), with 23.3% response rate.

Table 1: Medians of perceptions of culture of safety by the health care workers

Perceptions of safety by HCW on a likert scale	Median			Kruskal wallis test
	Doctors	Nurses	Lab technicians	P-value
The safety of the workers is a priority in this healthcare organization.	1	2	1	.175
Safety issues are an ongoing agenda item for discussion during staff meetings	2	2	2	.007
The organization encourages and rewards the recognition and reporting of errors and hazardous conditions.	2	3	3	.000
Personal accountability for safety is assessed during annual performance evaluations	2	2	2	.006
Hazardous problems are quickly corrected once they are brought to management's attention	2	1	1	.000
Sharps containers are available where and when I need them to dispose of needles and other sharp devices.	2	4	4	.000
Employees and management work together to ensure the safest possible healthcare environment for patients and personnel.	3	2	2	.102
Safety training is a part of staff development orientations and programs.	2	2	2	.075
The organization provides devices to prevent needle stick injuries	2	2	2	.000
I would not fear being criticized or reprimanded for reporting a sharps injury that I sustained.	3	4	4	.000

The above table shows majority of the HCW(92%) felt that Sharps containers were available to them to dispose of needles and other sharp devices where and when they required them and majority(96%) of them agreed there was no fear of being criticized

or reprimanded for reporting sharps injuries. No provisions for safe devices/safety training for employees were provided. The results were statistically significant.

Table 2: Details of walk through survey in ten units in the hospital.

Checklist	Minor procedure room	casualty	Operation theatre	Wards(6)
Commonest kinds of sharps available in the unit	Scalpel, suturing needle, hypodermic syringes	Disposable syringes, iv stylets, scalpels, lancets	Scalpel, suturing needles, syringes	Syringes, iv stylets, scalp veins
Commonest procedures requiring sharps in the unit	Suturing, venesection.	Injections, Drawing blood, starting iv line	Incision, suturing, syringes for infusion	Injection, drawing blood, starting iv line, procedure like pleural tap, lumbar puncture, bone marrow biopsy
Type of patients involved in these procedures	Predominantly road traffic accidents and self fall	Predominantly road traffic accidents and self fall	All kinds of patients	All kinds of patients
Who commonly does the procedure	Post graduate and interns	nurses	Teaching staff, post graduates and ot nurses	Nurses postgraduates interns
Are safe devices available for sharps	nil	Butterly type needles available	nil	nil
Are sharps boxes available within arms reach	Within sight	Within sight	Within arms reach	In the corner of the ward
Are personal protective equipment available in adequate numbers	Gloves only but inadequate numbers	Gloves only but inadequate numbers	Gloves, masks, caps, gowns available in adequate numbers	Gloves only but severe shortage
Are needle destroyers available in the unit	nil	Available but out of order	nil	nil
Practice of recapping noted	Widespread recapping and bending of needles noted	Widespread recapping and bending of needles noted	Widespread recapping and bending of needles noted	Widespread recapping and bending of needles noted
What other conditions exist in the unit that may contribute to the risk of sharp injuries	Short staffing of doctors	Short staffing of nurses	nil	nil

DISCUSSION

The study revealed 57% (252 out of 441) of the HCW had at least one episode of NSI in the preceding 12 months. According to EPI net data.16 an equivalent number of injuries for a 600-bed teaching hospital such as the study hospital would be 120 reports in a year. These figures are nearly twice the figures of Exposure Prevention Information Network (Epi net) data10. This may be attributed to the patient overload and

organizational problems existing in developing country like India. In the present study, the majority of the HCWs who had NSIs were doctors (56.7%), followed by nurses (36.9%). This may be because the doctors are the largest segment of the working force in our hospital(300) which includes 150 postgraduates and interns who has the least work experience(most of them less than a year).This is in contrast to

Several other studies which has shown high prevalence among nurses. [7,8]

A 85% of the HCW didn't report the injury, reporting was 7% among doctors and 3% among nurses. This was because majority of them were not aware about the formal reporting system existent in the hospital. This problem could be solved by including these issues in the job description of these employees and by regular monitoring by the management.

Only 6 (2.3%) of the HCWs took post-exposure prophylaxis (PEP) against HIV/AIDS after their injury who knew their NSI to be from a "high risk" patient. Less than 20 per cent HCWs knew about the availability of PEP services in the hospital. This was higher than the figures in a study by Chacko and Isaac (31.6%). [9]

Regarding the culture of safety, the concept of institutionalizing a culture of safety is relatively new for the healthcare industry and much of the focus is on patient safety. Studies examining safety climate in the context of patient safety have shown that the culture of safety within healthcare organizations is not as developed as that found in high reliability organizations. [10]

A very few studies have been done to access the relationship between perception of safety culture among the health care workers and their risk of sustaining sharp injuries. One such study done by SP Grytdal suggests that HCP perceptions of safety culture may influence the risk of sustaining an SI. [11]

The present study revealed considerable apathy and lack of orientation of the organization towards safety of the HCW. Though the reporting of the sharp injuries was not criticized it was neither encouraged either, 92% of them were not aware about the existence of formal reporting system in the hospital. There were no provisions for safety devices nor importance was given to safety training for

the employees. There is a pressing need for immediate organizational commitment towards creating a culture of safety as the burden of sharp injuries is considerable in the hospital. In this direction organizations can use the following strategies to communicate their involvement in and commitment to safety. [2]

A workplace walk through survey is a tool to identify and document where and why needle stick and sharps injuries are occurring. While every needle stick and sharps injury should be documented, many people do not report them. In the present study the reporting rate was only 15% this may be because many health care workers simply are unaware of the laws that protect them or the policies already in place at their health care facility. In addition to the logs, a survey can help determine whether needle stick injuries are being reported, whether staff is using safe devices, and whether they are aware of the laws and policies in place. [6]

Often, increased attention to needle stick injury prevention will result in an increase in the number of reported injuries. The present study walk through survey revealed that conventional sharps are being widely used and no provisions for safety devices are made available, also there is a shortage of health care staff. In industrialized countries, the cost of protective devices and equipment that reduce blood exposure may be offset by lower expenditures associated with post exposure testing and prophylaxis, medical treatment of infected workers, institutional insurance premiums, and workers' compensation payments. [12,13] In most developing countries, however, similar economic incentives do not exist; there is little reason for post exposure follow-up in countries that cannot afford prophylaxis, treatment, and compensation benefits. Nevertheless, there are costs associated with

failing to protect health care workers in developing countries. The loss of a wage-earning health care worker can be devastating to the financial security of the worker's family. The loss of health care workers can also have a disproportionate effect on the fragile health care infrastructure of developing countries, where trained health professionals are scarce in relation to the overall populations they serve.

Universal (now standard) precautions are an important concept and an accepted prevention approach with demonstrated effectiveness in preventing blood exposures to skin and mucous membranes. [14,15] In the present study there were issues of inadequate and irregular supply of personal protective equipment's and needle destroyers.

Poor safety culture will encourage an atmosphere of non compliance to safe operating practices; this emphasizes the need for institutionalizing a culture of safety in the work place and there should be a shared commitment of management and employees to ensure the safety of the work place.

CONCLUSIONS

Health care workers are a crucial resource in the health care systems of developing nations. In many developing countries, health care workers are at high risk for preventable, life-threatening occupational infections. Yet the protection of health care workers in these countries is largely neglected in national priorities for health care. We must not delay the implementation of effective prevention strategies while we await more data. The strategy of safety inculcated as a culture in the work place if perceived as crucial by both the management and employees will be one of the critical determinants of the

successful injury prevention programme in any health care setup.

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