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Staff Perceptions, Awareness and Compliance to Safety: A Survey of Occupational Hazards in a Cancer Centre

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Abstract

Background: The commonly encountered hazards in a healthcare setup include biological (infectious) hazards, chemical hazards, physical hazards, environmental hazards, and psychological hazards. The aim of this study was to conduct a survey of work related occupational hazards amongst the full time staff from various work areas and to assess the awareness, perceptions and levels of compliance to universal precautions and bio-safety measures.

Methods: A pre-structured questionnaire was developed based on literature survey and was distributed amongst staff from various work areas of the hospital viz. diagnostic laboratories, department of transfusion medicine and nursing department. Scales were based on standard methods.

Results: Responses were obtained from 66 participants (18 men, 48 women). Most respondents were nurses (57.57%) and technologists (28.79%). Common injuries encountered were musculoskeletal (62.12%), sharps (12.12%) and allergies (36.36%). Compliance to safe work practices including personal protective equipment and waste disposal ranged from 92-98%. Employee perceptions and awareness with respect to safety measures were generally ≥ 90%.

Conclusion: The survey showed that healthcare staffs were generally well aware of occupational hazards and biosafety issues. The general level of compliance to safety measures was high.

Keywords Occupational hazards; Survey; Healthcare; Safety

Introduction

Occupational health and safety (OHS) relates to health, safety and welfare issues in the workplace. Laws, standards and programs related to occupational health and safety aim to make the workplace better for workers, co-workers, family members, customers and other stakeholders [1]. An occupational hazard is a "potential source of harm or adverse health effect on a person or persons resulting from the work one does or from the environment in which one works" [2].

Occupational safety addresses potential safety hazards that can cause injury to the worker, whereas occupational health addresses potential health concerns related to a particular kind of work. Occupational safety pertains more to the physical well-being of employees, while occupational health covers the employees' overall well-being.

Health care workers are generally skilled workers handling patients, technical equipment or performing related procedures and are exposed to various hazards. However there may also be other staff associated with housekeeping, waste management etc. who are also at risk. In the context of health care delivery systems, the commonly encountered hazards include biological/infectious, chemical, enviromechanical, physical and psychosocial. Biological hazards are infectious agents transmitted to others via contact with infectious patients or their bodily fluids (e.g., bacteria, viruses, and fungi). Blood borne pathogenic exposures (HIV, HCV, HBV etc.) may occur due to percutaneous needle stick injuries (NSIs) [3]; in addition there is also a risk of other infections such as tuberculosis, or organisms such as salmonella, or MRSA (methicillin resistant Staphylococcus aureus). Chemical hazards are chemicals viz. Medications, solutions, gases, vapours, aerosols, and particulate matter that is potentially toxic or irritating to the body system. Enviromechanical hazards are elements that can cause or potentiate accidents, injuries, strains, or discomfort (such as damaged equipment). Physical hazards can cause tissue damage by transfer of energy from the agent (e.g. noise, radiation). Psychosocial hazards are factors that can cause stressor interpersonal issues among the worker [4].

Musculoskeletal injury is a major occupational health problem in India and it contributes to about 40% of all costs towards the treatment of work-related injuries [5].

It is important that employees know of the potential hazards in their workplace and employers conduct awareness programs to inform and educate their employers about these hazards, including their prevention (following universal precautions) and emergency management. Employees' perceptions on safety in the workplace are based on several factors such as support from management, safety policies and procedures developed in the organization and monitoring of compliance to safety norms by the staff. Health care worker safety is also an important component of hospital accreditation norms. If the employees' health and well-being are taken care of, then they will feel valued. The employees will become more productive with less sluggishness and events of absenteeism [6], and will contribute towards better patient care.

Aim

- The aim of this study was to conduct a survey of work related occupational hazards amongst the full time staff from various work areas
- To assess the awareness, perceptions and levels of compliance to universal precautions and biosafety measures.
- To suggest corrective actions to avoid major occupational hazards in the hospital.

Methods

The staffs recruited were from Advanced Centre for Treatment, Research and Education in Cancer (ACTREC), Navi Mumbai, Maharashtra, India. The total numbers of staff employed are 218 in the clinical aspect of the institute. The nature of work is mainly divided into treatment of the cancer patients, research on translational and basic aspects of cancer, and academics. Thus the staffs are divided into clinical and lab service category comprising of scientific and technical staff. The various aspects of clinical branch are divided into surgical and medical units. The lab service is divided into diagnostic pathology, microbiology, and pathology. Of this 65% of the staff is in direct contact with the patients. Further there is a nursing unit.

A pre-structured questionnaire was developed based on a previous study [7]. The questionnaire was based on previous surveys used in healthcare set ups to evaluate safety environment in the hospitals and factors related to employee safety practices. It was designed to evaluate the factors for compliance with universal precautions among healthcare workers. It was distributed amongst staff from various work areas of the hospital viz. diagnostic laboratories, department of transfusion medicine and nursing department. Scales were made based on standard methods. Sixty six respondents from different work areas were requested to provide inputs on the questionnaire.

The survey measured four key components:

1. Demographics
2. Work related injuries
3. Work safety compliance
4. Employee's safety perceptions and awareness

Questions were developed relating to staff demographics such as age, sex, work area, job category, and hours of work per week, work schedule, supervisory status, education, & years of work in healthcare. Demographic information was collected using multiple-choice response options. The questionnaire also contained clear and well-characterized compliance related queries that was used to measure employees' awareness and perceptions about safety related issues. Five-point Like rt scale (strongly agree, agree, neutral, disagree, strongly disagree) was used for the responses. The survey examined different types of work related injuries encountered by the staffs during their tenure of work in healthcare settings. These included needle stick and sharp injuries, burns, electric shocks, eyes or mouth splashes, musculoskeletal problems and allergies. The survey also sought information on different occupational variables related to exposures of staff to infected patients, biological hazards, radiation hazards, physical hazards, and to chemical products. The results were entered in MS Excel and calculated as percentages.

Results

Demographics

The Table 1 summarizes the demographic and background characteristic of the participants according to the education, tenure of work, and job profiles.

Sixty five per cent of staffs reported that they were in direct contact with patients. Ninety two per cent of the surveyed staffs were exposed to biological hazards, 65.15% were exposed to chemicals, 37.87% were exposed to radiation, and 72.50% were prone to physical hazards.

Characteristics	**N=66**
Sex	
Female (%)	72.72
Male %	27.27
Age (years)	Mean=33 years
Range	21-55 years
Education	
Post Graduate	22.73
Graduate	40.9
Higher Secondary	36.37
Tenure of Work (years)	Mean=9 years
Range	3 months to 26 years
Job Profile	
Clinicians (%)	7.58
Nursing (%)	57.57
Technical staffs (%)	28.79
Others (%)	6.06

Table 1: Demographic and background characteristics of the participants.

Types of Injuries	**Percentage**
Sharps & Needle stick injury	12.12
Burns	3.03
Electric shocks	10.6
Eye/mouth splashes or injuries	12.12
Musculo skeletal problems	62.12
Allergies	36.36

Table 2: Percentage of various work related injuries.

Work related injuries:

All participants reported to experiencing some sort of work related injury throughout their work tenure in healthcare settings. Table 2

summarises the percentage of various work related injuries reported by the participants.

Compliance	%
Disposal of sharp objects into a sharps containers	98.48
Wear eye shields/face mask for protection whenever there is a possibility of a splash	92.42
Never recap used needles	96.96
Treat all materials that have been in contact with patient as bio hazardous	95.45
Do not consume food or water in working areas	100
Follow hand hygiene between every patient contact	92.42
Attend to spills immediately as per spills policy	90.9
Follow appropriate waste disposal guidelines	98.48
Handle sharps with care as per 'sharps protocol'	95.45
Report any untoward incidents/accidents immediately to concerned person	95.45

Table 3: Safe work practices.

Questions	Strongly agree (5)	Agree	Neutral	Disagree	Strongly disagree
Colour coded waste containers are readily accessible	30	35	1	0	0
Personal protective equipments are readily available	33	28	4	0	1
Immunization for potential exposures such as Hepatitis B is mandatory	42	22	1	0	1
Employees are encouraged to be trained in occupational safety matters	33	29	3	1	0
Following Universal Precautions does not obstruct working.	21	40	4	1	0
There is enough time to follow Universal Precautions	15	37	7	5	2
Employees are made aware of and to recognize potential health hazards at work	17	45	3	0	1
A copy of the hospital safety manual is available at the area of work	42	14	6	4	0
Housekeeping of work areas is satisfactory	18	36	8	2	2
There are no physical obstacles in moving about in work areas	15	41	5	3	2
Work areas are not too crowded and cluttered	7	48	3	3	2
Unsafe practices are immediately detected and rectified by seniors	15	46	2	1	2
Appropriate training to handle potential hazards is provided	22	26	3	0	1

Table 4: Responses to questions as per Likert scale.

Compliance to safe work practices:

Self-reported compliance to safe work practices are shown in Table 3. It was also seen that staffs having more work experience were complying better to safety practices set by the organization than the staff with less experience.

Employee safety perceptions and awareness

The staff awareness of safety issues was satisfactory and their perception on support from management towards safe work practices was generally positive as seen in Table 4.

Discussion

There always exists a potential for workers to be exposed to various hazards in the health care setting. Most of our respondents were exposed to some form of occupational hazard(s), usually biological because they were directly in contact with patients or blood/body fluids. The common hazards/injuries encountered in a hospital setting such as ours include the following: needle stick injury which include penetrating stab wound from a needle (or other sharp object) that may result in exposure to blood or other body fluids [8]; splashes of blood and body fluids in eyes, nose, lips, mouth, or on broken skin of healthcare worker causing injuries of eyes or mouth [9];

musculoskeletal disorders (MSDs)-conditions that can affect muscles, bones, and joints [10]; and allergies that are abnormal reactions of the immune system occurring in response to otherwise harmless substances. These were taken into account while designing the questionnaire.

Adherence to bio safety measures plays an important role in preventing transmission of infection. Our respondents reported to a satisfactory compliance to following universal precautions (Table 3). Perceptions of staff about safety play an important role as indicators of safe place to work; as such organizations where staffs have a positive perception on safety in the workplace are less prone to occupational risks. Employee's perception, awareness and understanding of safety issues play an important role in determining compliance towards safety measures. The foremost among these is the ready availability of personal protective equipment (PPE), hand hygiene facilities and colour coded waste collection containers. It is important that adherence to safety measures should not be perceived as time consuming, cumbersome or interfering with the performance of work. Reasons mentioned for suboptimal adherence to universal precautions and PPEs have included amongst others, lack of time, decreased dexterity and comfort and interference with routine work [11]. These were agreed to upon by some of our respondents (Table 3).

Reported data suggest that the average prevalence of latex allergy worldwide remains 9.7%, among healthcare workers [12]. Thirty six per cent of our respondents reported latex allergy. No severe or anaphylactic reactions were noted. Hospitals suffer a particularly large number of musculoskeletal disorders (MSDs), largely categorized as sprains and strains. Musculoskeletal injuries accounted for 46.4 per cent in one study [13]. About 62% of our staff reported musculoskeletal problems, particularly in the nursing group.

Injuries related to sharps in healthcare may lead to transmission of infection. In one Indian study, six hundred and sixty six sharp injuries were noted in more than 1.5 million inpatient days (0.44/1000 IP days) with nurses being topmost on the casualty list followed by housekeeping staff [14]. However, our organization showed less percentage of NSI's and housekeeping staffs were the most affected. In spite of the awareness among our staff about avoiding sharp injuries (not recapping needles, proper handling and disposal of sharps) being high, it was found that about 12% had sustained a sharp injury through their work years. Splashes of blood/body fluids to eye or mucous membranes carry a small risk of transmission of HIV and other viruses. The prevalence of injuries through splashes of blood or body fluids was 86 % and that for chemical splashes was 26% for employees of other hospitals [15]. It was reported as 12% in our study for blood, body fluids and chemicals put together. This emphasises the need of mask and eyewear protection while performing procedures which could result in splashes. Prompt reporting of accidents by staffs has been motivated through repeated training sessions by competent and expert staffs of the institute. Spill kits are provided in all working areas and the staffs are trained to handle different types of spills using the contents provided in the spill kit. Poster of spill handling and management are also displayed in relevant areas.

Healthcare organizations must have a structured employee health policy. All our new inductees are screened with baseline tests for HIV, HBV and HCV and hepatitis B and other vaccines are provided as indicated. Training with respect to work safety is provided at induction and this is reinforced at regular intervals. The laboratory staffs is also trained in Good Laboratory Practices (GLP); highlighting the importance of use of bio safety cabinets, avoiding mouth pipetting, handling sharps, chemicals etc. There are periodic examinations regarding the compliance towards safety for our staff. Monthly lectures are held by the scientific staff focusing on the importance of safety and hygiene at work. The staffs are than examined after each lectures and their views noted. There are also weekly meeting conducted in the seminar hall for any sort of problems or grievance regarding the safety issues of our staff. There is an infection control committee appointed in our hospital which monthly assess the safety and any sort of risk exposure to infections to our staff. It also takes into account the various quality aspects of the environment and water by conducting weekly microbiological testing of above sources. Also there is a waste disposal committee appointed in our hospital which specifically looks into the aspects of waste disposal like infectious, surgical, eatery, etc. The canteen is regularly checked and the food samples are periodically tested for any storage of deteriorated food which may in turn be harmful to the staff.

Maximal compliance to safe work practices and universal precautions in the form of hand hygiene, wearing of personal protective equipment (PPE-gloves, masks, gowns, goggles and footwear) is important in preventing the spread of infection. Specific post-exposure policies must be developed, and compliance ensured for: human immunodeficiency virus (HIV), hepatitis A virus, hepatitis B virus, hepatitis C virus [16].

Suggestions

1. It is suggested to have periodical safety audit of various work areas of the hospital, in order to identify the deficiencies and rectify them before occurrence of any major occupational hazard. The results of such a survey can be used to carry out interventional procedures and outline training programmes for improving the safety outcomes in the organisation and eventually to reduce the exposure to occupational hazards in the hospital.
2. Since the musculoskeletal disorders are seen to be as high as 62.12%, ergonomics training with regards to sitting, bending, lifting objects etc. should be included in order to reduce the musculoskeletal injuries.
3. In order to reduce allergy exposures in the workplace, an exposure assessment has to be performed. Preventive measures for workers with allergy should be implemented. Reducing exposure to the compound or product that causes the skin condition is the most effective method of control. If possible, employers should attempt to substitute the hazardous agent with a less hazardous compound [17].
4. WHO emphasizes on primary prevention of workplace hazards, particularly because the highest incidence of nonfatal occupational injuries occurs in hospitals (7.5%) [18].

Limitations

As it was a questionnaire based study, there was less opportunity to clarify specific issues cropping up in the minds of the respondents. Another limitation was that we could only analyse the awareness about safety measures of occupational hazards and could not examine the causes and impact of occupational hazards.

Conclusion

The survey showed that healthcare staffs were generally well aware of occupational hazards and biosafety issues. The general level of

compliance to safety measures was satisfactory. In spite of the above there is scope for improvement in this regard.

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