

## HEALTH HAZARDS AND WORK SAFETY MEASURES AMONGST NURSES IN HOSPITAL SETTINGS

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### *Abstract*

*Nurses are universally considered as critical components of the healthcare system and work in a variety of healthcare setups. Health care employees, particularly nurses, encounter a number of health hazards as a part of their jobs. An exploratory descriptive study was done on types of health hazards and work safety measures amongst nurses in selected hospital of Delhi. Objectives of the study were 1) Identify the types of health hazards amongst nurses 2) Assess the awareness and compliance of safety measures amongst nurses. The Quantitative research approach with exploratory descriptive study was used. Sample comprised of total 242 nurses selected by convenience sampling. A structured questionnaire was developed for data collection. Nurses encounter various health hazards in healthcare settings with the most prevalent being physical hazards including 146(60%) backaches and 114(47.11%) frequent headaches Injuries/ exposure at work such as exposure to workplace violence 146(60.33%), needle stick injuries 126(52.07%) and spillage of body fluids 116(47.93%). Disease due to exposure of patients 42(17.36%). Physiological challenges from work related hazards including persistent tiredness 144(59.50%) & loss of sleep 104 (42.98%) Nurses encounter various health hazards in healthcare settings. Present study depicted that the components connected to awareness and compliance with safety measures always have room for improvement, it is advised that proper training and a safety culture be developed in health care settings.*

**Keywords:** Health Hazards, Work Safety Measures

### **BACKGROUND**

Nurses are universally considered as critical components of the healthcare system and work in a variety of healthcare setups. Opportunities for ongoing education, and supportive and knowledgeable management structures and cultures are required to best protect the safety and health of nurses. To this aim, prominent professional nursing organizations have acknowledged the risks that nurses endure as part of their professions.<sup>1</sup>

Nurses' health is a legitimate concern at a time when governments around the world are grappling with how to improve the efficiency and efficacy of their health systems. In order for this to happen, high-performing health-care professionals are also required. The performance of health-care employees is dependent on their physical well-being.<sup>2</sup>

As the need for health care grows, so will the duration of working hours, shift rotation, and workload of patients be requiring highly complicated technologic care and services, increasing the risk of occupational sickness and injury in this occupational group.<sup>3</sup>

Workers' health is influenced not just by their exposure to specific job risks, but also by their level of control over their work, the effort-reward balance, and the implications of unemployment. 4 Working in a hospital is recognized to be one of the most dangerous environments to be in. 5

Health care employees, particularly women, encounter a number of health issues as a result of their jobs. Women account for almost two-thirds of all global hepatitis B and C infections and HIV infections caused by needle-stick injuries, owing to the fact that there are more women in the health-care industry and that female health-care workers are commonly working with sharps. Musculoskeletal injuries (induced by lifting) and burnout are also common among women.<sup>6</sup> Every year, three million percutaneous exposures occur among the world's 35 million health-care workers, with more than 90% of them occurring in low-resource nations.<sup>7</sup>

The most common occupational danger encountered by health care professionals is exposure to biologic agents and infections. Infections caused by viral organisms are the most dangerous; nevertheless, some are now vaccine-preventable. Infectious agents such as HIV, hepatitis viruses, rubeola, rubella, herpesviruses, and CMV, as well as *Mycobacterium tuberculosis*, are of particular concern (TB). 8

A wide range of chemical agents can be found in the workplace, notably in hospitals. The kind, dose, frequency, and length of exposure, work habits, and the individual's health and sensitivity all play a role in whether or not an individual is at risk from exposure. 9

Injuries and accidents in the workplace are linked to environmental and mechanical factors. Poorly designed or insufficient equipment or work stations can cause discomfort and exacerbate injuries like cumulative trauma syndromes, while cluttered and slippery flooring (from spilled fluids) contribute to falls and other mishaps. It's assumed that the extent of low-back pain and injury among nurses is underestimated. 10

Hospitalized as well as others patients seeking care in emergency rooms, have been known to act violently toward medical and nursing workers. Nonetheless, the issue is thought to be underreported. Caregivers in nursing homes and hospitals are increasingly becoming victims of nonfatal violence caused by patients. 11

Physical agents in the workplace, such as noise or vibration, can cause health problems by transferring physical or mechanical energy to humans in the workplace, resulting in tissue trauma. Electrical hazards, for example, can cause internal and external burns as well as gaseous embolism in humans.<sup>9</sup> Workplace exposure to physical agents can have catastrophic implications. Radiation is a frequent physical agent utilized in medical procedures and protocols for a variety of diagnostic and therapeutic operations. Health care workers may be at risk for radiation exposure in these procedures.<sup>12</sup>

Nursing professionals are familiar with psychosocial agents, sometimes known as stressors. They can cause a lot of stress, which can lead to a lot of work-related issues like absenteeism, staff conflict, staff turnover, low morale, and decreased practice effectiveness. 13,14

Measures can be taken to reduce the risks of exposure to work-related hazards in health care environments. Methods for hazard abatement include (1) engineering and work practice controls, (2) administrative controls, and (3) personal protective equipment.

Engineered control solutions can reduce worker exposures by changing the hazardous source or reducing the number of contaminants in the workplace. Engineering controls can include removing the danger, substituting a less hazardous material for a hazardous one, changing a work process to reduce worker exposure and interaction, and designing better and safer devices. 15 Engineering controls include placing needle disposal bins as close to the site of use as possible so that needles do not need to be recapped, as well as providing waste disposal, handwashing, and laundry facilities.

When exposures cannot be lowered to acceptable levels by engineering and work practice controls, administrative controls should be used to limit workers' exposure. Monitoring the workplace and workers to minimize exposures, as well as the execution of rules and procedures to mitigate occupational exposure hazards, are examples of administrative controls.<sup>15</sup> Vaccination programmes against vaccine-preventable diseases, health maintenance, screening, and surveillance programmes, and risk reduction training and education, such as sharps handling and waste cleanup, can all be useful administrative methods.<sup>16</sup>

Personal protective equipment (PPE) should only be used as a last choice for worker protection when hazardous conditions cannot be avoided through engineering, work practises, or administrative controls.

According to Norman et al.<sup>17</sup>, education and training are the foundation for improving Occupational Safety and Health, and the implementation of effective health and safety hazards prevention programmes necessitates sound basic education for work, certified induction and refresher training, and certified company specific training as part of lifelong learning.

A safety culture, according to Asa et al.<sup>18</sup>, reflects individual, social, and organizational attitudes, values, and actions related to safety. A well-developed safety culture in an organization enables the organization's safety performance to be maintained and improved, with a focus on safety work and safety improvement activities.

Very little research has been completed on how nurses comply with written protocols that are meant to address and mitigate health hazards at the workplace, nor on the impact of health hazards to nurses. The aim of this study is therefore to identify occupational health hazards encountered by nurses and to discuss safety measures to prevent them.

Review of literature

Udasin and Gochfeld<sup>19</sup> indicated that infection is one of the most important problems in health care services worldwide.

Tinubu et al.<sup>20</sup> found that work-related musculoskeletal problems are widespread among health-care employees and can be caused by work-related events. The nursing workforce, which makes up around 33% of the hospital workforce, is particularly vulnerable, accounting for 60% of all

recorded occupational injuries.

According to Gerberding & Holmes<sup>21</sup>, health care professionals have a high risk of needle stick injuries and blood-borne diseases when performing clinical tasks. Nurses are exposed to blood-borne illnesses caused by pathogens such as the Human Immunodeficiency Virus (HIV), Hepatitis B, and Hepatitis C viruses through sharp injuries and contact with blood and other bodily fluids. As per Denis<sup>22</sup> et al. report Nurses and midwives had the greatest annual rates of occupational blood exposure.

According to Mallon et al.<sup>23</sup>, needlestick and other sharps injuries made up 83.4 percent of all injury reports. Furthermore, failure to take universal precautions was mentioned in 34% of the complaints. The danger of needle stick injury is increased by recapping, disassembly, and improper disposal (Pruss-Ustun et al)<sup>7</sup>. Makofsky et al.<sup>24</sup> also found a considerable decrease in needle recapping merely by placing disposal containers in a more convenient location near the patient's bed. Poor organizational climate and excessive workloads were linked to a 50 percent to 2-fold increase in the risk of needlestick injuries, according to Clarke et al.<sup>25</sup>

According to Martin et al.<sup>26</sup>, healthcare workers who work with chemotherapeutic drugs experience more acute health symptoms such nausea, vomiting, headaches, and hair loss. According to Lawson et al.<sup>27</sup>, some occupational exposures that nurses are exposed to are linked to the risk of spontaneous abortion. Formaldehyde has been linked to irritating allergic dermatitis, ocular irritation, and occupational asthma, according to McAbee et al.<sup>28</sup>. The most common injuries, according to Wilkinson et al. <sup>29</sup>, were needlestick injuries (32.1%) and sprains and strains (17.2%); of the latter, 55 percent were back injuries allegedly caused by lifting and twisting motions.

Major stressful occurrences mentioned by neurosurgery nurses were being exposed to life-or-death circumstances among small infants, being short of vital resources, being on duty with insufficient staff, and dealing with angry relatives, according to Snape and Cavanagh<sup>30</sup>. A hospital-based survey on shift work, sleep, and accidents was undertaken by Gold et al.<sup>31</sup> and found rotators (all three shifts) exhibited more sleep-wake cycle disruption than nurses who exclusively worked day or evening shifts, nodded off more at work/while driving to or from work, and reported an accident or error linked to sleepiness. According to Aluko et al. <sup>32</sup>, respondents' high level of knowledge differed from practice, so measures aimed at promoting safety practices and minimizing exposure to hazards, such as the provision of safety equipment, pre-placement and routine training of staff on safety practices, and adequate reinforcement of staff capacity and capability through drills, should be institutionalized and made mandatory in all hospitals.

Shinde et al.<sup>33</sup> claim that Several dangers continue to exist in the workplace for staff nurses. Working without the appropriate safety equipment, working overtime, and experiencing work-related pressures are all variables linked to encountering dangers.

### **AIMS AND OBJECTIVES**

AIM: To study the types of health hazards and work safety measures amongst nurses.

OBJECTIVES:

1. Identify the types of health hazards amongst nurses.
2. Assess the awareness and compliance of safety measures amongst nurses.

### METHODOLOGY

Study Approach- Quantitative research approach.

Study Design- Exploratory descriptive study.

Study Population- All the nursing officers working in selected hospital of Delhi

Sample Size- Fisher's formula<sup>63</sup> for population less than 10000 was used to calculate the minimum sample size for this study:

$$ns = n / (1 + n/N)$$

$$n = Z^2(PQ) / d^2$$

Where:

- n = minimum required sample size in population greater than 10,000
- ns = minimum required sample size in population less than 10,000
- Z = Standard normal variate for 95 % confidence level, (Z = 1.96)
- p = prevalence of the attribute (50%)
- d = acceptable difference; using 5 % (d = 0.05)
- q = 1 - p
- N = population size. (650)

$$n = 242$$

### Inclusion Criteria

All the nursing officers who are willing to participate will be included in the study.

### Exclusion Criteria

The nursing officers on leave, those who will be off-duty during data collection and the nurses who don't give consent will be excluded for the study.

Sampling Method- Convenience Sampling

Development and description of tool

A structured questionnaire was developed based on previous studies. Steps taken in development of questionnaire:

- Extensive review of research and non- research literature to develop the needed items for the questionnaire.
- Consultation with experts in the nursing and medical field.
- Consultation with the guide and co-guide.
- Development of the instructions for the respondents.
- Formulation of the items.
- Categorization of the items under different sections.

Based on objectives of the study, the following tools were developed in order to generate the data. The questionnaire is divided into three sections as follows:

Section A - Demographic variables

Demographic variables consist of gender, age, educational status, present placement and work experience

Section B- Types of health hazards

Questions related to types health hazards were included

Section C- Assessment of awareness and Compliance of safety measures

Questions on Assessment of awareness and Compliance of safety measures were included.

### PROCEDURE FOR FINAL DATA COLLECTION

After obtaining approval from the institute, final data was collected. Subjects were screened based on inclusion and exclusion criteria of the study. Subjects were assured of confidentiality of their data. Informed consent was obtained. Self-administered Questionnaire was provided to the selected subjects.

Analysis and interpretation of data

All the items of the questionnaire responses were coded and transferred to a master data sheet.

Then analysis of data was done using descriptive and inferential statistics.

The findings were organized under the following sections:

### SECTION A

Findings related to Demographic Data of nursing officers

**Table 1: Frequency and Percentage distribution of Demographic Variables of Nursing Officers**

n =242

S. No.	Demographic Variables	Frequency	Percentage
1.	Age (in years)		
	21-30	60	24.79
	31-40	114	47.11
	41-50	64	26.45
	51-60	4	1.65
2.	Sex		
	Male	68	28.10
	Female	174	71.90
3.	Educational Status		
	GNM	146	60.33
	B. Sc. Nursing	92	38.02
	M. Sc. Nursing	4	1.65
4.	Present Placement		
	Emergency	54	22.31
	OPD	8	3.31
	Wards	122	50.41
	ICUs	32	13.22
	O.T.	20	8.26
	Labour Room	6	2.48
5.	Work Experience (years)		
	0-10	130	53.72
	10-20	86	35.54
	20-30	26	10.74

Findings according to table1 shows

Maximum nursing officers i. e. 114 (47.11%) were in the age group of 31-40 years followed by 64 (26.45%) in the 41-50 years, 60 (24.79%) in 21-30 years and 4 (1.65%) in 51-60 years age group.

Out of 242 Nursing Officers, 174 (71.90%) were female and 68 (28.10%) males. Majority of Nursing Officers i.e. 146 (60.33%) were G.N.M. qualified followed by 92 (38.02%) B.Sc. Nursing qualified and 4 (1.65%) M. Sc. Nursing qualified. Maximum Nursing Officers selected i.e. 122 (50.41%) were placed in Wards followed by 54 (22.31%) in Emergency. Maximum Nursing Officers i.e. 130 (53.72%) were having 0-10 years of experience followed by 86 (35.54%) Nursing Officers with 10-20 years of experience and 26 (10.74%) with 20-30 years of experience.

## SECTION B

Findings related to types of health hazards

**Table 2: Frequency and Percentage distribution of types of health hazards**  
n =242

S. No.	Types of Health Hazards	Frequency	Percentage
1.	Physical Hazards		
	a) Frequent headaches	114	47.11
	b) Backaches	146	60.33
	c) Persistent tiredness	94	38.84
	d) Feet ailment	54	22.31
	e) Accidental falls/ Injury	36	14.88
	f) Varicose veins	24	9.92
	g) Contact Dermatitis	4	1.65
	h) Muscular Strain	46	19.00
	i) Abortion	12	4.96
2.	Injuries/exposures at work		
	a) Needle stick injury	126	52.07
	b) Spillage of patient body fluids	116	47.93
	c) Exposure to chemicals	24	9.92
	d) Exposure to Radiation	26	10.74
	e) Exposure to workplace violence	146	60.33
3.	Diseases due to exposure of patients		
	a) Pneumonia	4	1.65
	b) Tuberculosis	12	4.96
	c) Influenza	42	17.36
	d) Hepatitis C	0	0
	e) HIV	0	0
	f) Hepatitis B	0	0
	g) Scabies	10	4.13
4.	Physiological challenges from work related hazards		
	a) Loss of sleep	104	42.98
	b) Persistent tiredness	144	59.50
	c) Anxiety	88	36.37
	d) Disturbed Social relationships	96	39.67
	e) Use of Excessive Smoking /Alcohol	8	3.31
	f) Use of medications to induce sleep	8	3.31

Data in table 2 gives following findings:

Maximum study subjects reported backaches as physical health hazard i.e 146 (60.33%) followed by frequent headaches i.e. 114 (47.11%), persistent tiredness i.e. 94 (38.84%), 54 (22.31%) feet ailment, 46 (19.00%) muscular strains, 36 (14.88%) accidental falls/ injury, 24 (9.92%) varicose veins, 12 (4.96%) abortions and least 4 (1.65%) contact dermatitis.

Maximum study subjects were exposed to injuries/ exposures at work due to exposure to workplace violence i.e. 146 (60.33%) followed by 126 (52.07%) needle stick injury, 116 (47.93%) spillage of patient body fluids. Exposure to radiation was reported in 26(10.74%) and exposure to chemicals in 24 (9.92%) study subjects.

Disease reported by study subjects were influenza, Tuberculosis, Scabies, Pneumonia by 42 (17.36%), 12 (4.96%), 10 (4.13%) and 4 (1.65%) study subjects respectively. There was no reporting done for Hepatitis C, HIV and Hepatitis B.

Most common Physiological challenges faced from work related hazards faced by Nursing Officers were persistent tiredness, loss of sleep, disturbed social relationships and anxiety i.e. 144 (59.50%), 104 (42.98%), 96 (39.67%) and 88 (36.36%) respectively. Few cases i.e. 8 (3.31%) reported use of excessive alcohol and use of medication to induce sleep.

### SECTION C

Findings related to awareness and compliance of safety measures

**Table 3: Frequency and Percentage distribution of assessment of awareness and compliance of safety measures**  
**n=242**

S.No.	Awareness and compliance of safety measures	Frequency	Percentage
1.	Responsible for Prevention of occupational hazard		
	a) Hospital Management	40	16.52
	b) Nursing Personnel	2	0.83
	c) Doctors	6	2.48
	d) Housekeeping Staff	0	0
	e) All	194	80.17
2.	Disposal of needle after giving injection		
	a) Recap and throw in sharps container	6	2.48
	b) Never recap and take out using sharp container	178	73.55
	c) Take out needle from hub and discard in sharps container	58	23.97
3.	Waste bin used for chemicals		
	a) Yellow	148	61.16
	b) Red	54	22.31
	c) Black	20	8.26
	d) Sharp Container	2	0.83
	e) Don't know	18	7.44



4.	PPE most useful for caring of TB Patient a) Gloves b) Face Mask c) Apron d) Cap e) Don't know	4 226 0 2 10	1.65 93.39 0 0.83 4.13
5.	Disease not preventable by Vaccine a) Hepatitis B b) Tetanus Toxoid c) Hepatitis A d) Swine Flu	36 30 158 18	14.88 12.40 65.29 7.44
6	Important to ensure compliance of safety measures a) Availability of standard operating procedures b) Regular review of infection control policies c) Training for safety measures d) All of the above	12 34 26 170	4.96 14.05 10.74 70.25
7.	Trainings received a) Occupational Hazards b) Needle Stick Injury Management c) BMW Guidelines d) Immunisation for Hepatitis B e) Fire Control f) None	76 210 210 148 98 8	31.40 86.78 86.78 61.16 40.50 3.31
8.	Steps to follow in case of needle stick injury a) Wash your hands under running water & cover the area b) Squeeze the finger and use antiseptic and then report to concerned person. c) Wash in running water and report to concerned person.	6 4 232	2.48 1.65 95.87
9.	When to wash hands a) Before touching the patient b) After touching the patient c) Both	0 2 240	0 0.83 99.17
10.	Knowledge of Availability of standard guidelines for post exposure prophylaxis a) Yes b) No	182 60	75.21 24.79

Table3 depicts findings of responses related to awareness & compliance of safety measures as follows:

Majority of Nursing Officers i.e. 194 (80.17%) considers all health team members are responsible for prevention of occupational hazards whereas 40 (16.52%) consider management responsible for it. And no one considered only housekeeping staff responsible for prevention of occupational hazards.

Majority of Nursing Officers i.e. 178 (73.55%) have opinion of "Never recap and take out using sharp container". And rest of 58(23.97%) Nursing officers have opinion of "Take out needle from

hub and discard in sharps container” and 6 (2.48%) think of “Recap and throw in sharps container”.

Majority of Nursing Officers i.e. 148 (61.16%) dispose chemicals in yellow bin. Other Nursing Officers i.e. 54 (22.31%) dispose chemicals in red bin followed by 20 (8.26%) in black bin and 2 (0.83%) in sharp container. 18 (7.44%) Nursing Officers didn't know about disposal of chemicals.

Majority of Nursing Officers i.e. 226 (93.39%) accept Face Mask as most useful PPE for caring of TB patient. Majority of Nursing Officer i.e. 158 (65.29%) said Hepatitis A is not preventable by Vaccine whereas 36 (14.88%) nursing officers consider Hepatitis B is not preventable by Vaccine followed by 30(12.40%) as Tetanus Toxoid.

Majority of Nursing Officers i.e. 170 (70.25%) responded to option “All of Above” regarding compliance of safety measures. Majority of Nursing Officers i.e. 210 (86.78%) have received trainings on Needle Stick Injury Management and BMW Guidelines. Other Nursing Officers i.e. 148(61.16%), 98 (40.50%), 76 (31.40%) have received trainings on Immunization for Hepatitis B, Fire Control, Occupational Hazards respectively. But 8 (3.31%) Nursing Officers have not received any training.

Majority of Nursing Officers wash hands in running water and report to concerned person in case of needle stick injury. Majority of Nursing Officers i.e.240 (99.17%) reported hand washing should be done in both before touching and after touching.

Majority of Nurses i.e. 182 (75.21%) said that they have knowledge of standard guidelines for post exposure prophylaxis but 60 (24.79%) Nursing Officers reported no knowledge of standard guidelines for post exposure prophylaxis.

## DISCUSSION

Findings related to Section B

Present study revealed maximum of study subjects reported backaches as physical health hazard i.e 146 (60.33%) followed by frequent headaches i.e.114 (47.11%), persistent tiredness i.e. 94 (38.84%). Other 54 (22.31%) subjects reported feet ailment, 46 (19.00%) muscular strains, 36 (14.88%) accidental falls/ injury, 24 (9.92%) varicose veins, 12 (4.96%) abortions and least 4 (1.65%) contact dermatitis. These findings of present study are in in line with following studies:

- A study by Tinubu et al.20 found that health-care professionals can develop work-related musculoskeletal ailments.
- Neck pain, shoulder pain, backache, and foot pain were shown to be prevalent in 62.9 percent, 73.1 percent, 71.2 percent, and 53.4 percent of people, respectively, according to Cheung et al.34
- According to Lawson et al.27, some occupational exposures that nurses are exposed to are linked to the risk of spontaneous abortion.

Present study revealed that maximum of study subjects were exposed to injuries/ exposures at work due to exposure to workplace violence i.e. 146 (60.33%) followed by 126 (52.07%) needle stick injury, 116 (47.93%) spillage of patient body fluids. Exposure to radiation was reported in 26(10.74%) and exposure to chemicals in 24 (9.92%) study subjects. After analyzing the published

data, it was observed that present study is in line with following studies:

- Denis et al.<sup>22</sup> discovered that nurses and midwives had the greatest annual rates of occupational blood exposure.
- According to Mallon et al.<sup>23</sup>, needlestick and other sharps injuries made up 83.4 percent of all injury reports.
- According to Larkin E et al.<sup>11</sup>, caregivers in nursing homes and hospitals who are injured by patients are victims of nonfatal violence.
- Health care workers may be exposed to radiation during diagnostic radiography, treatment of patients with radioactive implants, and exposure to body fluids of patients receiving metabolized therapeutic nuclear radiation, according to Godwin CL<sup>12</sup> et al.

Present study correlated with published literature but there is a shocking result in present study revealing that workplace violence (60.33%) has become a major occupational hazard in nursing profession now a days even more than needle stick injuries (52.07%). Spillage of body fluids i.e 116(47.93%) and needle stick injuries (52.07%) which is still very high & sensitive issue.

In Present study, diseases reported by study subjects were influenza, Tuberculosis, Scabies, Pneumonia by 42 (17.36%), 12 (4.96%), 10 (4.13%) and 4 (1.65%) study subjects respectively. There was no reporting done for Hepatitis C, HIV and Hepatitis B. Present study revealed no cases of Hepatitis C, HIV and Hepatitis B due to occupational hazards. Findings of present study is not in line with a report of WHO which states female health workers account for about two-thirds of all global hepatitis B and C infections and HIV infections due to needle-stick injuries<sup>8</sup>. The variations in the findings of present study may be due to under reporting or small sample size.

In the present study, most common Physiological challenges faced from work related hazards faced by Nursing Officers were persistent tiredness, loss of sleep, disturbed social relationships and anxiety i.e. 144 (59.50%), 104 (42.98%), 96 (39.67%) and 88 (36.36%) respectively. Few cases i.e. 8 (3.31%) each reported use of excessive alcohol and use of medication to induce sleep.

Present study findings are similar to findings of following studies:

- Sakai et al.<sup>35</sup> suggest that signs of intense mental fatigue are frequently observed in nurses who take on additional duties.
- Gold et al.<sup>31</sup> found rotators (all three shifts) had more sleep-wake cycle disruption.

### Findings related to Section C

Majority of Nursing Officers i.e. 194 (80.17%) considers all persons involved in the management of health care system responsible for prevention of occupational hazards but other 40 (16.52%) consider management responsible for it. And no one considered only housekeeping staff is only responsible for prevention of occupational hazards. Extensive search in the literature related to the present observation could not be found hence couldn't not be correlated with published results.

Present study shows 178 (73.55%) Nursing Officers never recap needles and but 58(23.97%) Nursing officers take out needle from hub and then discard in sharps container also 6 (2.48%) Nursing Officers perform recapping needles. According to a study conducted by Pruss et al.<sup>7</sup> recapping, disassembly, and inappropriate disposal increase the risk of needle stick injury so it is felt that there is need of improvement in needle disposal practices.

According to Biomedical Waste Management rules<sup>36</sup> by MoEFCC, Govt. of India under Environmental Protection Act, 1986, chemicals should be disposed to yellow bins. Findings of present study shows that majority of Nursing Officers i.e. 148 (61.16%) dispose chemicals in yellow bin. Other Nursing Officers i.e. 54 (22.31%) dispose chemicals in red bin followed by 20 (8.26%) in black bin and 2 (0.83%) in sharp container. 18 (7.44%) Nursing Officers didn't know about disposal of chemicals. So there is some training required in this aspect.

Furthermore, it is stated that majority of Nursing Officers i.e. 210 (86.78%) have received trainings on BMW Guidelines & Needle Stick Injury Management still some Nursing officers are not following the same so there is need to sensitize them & take necessary action if required.

Majority of Nursing Officers i.e. 240 (99.17%) wash hands in running water and report to concerned person in case of needle stick injury. But a few i.e. 6 (2.48%) nursing officers wash their hands under running water & cover the area whereas 4 (1.65%) Nursing Officers squeeze their finger and use antiseptic and then report to concerned person. There is also need of training for few nursing personnel who are not aware of needle stick injury guidelines. Majority of Nursing Officers i.e. 240 (99.17%) reported hand washing should be done in both before touching and after touching.

In the present study majority of Nurses i.e. 182 (75.21%) said that they have knowledge of standard guidelines for post exposure prophylaxis but 60 (24.79%) Nursing Officers reported no knowledge of standard guidelines for post exposure prophylaxis. Jennings N17 claims that there is a correlation exists between poor or insufficient education and training and poor Occupational Safety and Health performance. It is predicted that a circular will be required to ensure the provision of uniform guidelines at each counter.

## CONCLUSION

Nurses encounter various health hazards in healthcare settings especially physical hazards, injuries/ exposure at work, disease due to exposure of patients and physiological challenges from work related hazards. Present study depicted that the components connected to awareness and compliance with safety measures always have room for improvement, it is advised that proper training and a safety culture be developed in health care settings.

However, studies with larger sample size and multicenter studies are required to develop a recommended protocol for reduction of health hazards and improvement of safety measures amongst the nursing officers.

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