

Original article

A study on occupational injuries to the health care workers in a Tertiary Care Hospital

¹Dr. Rahul H. Dandekar, ²Dr. Madhuri Gunjal

Name of the Institute/college: Dept. of Community Medicine, Terna Medical College and Hospital, Nerul, Navi Mumbai

Corresponding author: Dr. Rahul H. Dandekar , Associate Professor, Dept. of Community Medicine, Terna Medical College and Hospital, Nerul, Navi Mumbai

ABSTRACT

Background: Occupational hazards are very common amongst healthcare workers. Healthcare workers face a wide range of hazards on the job, including sharp injuries, harmful exposure to chemicals and hazardous drugs. Unsafe working conditions contribute to the health hazards in many countries around the world. Healthcare workers need protection from these hazards. It is important that employees know of the potential hazards in their workplace and employers conduct awareness programs to inform and educate their employees about these hazards, including their prevention and emergency management. Employee 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 stay.

Methods and results: This study was conducted in three months duration as a cross sectional study amongst the interns and residents Doctors in a Tertiary care centre. By simple random sampling method, a total of 140 interns and residents were included for the study. A pre-structured questionnaire was created and distributed to all the interns and residents. Data collected from the questionnaire was analyzed and appropriate statistical tests were applied to draw conclusions.

Conclusions: The maximum doctors suffered injuries due to needle stick, sharp and infections. Doctors should be advised and taught on proper disposal techniques of certain harmful wastes. The interns should be given a brief lecture wherever they are posted in the department to know about the department and how the department works. Interns should be informed and guided carefully about HIV and its prophylaxis.

Key words: Occupational Injuries, Health Care Workers, Awareness, Practice, Spills.

INTRODUCTION

Occupational hazards are very common amongst healthcare workers. Healthcare workers face a wide range of hazards on the job, including sharp injuries, harmful exposure to chemicals and hazardous drugs. Unsafe working conditions contribute to the health hazards in many countries around the world. Healthcare workers need protection from this hazards.¹ An occupational injury is bodily damage resulting from working. The most common organs involved are the spine, hands, head, lungs, eyes, skeleton, and skin. Occupational injuries can result from exposure to occupational hazards such as physical, chemical, biological or psychological. And also temperature, noise, insect or animal bites, blood borne pathogens, aerosols, hazardous chemicals, rationale and occupational burnout²

An occupational injury describes any type injury or illness that occurs to a person as related to his or her specific occupational demands or requirements occupational injuries or illness represent a substantial percentage of emergency department visits as well as primary care and subspecialty clinical practices.^{3,4}The occupational injuries are most commonly seen in the health care area due to sharp objects, needle stick injuries, burns, electric

shock, eye mouth splashes, musculoskeletal problems, allergens and infection. A health care facility is a workplace as well as for receiving and giving care. Health care facilities around the world employ over 59 million workers who are exposed to variety of health and safety everyday including biological, chemical, physical, ergonomics and psychological hazards.⁵

MATERIAL AND METHODS

The type of study- This study was conducted as a cross sectional study amongst the interns and residents in a Tertiary care Hospital.

Duration of study – This study was undertaken in three months duration from October to December 2021 to carry over.

Inclusion criteria- Those who are doing their one year of internship and also, residents & doctors belonging to tertiary care facilities were included in the study.

Exclusion criteria- Those who were not willing to give their writing consent and newly joined interns were excluded from this study.

Total sample size- By simple random sampling method, a total of 140 interns and residents were included for the study.

Tools for the study- A pre-structured questionnaire was created and distributed to all the interns and residents.

Analysis- Data collected from the questionnaire was entered into MS excel sheet and calculated as percentage manually and appropriate statistical tests were applied through SPSS V26.

OBERVATIONS AND RESULTS

In the present study the median age was 26 years. Study done by Hasat Amalgir, Shicheng Yu, et. al. at British Columbia University to determine whether compensated work related injuries among females were higher than their male colleagues concluded that female workers had significantly higher risk of all injuries compared to males.⁷ Thus occupational health and safety initiatives should be gender sensitive.

Occupational hazards as perceived by nursing interns and protective measures at a medical college et.al. was showed most nursing interns were exposed to physical hazards (65.35%) followed by chemical hazards (56.40%), while biological hazards were ranked as the lowest occurrence (45.73%).⁸

Sharp objects constituted the maximum number of injuries measuring at 79.54%. Infections were the second cause of injuries constituting about 71.59% of injuries. Burns caused about 27.27% of the injuries to healthcare workers under study. The least number of injuries were reported from electric shock measuring 15.90%.

Study was done for comparisons between nonfatal and fatal risk of injuries stating that non-fatal injuries were significantly higher in health care workers compared to fatal. Disposal of sharp in containers had the greatest response with 90.09% doctors disposing sharps in proper containers. Availability of aprons had the lowest percentage with 53.41% doctors opting that availability of aprons was not present. Treating every material as bio hazardous was the next compliance. To score 85.22% doctors following this compliance. Waste disposal guidelines were followed constituting about 81.81%. Following hand hygiene, wearing proper mask shields, recapping needles, attending to spill constituted fairly around 60-70%. Disposing of sharp was mostly followed among the female sex constituting 95.74% of the total female population. Sharps of needle were mostly followed by female sex constituting about 38.63% of the total female doctors which is matter of high concern. Consumption of food and water in working areas was more followed by the male sex constituting about 40.90% of the total male doctors which is matter of high concern.

The disposal of sharp objects into sharp containers showed 90.90% of the population dispose of the sharp objects into a sharp container while the remaining 9.10% population did not dispose. The consumer food or water in working areas 78.40% of the population consumed food and water in working areas while the remaining 21.60% didn't dispose. Attend spills immediately 61.63% of the population attended to spills immediately while the remaining 38.60% didn't dispose. Follow appropriate waste disposal guidelines 81.80% of the population followed appropriate waste disposal guidelines while the remaining 18.10% did not follow. The 78.40% of the population handled the sharps as per protocol while the remaining 21.60% did not follow protocol. The results are statistically significant.

About 75% majority of the total number of the people surveyed agreed with the readily accessibility of colour coded waste containers in work places whereas only 10.23% disagree with the same. The availability of personal protective equipment at work places was 4.32%. Out of 140 candidates were in favour whereas 26.13% were not in favour. When asked about the practice of universal precaution 65.91% of the total people surveyed had a positive response and 12.50% gave a negative response.

Hepatitis B vaccination was not taken among the doctors and constituted a fair enough amount of 56.81% among the whole sample. Majority did not suffer from malaria, dengue constituting about 62.50% of the whole sample size. Post exposure ART prophylaxis constituted about 53.40% among the whole sample. AKT treatment also constituted about 14.77% among the sample size.

Table no. 1. Distribution of participants as per sex.

Age in years	Male (%)	Female (%)
23	10 (15.38)	5 (6.67)
24	17 (26.15)	20 (26.67)
25	15 (23.08)	19 (25.33)
26	7 (10.77)	11 (14.67)
27	11 (16.92)	16 (21.33)
28	0 (0.00)	1 (1.33)
29	2 (3.08)	1 (1.33)
30	3 (4.62)	2 (2.67)
Total	66	74

Table no. 2. Ever suffered occupational injuries as per participants sex

SN	Hazards	Male		Female		Total	
		Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)	No (%)
1	Sharp Objects	40.9	12.5	39.77	6.8	79.54	20.45
2	Needle Stick Injuries	20.4	25	26.13	20.45	54.54	45.45
3	Burns	15.9	37.77	11.36	35.22	27.27	72.73
4	Electric Shock	3.4	50	12.5	34.09	15.9	72.73
5	Eye mouth splashes	15.9	37.5	25	21.59	40.9	84.09
6	Allergens	26.13	27.27	28.4	18.28	54.54	59.09
7	Infection	42.04	11.36	29.54	17.04	71.59	28.4

Table no. 3. Association between compliance and sex of participant

SN	Compliances	Response	Male	Female	Total	chi sq.	p value	Significance
1	Disposable sharp objects into a sharp container	Yes	55	72	127	5.358	0.021	yes
		No	10	3	13			
		Total	65	75	140			
2	Wear eye shield / face mask for protection	Yes	43	53	96	0.3239	0.566	no
		No	22	22	44			
		Total	65	75	140			
3	Recap used needles	Yes	43	55	98	0.3239	0.355	no
		No	22	20	42			
		Total	65	75	140			
4	Treat all materials that have been in contact with patients as bio hazardous	Yes	55	64	119	0.014	0.906	no
		No	10	11	21			
		Total	65	75	140			
5	Consume food or water in working areas	Yes	57	53	110	5.995	0.014	yes
		No	8	22	30			
		Total	65	75	140			
6	Follow hand hygiene in between every patient contact	Yes	40	51	91	0.639	0.424	no
		No	25	24	49			
		Total	65	75	140			
7	attend to spills immediately	Yes	33	53	86	5.818	0.01	yes
		No	32	22	54			
		Total	65	75	140			
8	Follow appropriate waste disposal guidelines	Yes	43	72	115	21.147	<0.001	yes
		No	22	3	25			

		Total	65	75	140			
9	Handle sharps with care as protocol	Yes	38	72	110	29.143	<0.001	yes
		No	24	3	30			
		Total	65	75	140			
10	Report any untoward incidents/accidents in the working area.	Yes	48	59	107	0.449	0.503	no
		No	17	16	33			
		Total	65	75	140			
11	availability of proper equipment and lead apron	Yes	27	38	65	1.167	0.28	no
		No	38	37	75			
		Total	65	75	140			

Table no. 4. Safe work practices and participant response (%)

SN	Respondent questions	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	Colour coded waste containers are readily available	29.55	45.45	14.77	6.82	3.41
2	Personal protective equipments are readily available	14.77	29.55	20.45	20.45	5.68
3	Employees are encouraged to be trained in occupational safety matters	21.55	32.95	15.91	15.91	2.27
4	Following universal precautions	28.41	37.5	7.95	7.95	4.55
5	Housekeeping of work areas is satisfactory	10.23	45.45	11.36	11.36	4.55
6	Enough time to follow universal precaution	14.23	27.27	27.27	27.27	6.82
7	Physical obstacle in moving about in work	12.5	39.77	12.5	12.5	3.41
8	Work areas area not too crowded and cluttered	12.5	19.32	34.09	34.09	7.95
9	Unsafe practices are immediately detected and rectified by seniors	15.91	39.77	12.5	12.5	7.95
10	Appropriate training to handle potential hazards is provided	15.91	38.64	17.05	17.05	7.95

Table no 5. Miscellaneous concerns and safety measures of participants (%)

SN	Miscellaneous	Yes	No
1	Post exposure ART prophylaxis taken on exposure	53.4	46.59
2	AKT Treatment taken	14.77	85.23
3	Suffered from malaria dengue	37.5	62.5
4	Hepatitis B vaccination taken all 3 doses	43.18	56.81

DISCUSSION

Sharp objects constituted the maximum injuries measuring 79.54% infections. The second cause of injuries consisting of about 71.59% reported from electrical shocks measuring 15.9%. Needle stick injuries and allergies constituted 54.54% of injuries. Disposal of sharps in containers had the greatest response with 90.09% doctors disposing of the sharps in proper containers. Availability of aprons had the lowest percentage with 53.41%. Treating every material as bio hazardous was the next compliance to score 85.22% doctors following this compliance.

Disposing of sharps was mostly followed among the female sex constituting about 95.63% of the total female population. Also, recapping of needles was mostly followed in female sex constituting about 38.63% of total female doctors making it a matter of great concern. Consumption of food and water in working areas was more over followed by sex constituting about 40.90% of the total male population.

The male doctors were a bit careless in following the sharps protocol and were consuming drinks and food in work areas. Safe work practices consisting of accessibility of colour coded containers being readily accessible constituted about 74% of the total sample. Enough time to follow universal precautions was not available as majority of the sample voted constituting about 34% of the total sample size. Work areas was cluttered and crowded constituted about 42% of the total response.

CONCLUSION

The maximum doctors suffered injuries due to needle stick, sharp and infections. Hence, guidance lectures about needle stick injuries should be given to the new doctor preventing oneself from needle stick injuries. Periodically doctors may be given the proper techniques for preventing themselves from any harm. Doctors may be advised to have proper breakfast and proper meals during the day time which boosts their immunity as majority of them are the prey to infections like TB. Doctors may be advised and taught on proper disposal techniques of certain harmful wastes. The interns may be given a brief lecture wherever they are posted in the department to know about the department and how the department works. Interns may be informed and guided carefully about HIV and its prophylaxis.

REFERENCES:

1. Joseph B, Joseph M. The health of the healthcare workers. *Indian J Occup Environ Med.* 2016; 20(2):71-72. doi:10.4103/0019-5278.197518
2. Hazards & Exposures. *Centers for Disease Control and Prevention.* Accessed from <https://www.cdc.gov/niosh/topics/hazards.html>
3. Varacallo M, Knoblauch DK. Occupational Injuries and Workers' Compensation Management Strategies. StatPearls Publishing; 2022 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK470372>.
4. Tadros A, Sharon M, Chill N, Dragan S, Rowell J, Hoffman S. Emergency department visits for work-related injuries. *Am J Emerg Med.* 2018 Aug;36(8):1455-1458.
5. National institute for occupational health. accessed from <https://www.nioh.ac.za/healthcare>.
6. Naresh, Chital & Bhat, Vivek & Chavan, Preeti & Bhat, Prashant & Vira, Hemant. (2018). Staff Perceptions, Awareness and Compliance to Safety: A Survey of Occupational Hazards in a Cancer Centre. *Journal of Oncology Translational Research.* 4. 1-5. 10.4172/2476-2261.1000128.

7. Hasanat Alamgir, Shicheng Yu, Sharla Drebit, Catherine Fast, Catherine Kidd, Are female healthcare workers at higher risk of occupational injury?, *Occupational Medicine*, Volume 59, Issue 3, May 2009, Pages 149–152, <https://doi.org/10.1093/occmed/kqp011>
8. Elewa, Amal Hebashy and Sahar Hassan Aly El Banan. “Occupational Hazards as Perceived by Nursing Interns and Protective Measures.” (2016).