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Research Article

INTERNATIONAL JOURNAL OF PLANT, ANIMAL AND ENVIRONMENTAL SCIENCES
ISSN: 2231-4490

Awareness on Health Hazards and Protective Measures Among Healthcare Workers: A Study of Public Health Facilities

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Abstract

Biological, chemical, physical, and psychological risks are among a variety of occupational health hazards that healthcare workers (HCWs) in public hospitals frequently encounter. For their own safety as well as the protection of their patients, it is essential that healthcare workers are aware of these risks and the appropriate safeguards. The Cluster and stratified Sampling technique was used to collect the data. The sample size of 410 healthcare workers was considered in public hospital on prevalent health risks and suitable preventative measures were evaluated in this cross-sectional survey. A standardized questionnaire including various hazards, occupational risks and protective measures was used to gather data. The findings showed that the healthcare workers have 79.92% awareness level towards health hazards and occupational risks whereas 75.30% awareness level towards protective measures. The findings suggest that the healthcare workers have moderate level of general knowledge, with noticeable deficiencies in areas like identifying hazards and using personal protective equipment (PPE) correctly. Awareness scores and factors including job category, years of experience, and previous safety training were found to be significantly correlated. In order to raise knowledge and encourage safe working practices in public healthcare settings, the study highlights the necessity of consistent, focused occupational health training programs.

Keywords: Awareness; Health hazards; Protective measures; Health facilities; Healthcare workers

Introduction

Work-related deaths accounted for 6.71 percent of all deaths worldwide. Africa has the highest fraction of work-related deaths (7.39%), followed by Asia and the Pacific (7.13%) and Oceania (6.52%). Work-related illnesses were responsible for 2.6 million of these deaths, while work-related accidents claimed 330,000 lives [1].

Several challenges face the health industry in developing countries, including organizational issues with resource distribution, severe workloads caused by a shortage of human resources, and prioritizing. Because exposed workers have high rates of linked morbidity and mortality, occupational health and safety is an important issue [2]. Massive body mechanics are required for the job, including prolonged body contact, high force manual techniques, repetitive chores, patient body support, and the display of restricted postures during specific maneuvers [3]. The hospital staff mainly housekeeping staff is involved in cleaning and patient movement related work have more risks of getting ergonomic risks which may lead to injury, backache, fracture etc. According to World Health Organisation, 2.5% of global burden includes

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Citation: Naveen Malik, Gunjan Tripathi. Awareness on Health Hazards and Protective Measures Among Healthcare Workers: A Study of Public Health Facilities. International Journal of Plant, Animal and Environmental Sciences. 15 (2025): 126-131.

Received: August 01, 2025
Accepted: August 13, 2025
Published: August 22, 2025

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DOI:10.26502/ijpaes.4490182

HIV infection of healthcare workers due to occupational or workplace exposures [4]. There are many different types of heat-related illnesses, ranging from minor ailments like heat fatigue and stress to serious problems like heat stroke. If treatment is not received, mortality may reach 10% [5].

All hospital employees are concerned about proper lighting, particularly those on the night shift. A safe hospital environment and personnel safety in emergency situations are enhanced by adequate emergency lighting. Even within the same region, hospitals usually have different working conditions [6].

Due to a general lack of knowledge, instruction, and organized training about HIV infection prevention and what to do in the event of an unintentional exposure, it is estimated that 90% of these occupational exposures take place in developing nations [7]. The "Occupational Health and Safety" law serves as a barrier against workplace accidents and illnesses, and it also requires that workers receive training on the subject as part of a preventative strategy [8].

This study mainly focussed on the awareness of healthcare workers towards health hazards, occupational risks and protective measures in public health facilities of Haryana.

Objectives of the Study:

After reviewing the literature and increasing problems of occupational hazards and safety leads to certain researches by the researcher to cope up with the issues faced by the workers at workplace. This study has identified two objectives which are as following:

Objective 1: To assess the awareness level of healthcare workers about health hazards and occupational risks in hospital.

Objective 2: To assess the awareness level of healthcare workers about Protective Measures in hospital.

Materials and Methods

A cross sectional survey was done to investigate the awareness level of healthcare workers. The cluster and stratified sampling technique was used to collect the data from civil hospitals of four districts of Haryana namely Sonepat, Panipat, Karnal and Kurukshetra. A total of 12 Questions regarding Awareness about health hazards, occupational risks and protective measures used to collect the data from 410 respondents of various categories of staff which are nursing staff, housekeeping staff, radiology technician, laboratory staff and dialysis staff of civil hospitals. Cochran's modified formula for finite population was used to identify the sample size. The sample size of 410 was taken greater than the sample size calculated by Cochran's modified formula to increase the accuracy and to decrease the error. The Questionnaire includes two sections in which first section includes the demographic details of the respondents and second section related to the physical, chemical, biological and ergonomic hazards and protective measures. Five point likert scale was used to collect the responses of the respondents. Later on, this scale helped in data analysis. SPSS version 27 and Microsoft Excel were used for the data analysis. The data analysis includes the mean, percentages, bar diagram for representation of data.

A pilot study was done to ensure the reliability of questionnaire. After that the questionnaire was given to the target population. The awareness level of the healthcare workers was investigated using the Bloom's Criteria. According to this criteria the overall Awareness was categorized, as good if the score was between 80 and 100% i.e. >=80%, moderate if the score was between 60 and 79%, or < 80% and poor if the score was less than 60% [9,10].

Results

Table 1 show that male healthcare workers account for 53% and female accounts for 47% out of total respondents. Out of all, the respondents of age group of 30-34 years include 31.46% followed by age group of 25-29 years with 30.98% inclusion. The age groups of 20-24 years, 35-39years, 40 years and above have 13.66%, 15.37%, 8.54% respectively. As per the qualification, the respondents with diploma have higher number of 152 and percentage of 37.07% followed by the graduate respondents of 150 and 36.59%. Only 2 respondents were having 10th qualification which is very less amongst all. Table 1 also shows that mostly respondents have salary range of 2.5 lakh to 5 lakh. The job position category shows that out of total (410) respondents the nursing staff accounts for 63.17%, followed by housekeeping staff i.e. 20.98%, rest of the respondents are covered by the radiology technician, dialysis staff, and laboratory staff. The distribution of respondents suggests that the future challenges can be overcome with the help of identification of population for improvement in occupational safety and related areas.

Table 2 demonstrates that female respondents from a variety of departments, including nursing, housekeeping, laboratory, radiology, and dialysis, are more aware about occupational dangers, health hazards, and workplace safety procedures. Regarding job risks and health hazards, male respondents are 79.07% aware, compared to 80.86% for female respondents. The responses on protective measures to prevent occupational risks and health hazards that occur at work on a daily basis at various levels reveal that the female respondents are 75.93% and 74.75% aware of protective measures, respectively.

Table 3 and Figure 1 illustrate how respondents from various departments and age groups differed in their level of awareness regarding work risks and health concerns. The laboratory staff has the highest awareness among all staff categories in the 20–24 and 25–29 age groups (81.00%

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Table 1: Demographic analysis.

Variable	Frequency (N=410)	Percent
Gender		
Female	194	47%
Male	216	53%
Age Group		
20 - 24 years	56	13.66%
25 - 29 years	127	30.98%
30 - 34 years	129	31.46%
35 - 39 years	63	15.37%
40 years and above	35	8.54%
Qualification		
10th	2	0.49%
12th	43	10.49%
Diploma	152	37.07%
Graduate	150	36.59%
Post Graduate	63	15.37%
Salary per Year		
1 lakh to 2.5 lakh	18	4.39%
2.5 lakh to 5 lakh	248	60.49%
Above 5 lakhs	144	35.12%
Job Position		
Housekeeping Staff	86	20.98%
Laboratory Staff	23	5.61%
Nurse	259	63.17%
Radiology Technician	37	9.02%
Dialysis Staff	5	1.22%

Table 2: Influence of Gender on Awareness Level.

S. No.	Gender	Awareness level towards health hazards, occupational risks	Awareness level towards protective measures
1	Female	80.86%	75.93%
2	Male	79.07%	74.75%

and 81.88%, respectively), while the radiology crew has the lowest awareness (60.00% and 72.25%, respectively). The nursing staff had the highest degree of awareness in the 30-34 and 35-39 age groups, at 81.76% and 77.02%, respectively. In the 35–39 age range, the dialysis staff has the lowest awareness level (63.33%). Additionally, laboratory employees who are 40 years of age or older are more conscious of work risks and health concerns.

The relationship between the respondents' age, job position, and awareness level is shown in Table 4 and Figure 2. According to Table 4, nursing staff members who are between the ages of 20 and 24 have a higher degree of awareness (77.50%), followed by those who are between the ages of 30 and 34 and those who are between the ages of 35 and 39 (77.57%).

The laboratory staff is most aware of preventive measures when they are 25–29 years old and 40 years of age or older. Radiology technicians in the 20–24 and 40+ age groups have the lowest awareness levels, scoring 61.25% and 64.17%, respectively. Dialysis staff members are between the ages of 25 and 29 and 35 and 39, with awareness levels of 67.50% and 55.00%, respectively. With a score of 70.50%, the laboratory staff has the lowest score among those aged 30-34.

Discussion

Objective 1: To assess the awareness level of healthcare workers about health hazards and occupational risks in hospital

Based on factors including gender, age, education, job title, and years of experience, this section shows how

Table 3: Influence of Age and Job Position on Awareness towards health hazards and occupational risks.

S. No.	Age Group	Awareness Level				
		Nurse	Housekeeping Staff	Laboratory Staff	Radiology Technician	Dialysis staff
1	20 – 24 years	78.93%	79.71%	81.00%	60.00%	
2	25 – 29 years	80.26%	77.07%	81.88%	72.25%	75.00%
3	30-34 years	81.76%	79.38%	80.00%	78.33%	
4	35-39 years	77.02%	73.75%	68.75%	69.50%	63.33%
5	40 years and above	78.71%	80.50%	86.25%	79.50%	

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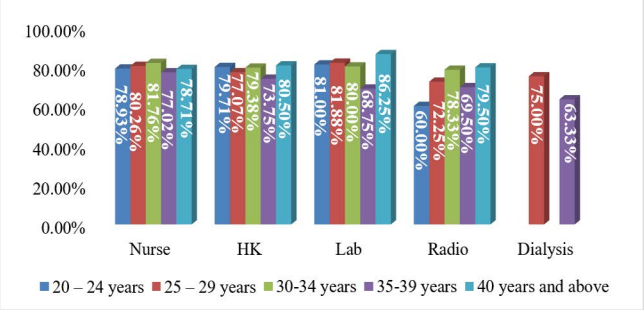

Figure 1: Influence of Age and Job Position on Awareness towards health hazards and occupational risks.

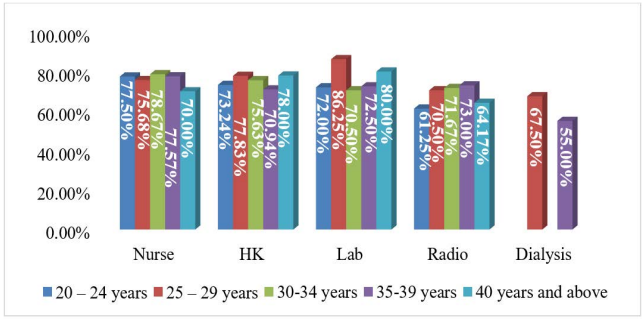

Figure 2: Influence of Age and Job Position on Awareness towards protective measures.

Table 4: Influence of Age and Job Position on Awareness towards protective measures.

S. No.	Age Group	Awareness Level				
		Nurse	Housekeeping Staff	Laboratory Staff	Radiology Technician	Dialysis staff
1	20-24 years	77.50%	73.24%	72.00%	61.25%	
2	25-29 years	75.68%	77.83%	86.25%	70.50%	67.50%
3	30-34 years	78.67%	75.63%	70.50%	71.67%	
4	35-39 years	77.57%	70.94%	72.50%	73.00%	55.00%
5	40 years and above	70.00%	78.00%	80.00%	64.17%	

knowledgeable healthcare personnel are of workplace risks and health hazards. The results of awareness level are interpreted using Bloom's cutoff point or criteria [10,12,13]. According to Bloom's cut-off point, the total awareness score was classified as good if it was between 80 and 100%, or >=80%, moderate if it was between 60 and 79%, or <80%, and low if it was less than 60% [10,12,13]. This study demonstrates that female respondents in a number of categories, including nursing staff, laboratory staff, housekeeping staff, dialysis staff, and radiology technician, have a good level of awareness regarding health hazards and occupational risks in government hospitals. This indicates that females have a good level of awareness, while male respondents have a moderate level [14,15]. While nurses, housekeeping workers, and radiology technicians have a moderate level of awareness, laboratory staff members in the 20–24 age range have a good level. While the housekeeping staff, radiology technician, and dialysis staff have a moderate degree of awareness of the health hazards and work dangers, the laboratory and nurse have a good level of awareness among those aged 25 to 29 years.

According to a study on health hazards by Elbaz et al. [16], 65.5% of the female healthcare professionals in the study were correctly informed about how these hazards affect reproductive health, and 68.1% of the workers had a good degree of awareness about occupational dangers.

According to a study by Prajwal et al., 43.4% of respondents were fully aware of the risks to occupational safety and health, compared to 42.7% for latex allergies, 52.7% for dermatitis and respiratory conditions, and 42% for unintentional fires. 39.4% were caused by burns, 36.7% by electric shocks, 59.4% by biological infections, and 54% by respiratory ailments. Skin allergies, the importance of handwashing (78.0%), the need for the Hepatitis B vaccine (78%), the use of first aid kits in minor accidents (71.4%), the reporting of incidents (60%), unawareness of the use of personal protective equipment (PPE) to prevent respiratory issues (67.4%), unintentional falls (44%), and the documentation system for incident reporting (58%). According to the participants' total scores, 73.3% of them comprehended all of the occupational health and safety topics covered in the survey. Of those, fewer than 1% were only marginally aware, 3.3% were somewhat aware, and 22.6% were aware. Nurses in emergency departments had a high level of knowledge regarding illnesses linked to healthcare, according to research by Parmeggiani et al. [15] on healthcare workers.

The purpose of the study was to assess healthcare workers' knowledge of occupational risks and health hazards in hospital environments. Healthcare workers' awareness of occupational dangers and health hazards in the hospital was moderate, at 79.92%. The results also showed that although many healthcare workers have a basic awareness of the dangers and hazards associated with their jobs, their awareness levels vary, even if the awareness level was judged to be moderate. This discrepancy raises the possibility that some people or divisions are more knowledgeable than

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DOI:10.26502/ijpaes.4490182

others, possibly as a result of variations in education, work history, or information availability. Higher awareness among employees was linked to better performance outcomes because they showed better adherence to safety procedures and more proactive attitudes toward risk mitigation. The existence of moderate correlations in certain awareness-related areas, however, raises the possibility that current training initiatives fall short in meeting the varied demands of all healthcare professionals. This emphasizes the need for specialized and focused educational programs that address important knowledge gaps, especially in high-risk processes and settings. Raising awareness through organized, inclusive training programs can boost workplace efficiency and safety generally in addition to improving individual performance.

Objective 2: To assess the awareness level of healthcare workers about Protective Measures in hospital

Based on factors including gender, age, education, job title, and years of experience, this section shows how knowledgeable healthcare professionals are of preventative measures. The results of awareness level are interpreted using Bloom's cutoff point or criteria [10,12,13].

According to the survey, both male and female respondents are only moderately aware of the safety precautions taken in medical settings. The respondents' awareness of preventative measures is moderate across all age groups. According to the Bloom cutoff criterion, laboratory employees aged 25 to 29 exhibits a high level of knowledge regarding safety measures, whereas other respondents, such as housekeeping staff, radiology technicians, dialysis staff, and nurses, have a moderate level of awareness. Respondents with a moderate level of awareness on safety measures include nurses, housekeeping staff, radiology staff, laboratory workers, and dialysis staff aged 30-34 and 35-39. Respondents who work in laboratories and are 40 years of age or older have strong understanding of protective measures, whereas those who work in other departments, such as nursing, radiology, dialysis, and cleaning, have a middling level of knowledge.

According to Salem et al. [14], healthcare practices indicate that students' clinical performance and understanding have significantly improved after the intervention. After the intervention, 79.9% of the students showed high understanding of risk assessment, compared to 47.2% who had poor knowledge before.

In a study, Durduran et al. [8] found that medical professionals and nurses knew more about safety procedures and had more favorable opinions about them than nursing assistants. To close the knowledge gap between theory and practice, the study emphasized the value of consistent training and the supply of sufficient safety measures [11]. The healthcare staff had a moderate level of awareness and understanding about safety procedures.

With an emphasis on their comprehension and implementation of safety procedures, the study aimed to evaluate healthcare professionals' awareness of hospital safety precautions. Healthcare professionals' awareness of hospital protective measures was moderate, at 75.30 percent. The findings showed that healthcare professionals have a moderate understanding of safety precautions, including using personal protective equipment (PPE) appropriately, washing their hands, and following infection control guidelines. According to this research, awareness is crucial in influencing the attitudes and behaviors of healthcare professionals, which in turn affects their capacity to uphold a safe workplace. However, the study also found that healthcare personnel' knowledge of preventative measures varied, with some staff members showing inconsistent adherence or little information. This variation highlights weaknesses in the current training initiatives, which might not be sufficiently thorough or customized to meet the unique requirements of every employee. Reinforcing education and training programs that emphasize the practical implementation and adherence to preventive measures is crucial to closing these gaps. Furthermore, the adoption of improved information-sharing tools like seminars, online courses, and peer-to-peer training sessions may aid in standardizing knowledge and procedures throughout the workforce. Hospitals may guarantee that all healthcare personnel are prepared to defend themselves and others by giving regular and focused training efforts top priority. This will improve overall safety and performance results.

Conclusion

This study highlights new information about healthcare workers' awareness of workplace dangers, health hazards, and the use of protective gear in healthcare environments. Although most participants showed a rudimentary comprehension of typical occupational dangers, including ergonomic strain, needlestick injuries, and infectious agent exposure, gaps in thorough knowledge and regular adherence to protective practices are still noticeable. Awareness levels were strongly impacted by variables like years of experience, professional designation, and training availability.

Recommendation

Crucially, the results highlight the necessity of consistent, focused training initiatives, well-defined institutional guidelines, and enhanced accessibility to personal protective equipment (PPE) in order to guarantee the security and welfare of healthcare workers. In order to reduce workplace dangers and improve occupational health standards, it is crucial to promote a culture of safety and to reinforce preventative measures and risk communication. Future studies should concentrate on assessing the efficacy of training initiatives

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DOI:10.26502/ijpaes.4490182

and investigating obstacles to adherence to safety protocols in various healthcare roles and environments.

Conflict of Interest: There is no conflict of interest.

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