

Assessment of Knowledge of Nurses Towards Occupational Hazards and Health Safety Measures

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(Received, 04th March 2025, Accepted 18th March 2025, Published 31st March 2025)

Abstract: Nurses are regularly exposed to various occupational hazards in healthcare settings, making their awareness and knowledge of health safety measures essential to reduce risk and improve patient care outcomes. **Objective:** To evaluate the level of knowledge of nurses about occupational hazards and health safety measures in a tertiary care hospital. **Methods:** A prospective cross-sectional study was conducted at Allama Iqbal Teaching Hospital, D.G. Khan, from February 2024 to February 2025. A total of 100 nurses working across departments including ICU, neurology, medical, urology, pediatrics, obstetrics, nephrology, and orthopedics were included. Data were collected using a structured questionnaire containing 27 items related to general awareness of occupational hazards and specific types of workplace hazards (physical, chemical, mechanical, electrical). The level of knowledge was quantified, and associations with demographic variables such as age and experience were statistically analyzed using SPSS. **Results:** The overall knowledge score regarding occupational hazards and health safety was 74%. Good knowledge of general concepts was found in 45% of nurses. Full awareness was reported for physical hazards in 42%, chemical hazards in 49%, and mechanical/electrical hazards in 40% of respondents. A statistically significant association was observed between knowledge levels and nurses' age and work experience ($p < 0.05$). **Conclusion:** Nurses demonstrated a satisfactory level of knowledge regarding occupational hazards and health safety. However, efforts should be made to reinforce the practical application of this knowledge through regular training and hospital-based safety protocols to ensure safer working environments.

Keywords: Health, Knowledge, Nurses, Safety

[How to Cite: Amna K, Rehman S. Assessment of knowledge of nurses towards occupational hazards and health safety measures. *Biol. Clin. Sci. Res. J.*, 2025; 6(3): 109-111. doi: <https://doi.org/10.54112/bcsrj.v6i3.1637>

Introduction

Medical personnel constitute 12% of the total work force all over the world. Healthcare staff are at risk of occupational hazards including physical and physiological damage in hospitals and research centers daily. These hazards are not only constant exposure diseases and infections due to direct contact with patients but there is always a threat of accidents (1). Radiations, drug addiction, stress, assault, injuries and harmful chemicals also make the work place unsafe for the staff (2).

Unsafe health environments increase the morbidity and mortality risk of workers which can negatively impact the patient care. A major reason for the chemical, biological and physical hazards is the lack of awareness among the staff about safety measures (3,4). Evaluating the knowledge of health hazards and providing required awareness for management of these hazards is essential for improving quality of care. As most of the patient care is handled by nurses at the instruction of physician, the level of knowledge about occupational hazards and safety measures should be top notch.

This study was conducted to evaluate the level of knowledge of nurses about occupational hazards and health safety measures.

Methodology

A prospective study was conducted at the Allama Iqbal Teaching Hospital, D.G. Khan from February 2024 to February 2025. Hundred nurses working in the ICU, neurology, medical, urology, pediatrics and obstetrics, nephrology and orthopedic department were selected for the study. Nurses on rotation and those hired on a temporary contract were excluded. Respondents agreed for their data be used for research. The ethical committee of the hospital approved the study.

Data collection tool was a self-designed questionnaire. Part one of the questionnaire recorded demographic information including gender, marital status, age, department and experience. The second part assess

nurses' awareness through 27 questions on six dimensions; general information about occupational hazards, its types and hazards management. The responses could be provided from 1 to 5 with 1 being not aware and 5 being fully aware. The maximum score possible was 135. A higher score showed high knowledge and a low score showed poor knowledge. The primary outcome of study was to identify the level of knowledge about occupational hazards and health safety among nurses.

All data was analyzed by SPSS version 20. Demographic data was presented as frequency and percentage. Age and work experience was also presented as mean \pm SD. The association between demographics such as age and experience and respective scores were measured.

Results

A total of 100 nurses participated in the study with a mean age of 29.1 ± 6.8 years. 95 (95%) were females and 65 (65%) were married. Half of the participants had a 5-10 years' experience with the mean experience of population being 8.0 ± 5.8 years. The demographic factors of nurses are shown in Table I. Overall knowledge about occupational hazards and health safety was 74%. A good knowledge about general concepts of occupational hazards and safety was noted in 45% nurses where the full awareness percentage was 47% for occupational hazards and 49% for medical consequences for these hazards (Table II). 29% participants were moderately aware of the types of occupational hazards and 23% were fully aware. There was a 42% incidence of full awareness regarding physical hazards with good knowledge about accidental falls in 45%, about hearing problems in 44% and about headaches in 46%. 49% participants were fully aware of the chemical hazards including 43% had knowledge about latex allergies and 54% about skin and breathing problems. 40% nurses were fully aware of mechanical and electrical hazards including 41% had knowledge about accidental fires, 40% about burns, and 28% about shocks. There was a significant association between knowledge and age and experience.



Table 1: Participants' demographics

Factors	N (%)
Age	
21-30 years	55 (55%)
31-40 years	35 (35%)
41-50 years	8 (8%)
51-60 years	2 (2%)
Gender	
Male	5 (5%)
Female	95 (95%)
Experience	
1 year or less	15 (15%)
5-10 years	50 (50%)
10-15 years	30 (30%)
More than 15 years	5 (5%)
Marital status	
Single	35 (35%)
Married	65 (65%)

Table 2: Awareness about occupational hazards and health safety

Dimensions	N(%)
General awareness	45 (45%)
Physical hazards	42 (42%)
Biological hazards	60 (60%)
Mechanical/ electrical hazards	40 (40%)
Chemical hazards	49 (49%)
Practices for occupational safety	56 (56%)

Discussion

Healthcare workers often suffer from occupational hazards and struggle with management skills to cope with them. This study was conducted to evaluate the knowledge level of nurses regarding occupational hazards and health safety. Overall knowledge about occupational hazards and health safety was 74%. Previous studies conducted in other countries showed similar results (5, 6, 7). However, Odonkor and Sallar reported a 96% good knowledge rate in nurses regarding occupation health and safety, which is significantly higher than our study (8).

There was a significant relationship of knowledge with age and work experience in our study. However, a study by Ahmad and Shareef contradicts the association between awareness level and age but recognized the correlation of overall knowledge and experience (9).

A good knowledge about general concepts of occupational hazards and safety was noted in 45% nurses where the full awareness percentage was 47% for occupational hazards and 49% for medical consequences for these hazards. Prajwal et al also assessed the data from 150 nurses in India and reported a 40% general knowledge about occupational health safety. The similarity in results may be due to similar health care structure and environment in neighboring countries (10).

A total of 60% nurses had a good knowledge about biological hazards including blood borne infections and pathogens and allergies. This finding is significantly higher than reported in a Nepalese study which showed 46% awareness about biological hazards but the knowledge about their management was satisfactory in 66% nurses (11).

There was a 42% incidence of full awareness regarding physical hazards with good knowledge about accidental falls in 45%, about hearing problems in 44% and about headaches in 46%. This incidence was significantly lower than Amare et al where 66.2% nurses were fully aware of physical hazards (12). 49% participants were fully aware of the chemical hazards including 43% had knowledge about latex allergies and 54% about skin and breathing problems. Our results are significantly

lower than reported by Sabita et al where 73% nurses answered correctly about chemical hazards (13).

Conclusion

The knowledge of nurses towards occupational hazards and health safety was satisfactory among nurses. However, attention is still needed for practice of this knowledge in healthcare centers.

Declarations

Data Availability statement

All data generated or analysed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department concerned. (IRBEC-MMNCS-08445s-24)

Consent for publication

Approved

Funding

Not applicable

Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution

KA (MSDS),

Manuscript drafting, Study Design,

Review of Literature, Data entry, Data analysis, and drafting article.

SR (Nursing Officer), *Conception of Study, Development of Research Methodology Design,*

All authors reviewed the results and approved the final version of the manuscript. They are also accountable for the integrity of the study.

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