Journal of Neonatal Surgery
ISSN(Online): 2226-0439
Vol. 14, Issue 32s (2025)
https://www.jneonatalsurg.com

OPEN ACCESS

Perception of Personal Protective Equipment (PPE) Use and Its Barriers in Clinical Settings

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Cite this paper as: Anjali Sharma, Aqsa Hussain, Gunjan, Asmita Gupta, Deepanshu Bhati, Ishita Kumari, Manas Bhadoriya, Jai Bhati, Dr. Hemant Kumar Garg, Dr. Col. Brij Mohan, (2025) Perception of Personal Protective Equipment (PPE) Use and Its Barriers in Clinical Settings. *Journal of Neonatal Surgery*, 14 (32s), 8322-8326.

ABSTRACT

Background: Personal Protective Equipment (PPE) is essential for infection control and occupational safety in clinical environments. Despite its proven efficacy, compliance remains suboptimal due to various perceptual and systemic barriers.

Objective: To assess the perception of PPE use and identify barriers among healthcare trainees and professionals in clinical settings.

Methods: A cross-sectional study was conducted among 250 participants: 100 MBBS students/interns, 50 nursing students, and 100 nurses/technicians. A 15-item Likert-scale questionnaire was developed to evaluate perceptions and barriers. Data were analyzed using descriptive statistics, ANOVA, and thematic analysis for open-ended responses.

Results: While 82% of participants acknowledged the importance of PPE, only 61% reported consistent usage. Major barriers included discomfort (68%), lack of availability (54%), and time constraints (47%). Statistically significant differences ($p < 0.05$) were observed between student and professional groups in perceived risk and compliance behavior.

Conclusion: Although awareness of PPE is high, practical barriers hinder optimal usage. Targeted training, ergonomic improvements, and institutional support are essential to enhance compliance and reduce occupational risk.

Keywords: *Personal protective equipment (PPE), PPE kit use, barriers for PPE use, clinical settings*

1. INTRODUCTION

Personal Protective Equipment (PPE) forms the cornerstone of infection prevention and occupational safety in healthcare. Despite its critical role, adherence to PPE protocols varies widely across clinical settings. This study explores the perception and barriers to PPE use among healthcare students and professionals.

2. OBJECTIVES

- To assess perception of PPE use among healthcare trainees and professionals.
- To identify key barriers affecting PPE compliance.
- To compare perception across different professional groups.

3. METHODOLOGY

Study Design: Cross-sectional descriptive study **Sample Size:** 250 participants

- MBBS students/interns: 100
- Nursing students: 50
- Nurses and technicians: 100

These subjects were spread across National Institute of Medical Sciences, Jaipur, Rajasthan, Rajasthan and Government Institute of Medical Sciences, Gautam Buddha Nagar, Uttar Pradesh, India.

Sampling Technique: Stratified random sampling

Tool: 15-item Likert-scale questionnaire (1 = Strongly Disagree to 5 = Strongly Agree)

Data Collection: Online and paper-based survey

Analysis: SPSS v26 for descriptive statistics, ANOVA, and thematic coding of open-ended responses

4. QUESTIONNAIRE: 15-ITEM LIKERT SCALE

Item No.	Statement
1	I understand the importance of Personal protective equipment (PPE) in preventing infections.
2	I feel confident in using PPE correctly.
3	PPE is readily available in my clinical setting.
4	PPE use is emphasized during clinical training.
5	I consistently use PPE during patient interactions.
6	PPE interferes with my ability to perform clinical tasks.
7	PPE causes physical discomfort during prolonged use.
8	Time constraints prevent me from using PPE properly.
9	I believe PPE reduces my risk of contracting infections.
10	Supervisors monitor and encourage PPE use.
11	I have received adequate training on PPE protocols.
12	Peer behavior influences my PPE usage.
13	I avoid PPE when I perceive the patient as low-risk.
14	PPE use is enforced strictly in my institution.
	15. I would benefit from refresher training on PPE guidelines.

Item No. Statement

5. RESULTS

Demographics:

- Mean age: 26.4 years
- Gender: 58% female, 42% male

Perception Scores:

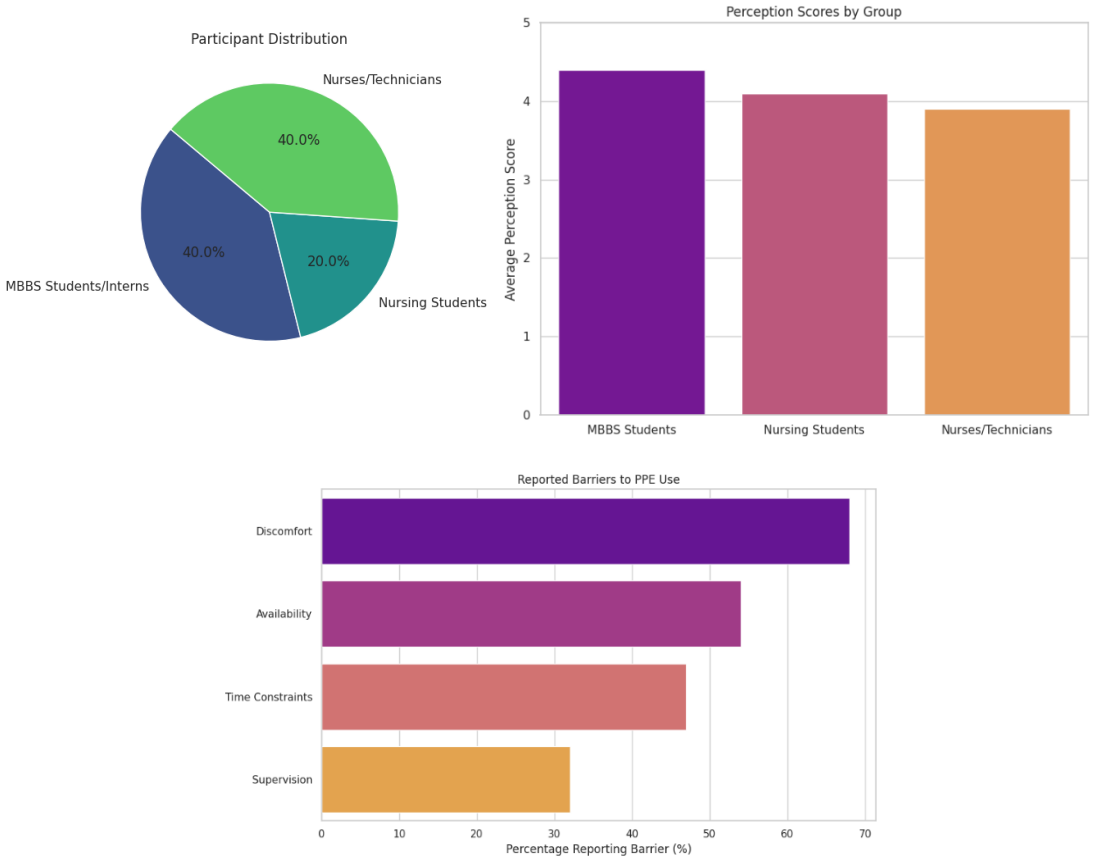
- Mean perception score: 4.2/5
- MBBS students: 4.4
- Nursing students: 4.1
- Nurses/Technicians: 3.9

Barriers Identified:

- Discomfort (68%)
- Limited availability (54%)
- Time constraints (47%)
- Lack of supervision (32%)

Statistical Findings:

- ANOVA revealed significant differences in perception scores between MBBS students and nurses ($p = 0.03$)
- Positive correlation between training exposure and PPE compliance ($r = 0.62$)



6. DISCUSSION

The findings of this study reveal a nuanced understanding of PPE perception across different healthcare roles. While the overall perception score was favorable (mean 4.2/5), significant disparities emerged between students and practicing professionals. MBBS students and interns demonstrated the highest perception scores, likely attributable to recent academic exposure and structured training modules. In contrast, nurses and technicians, despite their frontline roles, reported lower scores—suggesting a potential gap between theoretical knowledge and practical reinforcement.

Barriers such as discomfort (68%) and limited availability (54%) were consistent with global literature, underscoring the need for ergonomic redesign and robust supply chain management. Time constraints (47%) and lack of supervision (32%) further highlight systemic inefficiencies that hinder compliance. These findings align with Houghton et al. (2020), who emphasized that behavioral and institutional factors significantly influence PPE adherence.

Interestingly, peer influence and perceived patient risk also shaped PPE behavior. Participants admitted to selectively using PPE based on perceived threat, which raises concerns about subjective risk assessment and inconsistent protocol adherence. This behavior reflects the need for continuous education and reinforcement of universal precautions, regardless of patient profile.

The study also revealed that institutional enforcement and supervisor engagement play a critical role in shaping PPE culture. Participants who reported active monitoring by supervisors showed higher compliance rates, suggesting that leadership visibility and accountability mechanisms can positively influence behavior.

7. CONCLUSION

This study confirms that while awareness of PPE is high among healthcare trainees and professionals, practical barriers continue to impede consistent usage. Discomfort, availability issues, and time pressures are not merely logistical challenges—they reflect deeper systemic and behavioral gaps that must be addressed through targeted interventions.

To foster a culture of safety, institutions must go beyond training and ensure that PPE is accessible, comfortable, and integrated seamlessly into clinical workflows. Supervisory engagement, peer modeling, and periodic refresher courses can reinforce positive behavior and reduce complacency.

Ultimately, improving PPE compliance is not just a matter of individual responsibility—it is a collective institutional mandate. By addressing both perceptual and structural barriers, healthcare systems can enhance occupational safety, reduce infection transmission, and uphold the integrity of patient care.

8. RECOMMENDATIONS

- Regular PPE training and audits
- Ergonomic redesign of PPE
- Institutional policies for strict enforcement
- Peer-led awareness campaigns

9. ACKNOWLEDGEMENT:

The authors are thankful to the NIMS Jaipur and GIMS Greater Noida, U.P. for the help rendered in carrying out this study.

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