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Effectiveness of Hand Hygiene Training Modules: Feedback from Medical and Paramedical Students and Paramedical Staff in Three Tertiary-Level Hospitals of India

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Abstract

Background: Hand hygiene is a critical component of infection control in healthcare settings. Despite established guidelines, compliance remains inconsistent among healthcare workers.

Objective: To evaluate the effectiveness of hand hygiene training modules and gather feedback from MBBS students, nursing and paramedical students, and paramedical staff across three tertiary-level hospitals in India.

Methods: A cross-sectional interventional study was conducted involving 100 MBBS students, 50 nursing and paramedical students, and 100 paramedical staff. Participants underwent a standardized training module based on WHO guidelines. Pre- and post-training questionnaires assessed knowledge and practices, while feedback forms evaluated training quality.

Results: Post-training scores showed significant improvement across all groups, with paramedical staff demonstrating the highest behavioral change. Feedback indicated high satisfaction with the training content and delivery.

Conclusion: Structured hand hygiene training modules effectively enhance knowledge and compliance among diverse healthcare personnel. Regular reinforcement and role-specific customization are recommended for sustained impact.

Keywords: Hand hygiene, training modules, infection control, healthcare workers, India, MBBS students, paramedical staff

1. Introduction

Healthcare-associated infections (HAIs) remain a major challenge in clinical settings, often resulting from poor hand hygiene. Despite the availability of guidelines from WHO and national bodies, compliance remains suboptimal. Training modules tailored to different healthcare roles can bridge this gap. This study investigates the effectiveness of such modules in improving hand hygiene knowledge and practices among medical and paramedical personnel.

2. Specific objectives

- To assess baseline knowledge and practices related to hand hygiene.
- To evaluate the effectiveness of structured training modules.
- To gather feedback on the training experience from different healthcare groups.

3. Methodology

Study Design

A cross-sectional interventional study conducted over three months.

Study Sites

Three tertiary-level hospitals located in different regions of India:

- Hospital A: NIMS&R Medical college, NIMS University, Jaipur 303121, Rajasthan, India
- Hospital B: Fortis Hospital, Malviya Nagar, Jaipur 302017, Rajasthan, India
- Hospital C: Government Institute of medical Sciences, Gautam Buddha Nagar, Greater Noida 201310, Uttar Pradesh, India

Participants

- 100 MBBS students
- 50 nursing and paramedical students
- 100 paramedical staff (technicians, nurses, ward assistants)

Intervention

A standardized hand hygiene training module based on WHO guidelines was delivered through:

- Interactive lectures
- Demonstrations
- Hands-on practice
- Visual aids and posters

Data Collection

- Pre-training and post-training questionnaires assessing knowledge and self-reported practices.
- Feedback forms evaluating module clarity, relevance, and engagement.

Ethical Considerations: Not deemed to be necessary for this study.

15-Item Questionnaire

(5-point scale: 1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree)

Section A: Knowledge Assessment (Pre/Post Training)

1. What is the recommended duration for hand washing with soap and water?
2. When should alcohol-based hand rub be used instead of soap and water?
3. Which parts of the hand are most commonly missed during hand hygiene?
4. What are the five moments of hand hygiene according to WHO?
5. Can gloves replace hand hygiene practices?
6. What is the minimum alcohol concentration recommended in hand rubs?
7. How does hand hygiene prevent healthcare-associated infections?

Section B: Practice and Attitude

8. How often do you perform hand hygiene before patient contact?
9. Do you feel confident in your hand hygiene technique?
10. Have you ever skipped hand hygiene due to workload or time constraints?
11. Do you encourage others to follow hand hygiene protocols?
12. Are hand hygiene facilities (soap, rub, sinks) easily accessible in your workplace?

Section C: Feedback on Training Module

13. Was the training module clear and easy to understand?
14. Did the practical demonstration improve your technique?
15. Would you recommend this training to your peers?

Analysis

Quantitative data analyzed using paired t-tests and ANOVA. Qualitative feedback categorized thematically.

4. Results

Knowledge Improvement

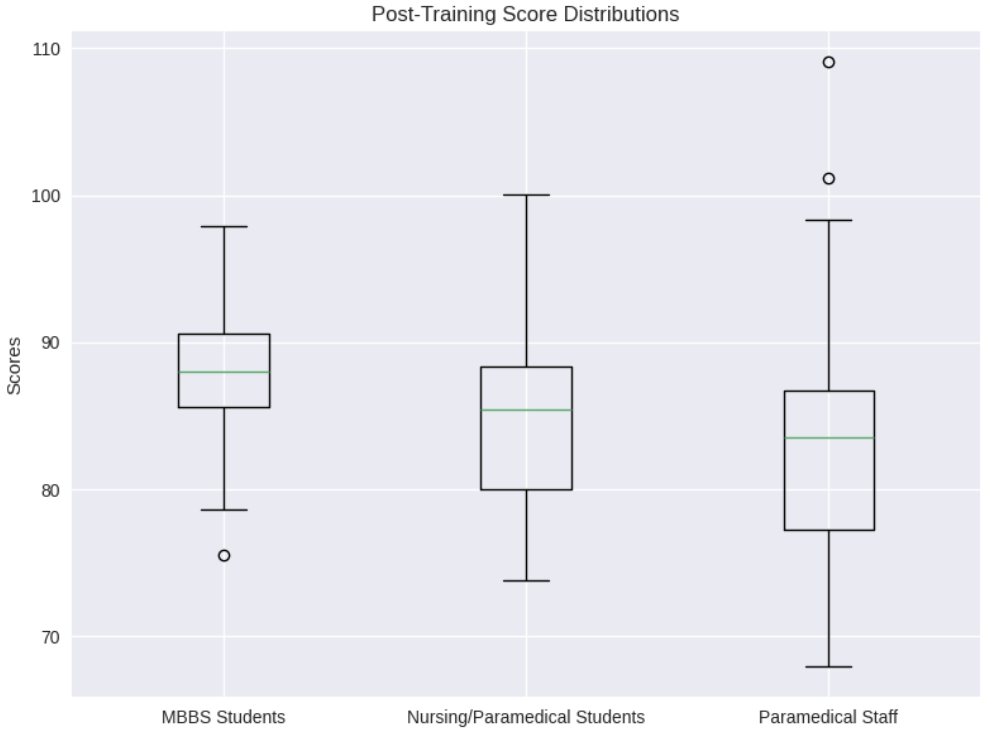
Group	Pre-training Score (Mean ± SD)	Post-training Score (Mean ± SD)	% Improvement
MBBS Students	65.2 ± 8.4	88.6 ± 6.1	35.9%
Nursing/Paramedical Students	58.7 ± 9.1	85.3 ± 7.4	45.3%
Paramedical Staff	52.3 ± 10.2	82.1 ± 8.7	56.9%

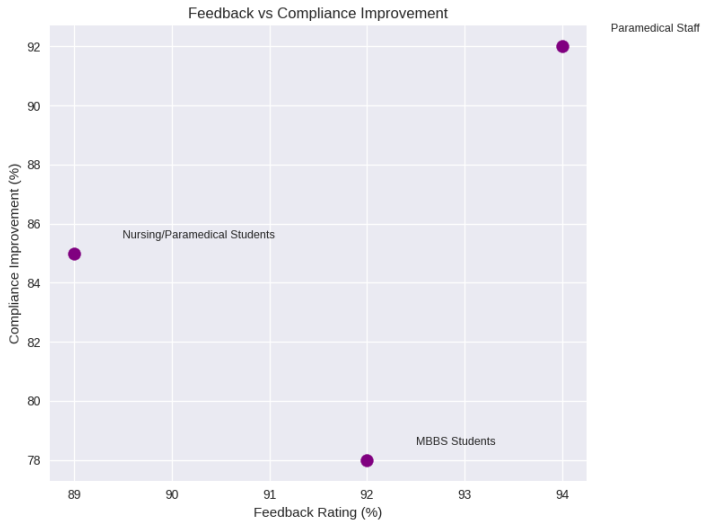
Behavioral Change

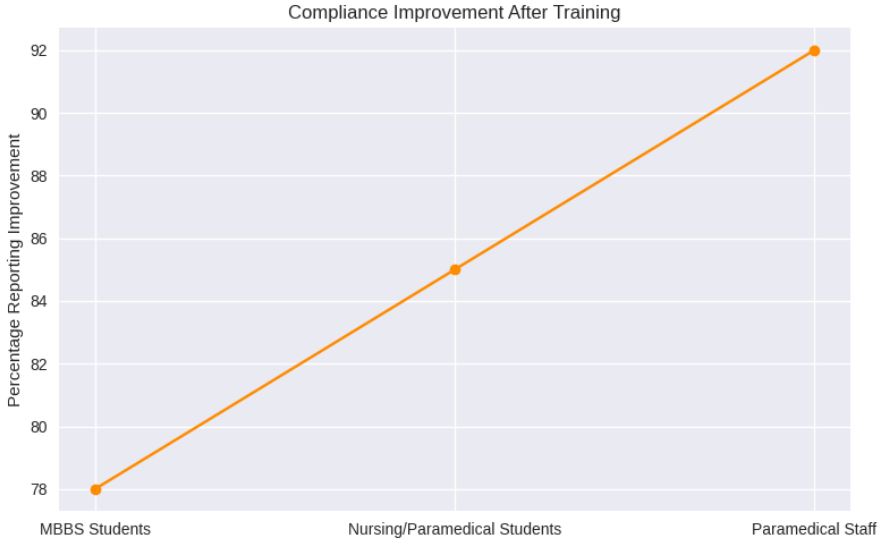
- 78% of paramedical staff reported increased hand hygiene compliance.
- 92% of MBBS students felt more confident in identifying hand hygiene lapses.
- 85% of nursing students began using alcohol-based hand rubs more consistently.

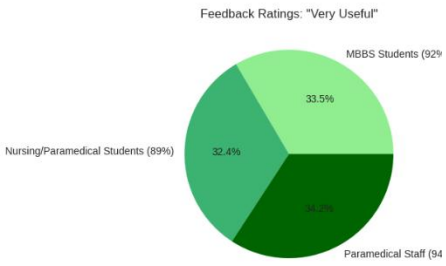
Feedback Summary

- 94% rated the module as “very useful.”
- 89% appreciated the practical demonstrations.
- Suggestions included more frequent refresher sessions and inclusion of real-case scenarios.









5. Discussion

The training module significantly improved knowledge and practices across all groups. Paramedical staff, often overlooked in training initiatives, showed the highest behavioral change, highlighting the need for inclusive

education. The feedback emphasized the value of interactive and practical components, aligning with adult learning principles.

6. Conclusion

Structured hand hygiene training modules are effective in enhancing awareness and compliance among healthcare workers. Regular reinforcement and tailored content for different roles can further improve outcomes. This study supports the integration of such modules into routine hospital training programs.

7. Recommendations

- Institutionalize hand hygiene training for all healthcare personnel.
- Conduct periodic refresher courses.
- Monitor compliance through audits and feedback loops.

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