

## A Study among Health Care Workers for Handhygiene Safety in Tertiary Care Hospital, Bundelkhand Region

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### Abstract

**Background:** Hand hygiene is crucial for preventing healthcare-associated infections and ensuring patient safety. Developed countries and developing countries have 5-10% and 40% respectively acquired infection, according to WHO. This study evaluates hand hygiene practices among healthcare workers in a tertiary care hospital in the Bundelkh and region of India.

**Aim & Objective:** To observe and evaluate the hand hygiene practices among doctors, nurses, and other healthcare staff in various departments of the hospital.

**Settings and Design:** Cross sectional study.

**Methods and Material:** A cross-sectional study was conducted over seven months, involving doctors, nurses, and ward boys across clinical departments. The World Health Organization (WHO) Hand Hygiene Observation Form was used for data collection. The study focused on hand hygiene practices before and after specific patient interactions.

**Statistical analysis used:** MS words excel sheet

**Results:** Of 521 healthcare workers observed, hand hygiene practices varied by department and professional category. The Medicine department exhibited the highest hand hygiene practices at 91%, while the TB and Chest department showed the lowest at 68.8%. Among professionals, nurses had a 74.8% hand hygiene actions, compared to 88.1% for consultants, 91.3% for senior residents, and 90.5% for junior residents. Non-PG junior residents and emergency medical officers achieved 100% hand hygiene practices. Hand hygiene was performed 82.6% of the time before touching patients and 92.1% before aseptic procedures. Hand hygiene was highest after body fluid exposure (95.1%) but lower after touching patients (82.8%) and their surroundings (81.3%).

**Conclusions:** Ensuring consistent hand hygiene practices across all departments and professional categories is essential for enhancing patient safety and infection control. Regular training according to WHO guidelines are important for improving hand hygiene practices.

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**Key-words:** Hand Hygiene, Health care worker, WHO observation form

**Key Messages:** Habits that alleviate the people from activity and prog them towards a slothful norm can cause lots of health issues causing chronic non-communicable diseases that afterward changes to near incurable outcomes.

## Introduction

Healthcare settings and organizations that are dedicated to improving patient safety must prioritize the surveillance and prevention of health care-associated infections, as they pose a significant threat to patient safety.<sup>1</sup>In healthcare, patient safety refers to the security of both patients, or clients, and healthcare professionals (HCPs). In the healthcare system, it is an organizational, management, financial, and clinical concern. A major factor influencing the quality of healthcare is patient safety culture. Patient safety places a strong emphasis on the reporting, examination, and avoidance of medical mistakes that frequently result in unfavorable health outcomes.<sup>2</sup> Rubbing the hands with Alcohol Based Hand Rubs internationally recommended as the preferred method for hand hygiene in the usual encounters with patients, except in case of handwashing with soap and water is advised.<sup>3</sup> Developed countries and developing countries have 5-10% and 40% respectively acquired infection, according to WHO.<sup>4</sup>For making hand hygiene safety effectively possible, it is essential to make familiar with many types of hand washing technique as well as the timing in which a particular type of hand washing technique is accomplish. In all type of health care settings, hand washing procedure is mainly responsible for prevention of infection and control procedure. That why poor hand hygiene increases the risk of hospital acquired infection causing a negative impact on treatment which causes several health complications and also prolong the length of hospital stay for patients.<sup>5</sup> Hand hygiene is a cost-effective procedure that plays an important role in infection control and patient safety at all level of health care.<sup>6</sup>Many Studies which have done before shown that patient safety culture is influenced by several factors, including organizational culture, leadership commitment to patient safety, staff education, knowledge and training, communication among health-care professionals, patient involvement, and reporting and learning from adverse events.<sup>7</sup> There are some factors which have an effect on patient safety culture, mainly due to workload, staffing pattern and the

available resources.<sup>8</sup> The assessment of patient safety culture is not only essential for improving patient safety outcomes but also for enhancing the quality of care delivered to patients. It is a fundamental responsibility of health-care organizations to provide safe and effective care to patients, and the assessment of patient safety culture is a critical step towards achieving this goal.<sup>9</sup>

In this context, the current research aims to examine the current hand hygiene practices among healthcare workers in a tertiary care hospital located in the Bundelkhand region.

**Aim & Objective:** To observe and evaluate the hand hygiene practices among doctors, nurses, and other healthcare staff in various departments of the hospital.

(This study is needed because antibiotic resistance is a serious public health issue, especially in tertiary healthcare settings and also helped reduce in patient load. Poor hand hygiene practices can help to spread drug-resistant infections, which complicate treatment and increase health risks. In the Bundelkhand region, this is the first tertiary care hospital, where healthcare resources are limited, it's crucial to understand how hand hygiene can prevent the spread of these infectious agents. By examining hand hygiene practices among healthcare workers, this study aims to highlight their importance in reducing infections and promote safer healthcare environments.)

## Materials and Methods

The study utilized a cross-sectional methodology. All medical professionals (doctor, nurse, and ward boy) from clinical departments of tertiary health care centres were included in this study, which lasted seven months. The study was approved by the institute ethics committee (Ref No. IEC/RDMC/Cert/12). The hospital was located in the Bundelkhand region of India. Data collection was conducted using the World Health Organization (WHO) Hand Hygiene Observation Form, a recognized tool worldwide<sup>1</sup>. Observers were strategically positioned to closely

monitor how healthcare workers practiced hand hygiene during routine patient care activities. The data collected in the research was analyzed using MS Excel. We used it to describe the data and draw conclusions from it. We examined the data more closely to identify any variations in hand hygiene practices across different healthcare departments and among various professional categories.

**Results**

**Table 1:** Healthcare staff’ hand hygiene habits fluctuate between hospital departments, which is indicative of variations in how hand hygiene practices are followed. Of the observed actions, 76.7% involve proper hand hygiene, indicating that the Emergency department has the highest level of hand hygiene practices. By contrast, the department of TB and Chest has the least amount of hand hygiene practices, with only 68.8% of acts observed following hand hygiene guidelines. Curiously, the department of medicine has a high overall hand hygiene action of 91.0%; a noteworthy fraction of recorded activities (9.0%) still does not follow adequate hand hygiene.

**Table-2:** The data from table 2 reveals varying levels of hand hygiene practices across different professional categories within the healthcare setting. Nurses/staff exhibit hand hygiene action of 74.8%, while consultants, senior residents, and junior residents demonstrate higher rates of 88.1%, 91.3%, and 90.5% respectively. Nurse practitioners, junior and emergency medical officers display perfect hand hygiene action of 100%, indicating exemplary commitment to hand hygiene. However, interns show a slightly lower hand hygiene practice at 81%.

**Table-3:** The percentage of instances where healthcare workers performed hand hygiene actions before and after specific tasks. Before touching the patient, hand hygiene was observed 82.6% of the time, while it was not performed in 17.4% of cases. Prior to aseptic procedures, hand hygiene practices were higher at 92.1%, with only 7.9% of instances lacking hand hygiene. After exposure to body fluids, hand hygiene was practiced in 95.1% of occurrences and missed in 4.9%. After touching the patient, hand hygiene was seen 82.8% of the time, with 17.2% Hand hygiene. Similarly, after touching patient surroundings, hand hygiene was performed 81.3% of the time, and not done in 18.8% of instances.

**Table 1: Department wise**

| Percentage of Hand Hygiene Action |           |            |
|-----------------------------------|-----------|------------|
|                                   | No        | Yes        |
| Emergency                         | 7(23.3%)  | 23(76.7%)  |
| Medicine                          | 7(9.0%)   | 71(91.0%)  |
| Surgery                           | 15(10.1%) | 133(89.9%) |
| Paediatrics                       | 15(15.3%) | 83(84.7%)  |
| Obstetrics/Gynaecology            | 15(15.5%) | 82(85.5%)  |
| Orthopaedics                      | 8(14.8%)  | 46(85.2%)  |
| TB & chest                        | 5(31.3%)  | 11(68.8%)  |

**Table 2: Professional Category**

| Percentage within hand Hygiene Action |                        |                     |            |
|---------------------------------------|------------------------|---------------------|------------|
|                                       |                        | Hand Hygiene Action |            |
|                                       |                        | No                  | Yes        |
| Professional Category                 | Nurse/Staff            | 31(25.2%)           | 92(74.8%)  |
|                                       | Consultant             | 15(11.9%)           | 111(88.1%) |
|                                       | Senior Resident        | 10(8.7%)            | 105(91.3%) |
|                                       | Junior Resident        | 12(9.5%)            | 114(90.5%) |
|                                       | Non-PG Junior Resident | 0(0%)               | 7(100%)    |
|                                       | INTERN                 | 4(19%)              | 17(81%)    |
|                                       | EMO                    | 0(0%)               | 3(100%)    |

**Table 3: Before/After**

| Percentage of Hand Hygiene Action |                                    |           |            |
|-----------------------------------|------------------------------------|-----------|------------|
|                                   |                                    | HH Action |            |
|                                   |                                    | No        | Yes        |
| Before/After                      | Before touching the patient        | 30(17.4%) | 142(82.6%) |
|                                   | Before aseptic procedure           | 8(7.9%)   | 93(92.1%)  |
|                                   | After Body fluid Exposure          | 4(4.9%)   | 77(95.1%)  |
|                                   | After touching the Patient         | 15(17.2%) | 72(82.8%)  |
|                                   | After touching patient surrounding | 15(18.8%) | 65(81.3%)  |

### Discussion

During the seven months data collection in tertiary care hospital, total 521 healthcare workers were observed for hand hygiene opportunities. In this study according to departmental category, medicine department exhibits highest level of hand hygiene practices (91%) but Krishnamoorthy Yuvaraj et al found in his study that medicine department exhibit 40% hand hygiene practices<sup>10</sup>. According to study which was done by Krishnamoorthy Yuvraj et al in Tamil Nadu found that 36%,42% and 34% hand hygiene actions performed in general surgery, paediatrics & obstetrics and gynaecology department respectively whereas in this study department like surgery (89.9%), pediatrics, obstetrics & gynecology (in range from 84.7% to 85.5%) exhibits relatively good hand hygiene practices. The TB and chest department exhibits low level of hand hygiene practices as compared to other departments.

The study done by Patil Vaibhav B. et al found that 68.7% consultants, 49% senior and junior residents doctors performed Hand hygiene practices<sup>11,13,15</sup>. Similar in another study which is done by Prabhu Deepthi j. et al found that 61% doctors performed better hand hygiene practices which is highest among all other professional categories<sup>12</sup>. But in current study according to professional category, Consultants, senior residents, and junior residents did hand hygiene practices about 88.1%, 91.3%, and 90.5%. Nursing staff, junior residents and emergency medical officers did even better, following hand hygiene practices perfectly. But interns didn't do as well, with only 81% followed the hand hygiene practices. Nurses and staff did pretty well too, with about 74.8% followed the hand hygiene practices.

The study done by Krishnamoorthy Yuvraj et al found that five moments of hand hygiene was 39% (Before touching a patient), 46.1% (before aseptic procedure), 51% (after body fluid exposure), 34% and 35% after touching the patients and their surroundings respectively<sup>10</sup>. But in this study five moments of hand hygiene found that, before touching the patient, 82.6% of hand hygiene actions were observed, indicating relatively good hand hygiene action in this aspect. However, the hand hygiene actions were lower before aseptic procedures (92.1%) and after body fluid exposure (95.1%). After touching the patient or their surroundings, hand hygiene actions were observed in 82.8% and 81.3% of instances, respectively.

In another study which is done by Anguraj Symphonia et al found that WHO moments 3 (after body fluid exposure risk) was 93.1% but in our study 95.1% health care workers performed better hand hygiene after patient's body fluid exposure<sup>14</sup>.

### Conclusion

Based on this study, hand hygiene practices among healthcare staff vary across departments and professional category. While some departments like the Emergency department show good hand hygiene practices, other department especially TB and Chest, demonstrate low level of hand hygiene practices. Nurses generally follow hand hygiene practices less as compared to consultants and residents. Overall, hand hygiene is better before aseptic procedures and after exposure to body fluids, but there are gaps before and after patient contact and touching patient surroundings. Improving consistency in hand hygiene across all the five moments by WHO is crucial to enhance patient safety and infection control in healthcare settings.

**Recommendation:** To make sure healthcare workers follow hand hygiene in better way, for that it is necessary to conduct regular training on half yearly basis. This training should teach the health care workers about the latest handwashing methods and recent guidelines (Educational workshops should be held on hand hygiene practices at all medical colleges in India. These workshops helps students and faculty learn important skills to follow hand hygiene rules, which will keep patients safer and reduce the chances of infections. Participants should take part in engaging demonstrations, discussions, and hands-on activities to practice the best techniques and build a culture of safety in healthcare settings. Using interactive training and practice sessions can really help them remember and use these practices correctly.

For better hand hygiene practices make the rules same for all departments, put up hand washing posters everywhere to remind the health care workers about handwashing, and all the experienced staff should demonstrate hand hygiene to others, make hand hygiene practices is a part of everyday tasks, and always look for ways to do it even better to keep patients safe.

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**Conflict of interest:** None

**Ethical Clearance:** The study was approved by the institute ethics committee with (Ref No. IEC/RDMC/Cert/12) dated 24-08-2024.

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