

# A Study on Hand Hygiene Practices among Medical Interns in a Tertiary Care Hospital

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**Abstract:** ***Introduction:** Health-care associated infections are on a rise and the organisms causing these infections are most commonly transmitted through the hands of the health care workers. **Objectives:** To assess the hand hygiene practices among interns in a medical college hospital. **Methodology:** A study was planned to assess the self-reported practices of interns. 110 medical interns volunteered to participate in the study. **Results:** Hand hygiene on all the five moments as recommended by WHO was practiced by 54(49.1%) of the interns. Hand Hygiene before patient care was observed by 81(73.6%) interns, before clean aseptic procedures was performed by 94(85.5%) interns, on exposure to body fluids was performed by 97(88.2%) interns always. Hand hygiene between patient care was performed by 83(75.5%) interns and after patient care was 100%. **Conclusion:** Overall Hand Hygiene practices among the medical interns were satisfactory.*

**Keywords:** Hand Hygiene, Hand-rub, Interns, Health-Care Associated Infections, India

## 1. Introduction

The growing burden of Health Care-Associated Infections (HCAI) coupled with limited options of anti-microbials and evidence supporting that hand hygiene can reduce HCAI, have led to health care practitioners (HCPs) reversing back to simple measures like hand hygiene.<sup>1</sup> Though the need for hand washing is very obvious today it was not until before the middle of 1800's that its importance was recognized. Ignaz Philipp Semmelweis, a Hungarian physician, called the "saviour of mothers". He proved statistically that the incidence of puerperal fever, could be drastically reduced by use of hand washing standards for doctors and nurses in obstetrical clinics.<sup>2</sup>

## 2. Literature Reviewed

### 2.1 Health Care-Associated Infections (HCAI)

Health Care-Associated Infections is defined as a localized or systemic condition that results from an adverse reaction to the presence of an infectious agent or its toxin(s) that occurs during a hospital admission, for which there is no evidence that infection was present or incubating at admission and meets body-specific criteria.<sup>3</sup> In spite of being the most common adverse event in health care delivery, the true global statistics remains unknown because of lack of surveillance in developing countries<sup>4</sup>, where the prevalence varies between 5.7% and 19.1%<sup>7</sup>.

In 2002, CDC estimated that 1.7 million HCAI occurred in US Hospitals, with an increased prevalence among newborns, old-aged, and patients admitted in ICU.<sup>5</sup> The annual economic impact was approximately US\$ 6.5 billion.<sup>5</sup>

### 2.2 Hand Hygiene (HH)

Hand Hygiene applies to hand washing, antiseptic hand wash, antiseptic hand rub, or surgical hand antisepsis.<sup>6</sup>

Hands are the main pathways of germ transmission during health care as documented by several studies.<sup>7</sup> Health care workers contaminate their hands by touching the environment or patient during health care delivery.<sup>9</sup> Around 20 hospital-based studies have shown an association between optimal hand hygiene and reduction in HCAI rates. WHO launched a global Hand Hygiene campaign<sup>7</sup>, on May 2013 which committed health care facilities to improve hand hygiene.<sup>8</sup>

This study was planned realizing the importance of hand hygiene and the need to assess the practices of hand hygiene among interns, who are the first to encounter a patient in a medical college hospital and are the future practitioners of healthcare organisations.

## 3. Methodology

A descriptive cross-sectional study was conducted in Sri Ramachandra Medical College Hospital. Study population included all medical students doing internship during the study period. Data collection was carried out from March – April 2013. A questionnaire was prepared based on the WHO and CDC guidelines for hand hygiene. It was designed to collect information on demographic characteristics and self-reported hand hygiene practices. The practices were based on the 5 moments of hand hygiene as described by WHO. Ethical clearance was obtained from Sri Ramachandra University Institutional Ethics Committee.

Out of the 138 interns, 110 agreed to participate. The nature of the study was explained to them and Informed consent was obtained, after which the questionnaire was administered.

## 4. Results

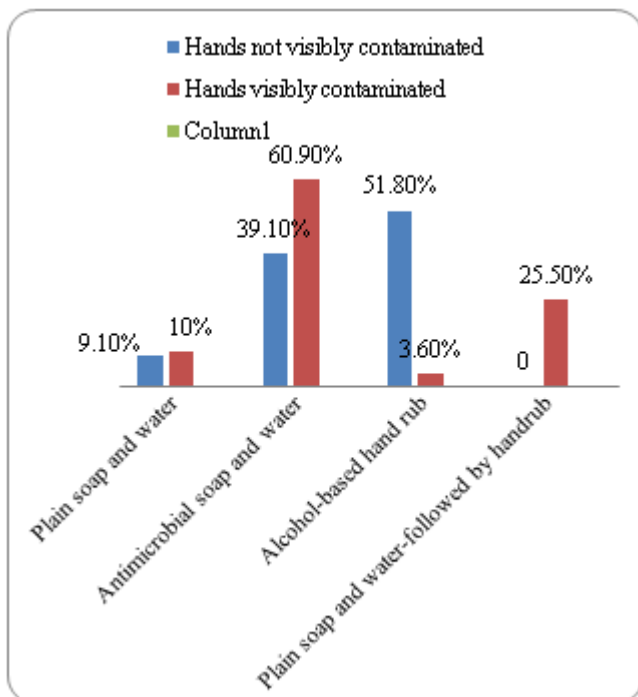
The overall response rate was 100% (110 interns). There were 62 (56.4%) males. Mean age of the participants was 22.6 years (S.D. 1.26). There were two batches of interns,

one batch with a mean clinical experience of 3 months and the other batch with a mean clinical experience of 9 months. Less than half (38.2%) of them had received any formal training on hand hygiene. 56 (50.9%) interns were working in surgical departments and the rest 54 (49.1%) were in the medical departments. There was no significant statistical difference observed in the hand hygiene practices of the interns working in medical and surgical department. The self-reported practices of the interns are summarized in Table 1. Hand hygiene compliance was less than satisfactory with only 54 (49.1%) performing hand hygiene at all five moments as recommended by World Health Organization. Poor compliance to HH was noted between patient care (44.6%), and after contact with items in the vicinity of the patient (24.5%).

**Table 1:** Self reported practices of hand hygiene

Indications for hand hygiene	Males	Females	Total
	Yes n (%)	Yes n (%)	Yes n (%)
My five moments of hand hygiene	29 (26.4%)	25 (22.7%)	54 (49.1%)
Before patient care	42 (38.2%)	39 (35.5%)	81 (73.6%)
After patient care	62 (56.4%)	48 (43.6%)	110 (100%)
Between patient care	30 (27.3%)	19 (17.3%)	49 (44.6%)
Before clean / aseptic procedures	52 (47.3%)	42 (38.2%)	94 (85.5%)
After contact with items in the vicinity of the patient	17 (15.5%)	10 (9.1%)	27 (24.5%)

Alcohol based hand rub was preferably used by 57(51.8%) interns when hands were not visibly contaminated, and antimicrobial soap and water was used by 67(60.9%) intern when hands were visibly contaminated (Figure 1).



**Figure 1:** Most commonly used Hand Hygiene method

Hand rub was the preferred method of HH before palpation of abdomen (59.1%) and before giving injections (54.5%). Hand Wash was the preferred method of HH, before food/medications and after using washroom (Table 2).

**Table 2:** Hand hygiene method practiced

Situation	Hand rub	Hand wash	None
Before palpation of abdomen	65 (59.1%)	11 (10%)	34 (30.9%)
Before giving injection	60 (54.5%)	28 (25.5%)	22 (20%)
Before food/ medications	30 (27.3%)	77 (70%)	3 (2.7%)
After using washroom	38 (34.5%)	72 (65.5%)	0

Among them, 35 interns have been washing hands appropriately for 40-60 seconds and 56 interns have been using alcohol-based hand rub for the recommended duration of 20-30 seconds (Table 3).

**Table 3:** Approximate time used for hand hygiene

Hand wash		Hand rub	
<40 seconds	23 (20.9%)	<10 seconds	10 (9.1%)
40-60 seconds	35 (31.8%)	10-20 seconds	44 (40%)
1-3 minutes	36 (32.7%)	20-30 seconds	56 (50.9%)
>3 minutes	16 (14.5%)	>30 seconds	0

Compliance to Hand Hygiene was compared with mean clinical experience of the interns (Table 4). The difference in the compliance to hand hygiene practices was found to be statistically significant ( $p < 0.008$ ).

**Table 4:** Comparison of mean clinical experience with percentage of interns performing hand hygiene

Mean clinical experience	Hand hygiene performed on all 5 moments		p-value
	Yes	No	
3 months	24 (21.8%)	39 (35.5%)	0.008
9 months	30 (27.3%)	24 (21.8%)	

## 5. Discussion

Gender difference has been observed in previous studies showing that women exhibit better hand hygiene practices than men.<sup>9,16</sup> However, no significant difference was observed in this study.

Alcohol-based hand rub (69%) was the principle mode of hand hygiene among HCWs similar to a study carried out in Apollo Hospitals, a tertiary care centre in Chennai.<sup>10</sup> In contrast a study done in a tertiary care hospital in Pune showed that the HCWs preferred hand washing with soap and water over use of hand rubs.

As also recognized by other researchers, enhanced adherence to hand hygiene was noticed “after” caring for a patient; whereas poorer adherence was reported “before” and “between” having direct contact with a patient,<sup>11,12</sup> which was also observed in this study. This disparity can be explained by the lack of complete understanding of the WHO Hand Hygiene guidelines. The inappropriate time duration used for hand hygiene by majority of the interns can also be explained by inadequate knowledge, which was consistent with a study assessing hand washing practices among medical students.<sup>13</sup>

Better compliance to hand hygiene has also been noted among health care workers in medicine departments when compared with the surgical departments, which is attributed to the very high patient load and lack of time in surgical departments.<sup>15, 16</sup> WHO recommends hand wash after using washroom<sup>7</sup>, whereas in this study almost 38 (34.5%) interns used alcohol-based hand rub.

Interns with mean clinical experience of 9 months showed better compliance to hand hygiene, when compared with the other group. In contrast a study conducted in a tertiary care hospital concluded that years of clinical experience did not affect hand washing frequency.<sup>16</sup>

## 6. Limitations of the Study & Future Scope

Ideally, hand hygiene practices have to be assessed by direct observation,<sup>17,18</sup> which could not be done and hence questionnaire was used to assess self-reported practices, although there are studies which have reported no major differences between self-reported compliance rates and observed compliance rates.<sup>19</sup> Response bias could have occurred which would lead to over-estimation of compliance rates. A larger sample size and a questionnaire based study coupled with observation of hand hygiene performance would yield a better result.

## 7. Conclusion

The compliance to hand hygiene, as per WHO recommendations on all five moments, is 49.1%. Good compliance was seen before, after patient care, and before clean aseptic procedures. The use of Hand Hygiene posters in the wards in Sri Ramachandra Medical College Hospital may have helped to improve Hand Hygiene practices. As per WHO recommendations, Hand rubs were the preferred method of HH among the interns. Although hand hygiene is a simple measure to follow, adherence to hand hygiene has always been poor and a complicated issue.

The hospital management along with the Infection Control Committee (ICC) have a major role to play in improving hand hygiene practices. Use multi-pronged approaches like easy accessibility to soap dispensers and hand washing stations, alcohol-based hand rubs at patient bedside, availability of disposable towels, training on when & how of hand hygiene to ensure optimal decontamination, using posters depicting hand hygiene instructions at all places in hospital where doctor-patient contact is expected, posters on skin care. Encourage use of hand rubs when recommended. Any intervention should be accompanied by making sure required facilities are available. Education on hand hygiene should be given priority starting from the under-graduate students to senior faculty by conducting formal training sessions and regular workshops to train the new workforce and reinforce the importance and practices of hand hygiene among the existing workforce. Monitoring of hand hygiene practices and individual feedback may help to improve compliance. Regular survey of healthcare associated infections occurring in the hospital would also be helpful. Further research could be conducted on the reasons for the poor compliance to develop more successful measures to improve HH.

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