



## RESEARCH ARTICLE

### PERCEPTION AND PRACTICES OF HAND HYGIENE IN A TERTIARY CARE HOSPITAL OF MANGALORE

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#### ABSTRACT

**Background:** Hand hygiene plays an important role in preventing diseases. Hand hygiene techniques are simple and effective, but there is a poor compliance by health workers to maintain hand hygiene.

**Objectives:** To assess the knowledge, attitude, and practices of hand hygiene in interns and postgraduates of a Tertiary care hospital of Mangalore.

**Methods:** A cross sectional study was conducted from August- September 2015 using a semi-structured questionnaire based on WHO hand hygiene Questionnaire. Written consent was taken. Likert Scale was used for scoring of knowledge, positive attitudes, and good practices. Data was analyzed using SPSS. Mann Whitney U Test was used to assess the differences between interns, postgraduates and those who are trained and untrained in hand hygiene.

**Results:** 150 students participated in this study, in which 40 were interns and 110 were post graduates. 78% of the students had received training for hand hygiene, yet only 61% of the students always washed their hands after seeing patients. 7% strongly agreed that the facilities available for hand hygiene were satisfactory. Around 15% of students strongly disagreed that wearing gloves reduced the need for hand hygiene. Mann Whitney U Test revealed a significant difference in knowledge scores between interns and final year post graduates ( $p = 0.019$ ), trained and untrained students towards attitude ( $p=0.004$ ) and practices ( $p<0.001$ ) of hand hygiene techniques.

**Conclusions:** Differences were observed between trained and untrained students, and between interns and postgraduates. Ongoing training with assessment of the students is required to prevent the risk of transmission of infections.

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## INTRODUCTION

Hand hygiene is found to play an important role in preventing diseases. Many infections can be acquired through lack of hand hygiene: during handling of injections, medical devices and blood products, inadequate and unsterile surgical procedures, and deficiencies in biomedical waste management. (WHO 2015) To address this problem the World Health Organization introduced an evidence-based concept of "My five moments for hand hygiene". These five moments that call for the use of hand hygiene include: the moment before touching a patient, before performing aseptic and clean procedures, after being at risk of exposure to body fluids, after touching a patient, and after touching patient surroundings. (Nair et al., 2014) Many of the reasons that health care workers felt that hand hygiene

could not be maintained due to a heavy work load, high number of clinical procedures, and shortage of water and sanitary equipment available in the health facilities. (Ariyaratne et al., 2013) Improper hand hygiene leads to spread of infections along with the development of multi drug resistant organisms. (Maheshwari et al., 2014) It is a simple and cost effective method to prevent disease. Hence, this study was carried out to assess the knowledge, attitude, and practice towards hand hygiene in the interns and postgraduates of a tertiary care hospital, and to understand how training helps in improving hand hygiene methods.

## MATERIALS AND METHODS

A cross sectional study was conducted on Interns and Post Graduates of a tertiary care hospital in Mangalore, Karnataka, India using a self administered questionnaire. The study was conducted from August to September, 2015. The investigator visited interns and postgraduates and explained the nature of

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the study. Written consent was taken from those who volunteered to participate. All the participants present during the collection of data were considered for the study.

**Certain definitions taken as per WHO guidelines (WHO, 2015) were:**

- 1) **Hand Rubbing**-treatment of both hand with an antiseptic hand rub ( alcohol based formulation)
- 2) **Hand Washing**- washing hands with plain or antimicrobial soap and water

Knowledge was assessed using WHO hand hygiene Questionnaire. Attitude towards hand hygiene was measured using 10 questions, where the respondents were given the option to select on 1 to 5 point scale (Likert Scale) between strongly agree to strongly disagree. Hand hygiene practices were assessed in a similar way using 7 questions. The Attitude and Practice questions were made using similar studies. (Nair *et al.*, 2014; Ariyaratne *et al.*, 2013)

### Statistical Analysis

A scoring system was used where 1 point was given for each correct response to knowledge, positive attitudes, good practices. Every question was given equal preference and Likert Scale was used for analysis. A score of more than 75% was considered good, 50–74% was moderate, and less than 50% was taken as poor. (Nair *et al.*, 2014) Data was entered into Microsoft Excel and analyzed using SPSS version 16.0. Separate analysis was done for knowledge, attitudes, and practices. Frequencies and Percentages were calculated. Mann Whitney U Test was used to assess the differences between interns and post-graduates, those who were trained and untrained.

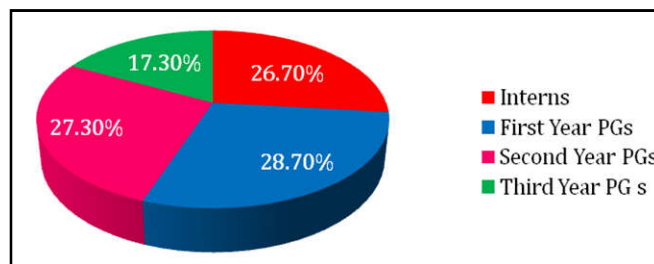
### Ethical Considerations

Anonymity was maintained and personal information was not disclosed. Written consent was taken and the participant had the freedom of returning the questionnaire as they choose to (half –written or completed). Ethical Clearance was taken from the Institution's Ethical Board and required permission was taken from the necessary officials.

## RESULTS

A total of 150 students participated in this study, of which 78% of the students had received formal training for hand hygiene. The age group varied from 21 to 33 years of age, with the sample containing 48.6 % (73) males and 51.3% (77) females. Around 87% of the students said that they knew the correct method of maintaining hand hygiene. A majority of the students (72%) identified that cross contamination of germs between patients in a health care facility was mainly due to unclean health care workers' hands. According to 90% of the students, hand hygiene practices before touching a patient prevent the transmission of germs to the patient. The frequent source of germs responsible for health care associated infections also included the hospital environment (57.3%) and

germs already present on or within the patient (29.3%). Wearing jewellery (82.7%), damaged skin (87.3%), artificial fingernails (90%) should be avoided as most students felt that it increased the likelihood of colonization of hands with harmful germs.



**Figure 1. Percentage of Distribution of Participants in Study**

**Table 1. Knowledge, Attitude, and Practice Median Scores for interns and postgraduates**

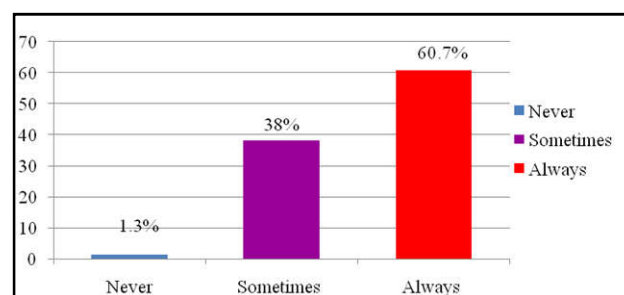
Students	Knowledge Median Score	Attitude Median Score	Practice Median Score
Interns	17	34.5	6
Final Year Post Graduates	20	36	6

In Table 1 we found that the knowledge median scores between Interns and Final year Postgraduates was found to be statistically significant ( $p < 0.019$ ). The knowledge, attitude, and practice scores of other students and Interns were found not to be statistically significant based on Mann Whitney U Test.

**Table 2. Knowledge, Attitude, and Practice Median Scores for Trained and Untrained Students**

Students	Knowledge Median Score	Attitude Median Score	Practice Median Score
Trained	18	36	7
Un-trained	18	32	5
P value	$p > 0.05$	$p < 0.004$	$p < 0.01$

Table 2 shows that the Attitude and Practice Median Scores were slightly higher in the trained students as compared to the untrained students, which was found to be statistically significant after conducting Mann Whitney U Test. Knowledge scores were found to be similar in both trained and untrained students, which could have occurred due to other modalities (mass media) of health education received by the students, which was not taken into consideration.



**Figure 2. Percentage of Participants who washed their hands after seeing patients**

As seen in Figure 2, only 60.7% of the students always washed their hands after seeing patients. Around 83% of the students felt that they should wash their hands after exposure to blood products. 26.6% of the student felt that they had more important things to do than maintain hand hygiene. 53% of them felt that the frequency in maintaining hand hygiene made it difficult to carry it out. The hand hygiene method students followed after removing their examination gloves were mainly washing of hands (65.3%) and using hand rub (30%). Only 15% of the students felt that hand hygiene should be maintained even after usage of gloves, with the majority of the students having a poor attitude towards maintaining hand hygiene when associated with glove usage. 67.4% of the students felt that the Infection Control Committee of the hospital had a positive role in maintaining hand hygiene. Around 80% of the students agreed that the hand hygiene posters on notice boards helped in reminding them to carry out hand hygiene. Figure 3 shows that around 54% of the students agreed that the facilities available in the hospital for maintaining hand hygiene were satisfactory. With 51.3% of the student using soap and 46% of them preferring hand rub (antiseptic). 68% of the students used a tissue, 21% used a clean towel, and 9 % said they used a personal handkerchief after hand washing. 44.7% of the students felt that the minimum time required for alcohol based hand rub was 20 seconds.

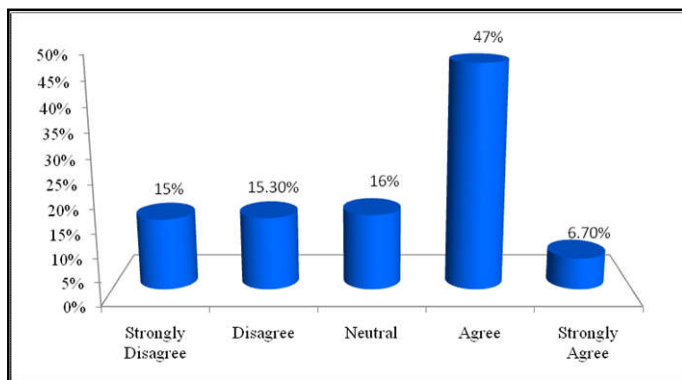


Figure 3. Percentage Satisfaction of Facilities Available

## DISCUSSION

In this study we found that a majority of students mentioned that they knew the correct method of carrying out hand hygiene. Differences were observed in knowledge between the Interns and the Final Year Postgraduates. Even though hand hygiene training is being conducted in the hospital, only 78% of the students received training. The attitude and practice scores were found to be better in trained students than untrained students. Around 61% of the students always washed their hands after seeing patients which is comparable to a study by Sharma *et al.* (2011) In our study more than half of the students felt that the frequency in maintaining hand hygiene was difficult. Work overload, lazy attitude, less time in emergency conditions, or even allergy to soap/ hand rub were some reasons in Sharma *et al* study that made hand hygiene difficult to maintain, which may also apply to our study. We found that training had a significant role to play in hand washing practices, rather than knowledge, unlike other studies

where knowledge on hand hygiene was greatly improved after receiving training. (Ekwere and Okafor, 2013; Kadi and Salati, 2012) The importance of a positive attitude along with training in hand hygiene was also well defined in our study, as it helps in maintaining clean and safe hands. Training may have influenced the behavior of the students as it made them more aware of the increased risk of spread of infections with poor hygiene and may have lead them to feel that they were role models to the society. The mode of hand drying is an important part in maintaining good hand hygiene and preventing the risk of spread of infections. We found a majority of students' drying their hands with tissues provided, unlike other studies where air dry method and use of personal handkerchief was more common. (Ekwere and Okafor, 2013) Earlier studies have shown that students were unaware of the need of hand hygiene after glove usage, which was also seen in our study, where only 15% of the students felt that hand hygiene should be maintained even when wearing gloves. (Kadi and Salati, 2012; www.who.int) 51.3% of the students used soap and 46% of them preferred hand rub to maintain hand hygiene in our study, similar to another study where soap and running water was preferred (Opara P I et al. 2009). We found that hand hygiene practices were influenced by Infection Control Committee (consisting of doctors, administrators, health workers, etc) and notice boards present in the hospital, which was similar to another study, which showed the influence of senior colleagues and teachers on maintaining and practicing hand hygiene. (Kadi and Salati, 2012) This could have been due to positive role model influence as well as the supervision and fear of inspections that the Infection control Committee would conduct. (Abdella *et al.*, 2014) The study brought to light that the attitude among the students was poor towards hand hygiene clearly indicating the need for repetitive teaching on hand hygiene methods and the risks of hospital acquired infections along with spot inspections by the Infection Control Committee to evaluate the students.

## Limitations

The limited sample size may have caused discrepancies in the results. The study could have been conducted between different groups of health workers to better assess hand hygiene practices being followed in a hospital .Direct observational assessments could have been conducted to get a correct picture of hand washing practices being followed in future studies.

## Conclusion

Differences were observed between trained and untrained students towards their attitude and modes of practices in maintaining hand hygiene. Knowledge on hand hygiene was better in final year postgraduates than interns. Hence ongoing training and formative assessment of the students are required to prevent the risk of transmission of hospital acquired infections. Displaying IEC material at different locations in the hospital helps in educating and reminding health workers to maintain hand hygiene.

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**Conflict of Interest:** None

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