

## Knowledge of Hand Hygiene practices among trainees of a medical college in South Karnataka

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### Abstract

**Background:** Hand hygiene is a simple measure that plays an important role in the reduction of the incidence of healthcare-associated infections. Compliance with adequate hand hygiene practices among the healthcare workers is only 40%. **Objective:** To estimate the level of Knowledge about Hand hygiene among the trainees of medicine at a tertiary care teaching hospital. **Materials and methods:** The present study was a cross-sectional study done for a duration of 3 months from September 2021 to November 2021 among 140 interns at a Government Medical College, Chamarajanagar. Data were collected by using the "WHO hand hygiene questionnaire for health care workers" and analyzed using Microsoft office excel 2010. **Results:** Only 23 (16.4%) of interns had a strong knowledge of hand hygiene while the majority had moderate understanding 97 (69.2%). **Conclusion:** Awareness regarding Hand hygiene practices needs to be improved through regular sensitization workshops and onsite practical guidance.

**Keywords:** Hand hygiene, Infection, Interns, Knowledge, Questionnaire.

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### Introduction

Hand hygiene is extremely important in preventing the spread of pathogens especially in hospital settings which results in the reduction of incidence of healthcare-associated Infections[1,2]. Hand hygiene compliance among health care workers is found to be low and few studies have suggested that compliance with hand hygiene is only 40%[3-5]. To ameliorate this situation, effective and long-term measures are required, as well as ongoing monitoring[6]. The World Health Organization (WHO) has addressed this issue by introducing the idea of "My five moments for hand hygiene," including moments before touching a patient, performing aseptic and clean procedures, after being at risk of exposure to body fluids, after touching a patient, and after touching the patient's surroundings[7]. In 2005, the World Health Organization launched the Global Patient Safety Challenge for the first time, with the slogan "Clean care is safer care"[8]. My five minutes for hand hygiene, a WHO evidence-based idea, is beneficial for understanding, teaching, monitoring, and reporting hand hygiene among healthcare professionals[9].

Factors that contribute to poor compliance among Health care workers include irritation of hands[10], inaccessibility or shortage of hand-washing equipment[11-13], dense working conditions[14], and poor knowledge[12,13] regarding practices of hand hygiene. To address this problem, there is a need to collect baseline knowledge regarding hand hygiene for effective planning of educational interventions.

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With this in mind, the current study was conducted among interns to assess their understanding of hand hygiene, as they will be the future providers of primary health care.

### Objective

- To estimate the level of knowledge towards hand hygiene among medical trainees in the study setting

### Materials and methods

The present study was a cross-sectional study conducted for a duration of 3 months from September 2021 to November 2021 among 140 interns at Chamarajanagar Institute of Medical Sciences, Chamarajanagar. Permission was obtained from the Institute. All the interns were explained about the background, rationale, and objectives of the study and were invited to participate and interns who remained absent on the day of data collection were left out.

After obtaining informed consent, a "WHO hand hygiene questionnaire for health care workers" was used to collect the data. One mark each was given for correct response and the knowledge of all the interns about hand hygiene was graded based on a total score of  $\geq 75\%$ , 50 – 74%, and  $\leq 49\%$  as good, moderate, and poor respectively. Microsoft Office Excel 2010 was used to conduct the statistical analysis.

### Results

A questionnaire-based study was conducted among 140 interns at a tertiary medical college. Table No. 1 depicts the distribution of medical interns with correct responses for Knowledge on hand hygiene practices. As evident from the table, only 51(36.42%) of the interns had received formal training on hand hygiene in the last three years. The majority of interns, 87 (62.14%), reported using alcohol-based hand rub regularly for hand hygiene. Only 37 interns (26.42%) were aware that the main route of transmission of potentially harmful

germs between patients is through unclean health care workers hands, and only 32 interns (22.85%) knew that germs already present on or within the patient were the most common source of healthcare-associated infections.

When enquired about the situations in which hand hygiene if practiced, can prevent the transmission of germs to the patient, while the majority i.e., 115 (82.14%) reported before touching a patient, 105 (75%) and 108 (77.14%) admitted to practice Hand hygiene immediately after the risk of body fluid exposure and immediately before a clean/aseptic procedure respectively. Similarly, when it came to preventing germ transmission to health care workers, the majority, 122 (87.14%), told doing so before touching a patient, followed by 116 (82.85%) reported doing so immediately after the risk of body fluid exposure, and 98 (70%) agreed to do so after exposure to a patient's immediate surroundings.

The majority of the interns in this study, 102 (72.85%), were accurate when they agreed that hand rubbing is more rapid for hand cleansing than hand washing, but only 34 (24.28%) were aware that a minimum of 20 seconds is needed for an alcohol-based hand rub to kill most germs on hands. The majority of students, 106 (75.71%), were aware that hand rubbing is essential before abdominal palpation, but only less than half of them i.e., 69 (49.28%) knew about the requirement of hand rubbing before giving an injection, and only one fifth i.e., 27 (19.28%) knew about its necessity after making a patient's bed. Awareness about reasons for the increase in the colonization of hands with harmful germs varied among interns with the largest percentage i.e., 136 (97.14%) reporting damaged skin followed by artificial fingernails and wearing jewelry by 100 (71.42%) and 79 (56.42%) of interns respectively in the current survey.

**Table 1: Distribution of medical interns with correct responses for Knowledge on Hand hygiene practices (N = 140)**

Sl.No.	Questions (Correct responses)	Number of Interns N (%)	
1	Did you receive formal training in hand hygiene in the last three years? (Yes)	51	36.42
2	Do you routinely use an alcohol-based hand rub for hand hygiene? (Yes)	87	62.14
3	Which of the following is the main route of transmission of potentially harmful germs between patients? (Health care workers hands when not clean)	37	26.42
4	What is the most frequent source of germs responsible for healthcare-associated infections? (Germs already present on or within the patient)	32	22.85
5	Which of the following hand hygiene actions prevents transmission of germs to the patient?		
a	Before touching a patient (Yes)	115	82.14
b	Immediately after the risk of body fluid exposure (Yes)	105	75.00
c	After exposure to the immediate surroundings of a patient (No)	55	39.28
d	Immediately before a clean/aseptic procedure (Yes)	108	77.14
6	Which of the following hand hygiene actions prevents transmission of germs to the health care worker?		
a	After touching a patient (Yes)	122	87.14
b	Immediately after the risk of body fluid exposure (Yes)	116	82.85
c	Immediately before a clean/aseptic procedure (No)	55	39.28
d	After exposure to the immediate surroundings of a patient (Yes)	98	70.00
7	Which of the following statements on alcohol-based hand rub and handwashing with soap and water is true?		
a	Hand rubbing is more rapid for hand cleansing than handwashing (True)	102	72.85
b	Hand rubbing causes skin dryness more than handwashing (False)	37	26.42
c	Hand rubbing is more effective against germs than handwashing (False)	94	67.14
d	Hand washing and hand rubbing are recommended to be performed in sequence (False)	59	42.14
8	What is the minimal time needed for an alcohol-based hand rub to kill most germs on your hands? (20 seconds)	34	24.28
9	Which type of hand hygiene method is required in the following situations?		
a	Before palpation of the abdomen (Rubbing)	106	75.71
b	Before giving an injection (Rubbing)	69	49.28
c	After emptying a bedpan (Washing)	109	77.85
d	After removing examination gloves (Rubbing/Washing)	137	97.85
e	After making a patient's bed (Rubbing)	27	19.28
f	After visible exposure to blood (Washing)	120	85.71
10	Which of the following should be avoided, as associated with increased likelihood of colonization of hands with harmful germs?		
a	Wearing jewelry (Yes)	79	56.42
b	Damaged skin (Yes)	136	97.14
c	Artificial fingernails (Yes)	100	71.42
d	Regular use of hand cream (No)	88	62.85

Table No. 2 demonstrates the distribution of medical interns according to their grading of Knowledge on Hand hygiene practices. Only 23 (16.4%) of interns had a strong knowledge of hand hygiene while the majority had moderate understanding 97 (69.2%) as seen in the table.

**Table 2: Distribution of medical interns according to their grading of Knowledge on Hand hygiene practices (N = 140)**

Grades	Number of Interns N (%)
Good (>75%)	23 (16.42)
Moderate (50-74%)	97 (69.28)
Poor (<49%)	20 (14.28)

### Discussion

Hand hygiene is a basic technique that plays an important role in preventing infection transmission. There were just 51 interns (36.42%) who claimed to have undergone formal hand hygiene training in the previous three years in the current survey. Mohesh G et al found a similar result, with only 26.3% of medical students having formal training in hand hygiene practices[15]. 87 (62.14%) of interns in our study used alcohol-based hand rub routinely comparable to the findings of a study by Kamble VS et al [6] whereas it was only 9% in a study by Das D et al[16]. Just 37 (26.42%) of interns were aware that the uncleaned hands of health care workers were the main route of cross-transmission, which is very low in agreement to studies from Nair S et al[9] and Mohesh G et al[15]. Only 32 (22.85%) of interns knew the frequent source of healthcare-associated infections was germs already present on or within the patient and it correlated with other studies[6,17,18]. Knowledge about practicing hand hygiene before touching a patient (82.14%) and immediately after the risk of body fluid exposure (75%) to prevent transmission of germs to the patient, was on par with a study by Nair S et al[9]. 87.14% and 82.85% of interns had awareness about practicing hand hygiene, which prevents transmission of germs to the health care worker like after touching a patient and immediately following the risk of body fluid exposure, and the results were better than those of Kamble VS et al, who found that 72.7% and 69.1% of medical students, respectively, gave the correct answer[6].

72.85% of interns agreed that hand rubbing is more rapid than washing and 26.42% of interns wrongly believed that hand washing causes more skin dryness than hand rubbing. Our results were almost consistent with the study by Nair S. et al where 69.6% and 30.2% of medical students respectively believed these facts[9]. 67.14% of interns were aware that hand rubbing is not more effective than washing and 42.14% were aware that hand washing and hand rubbing should not be performed in sequence in the current study which was concordant to the Nair S et al research which reported 45.7% of medical students of being aware of both these facts.[9] Yet, merely 24.28% knew that the minimal time needed for an alcohol-based hand rub to kill most germs on hands is 20 seconds, which is poor compared to the study by Nair S et al[9].

75.71%, 49.28%, and 19.28% of interns were right in having an opinion that rubbing is the best method of hand hygiene required in situations like palpation of the abdomen, before giving an injection, and after making a patient's bed respectively. Similarly, 77.85% and 85.71% of interns were aware that washing is the preferred approach of hand hygiene required in circumstances like after emptying a bedpan and after visible exposure to blood. However, a study by Nair S et al reported lower levels of awareness among their students in all these aspects except 30.9% of them considering rubbing as a method of hand hygiene after making a patient's bed[9].

Interns were aware that wearing jewelry (56.42%), having damaged skin (97.14%) and artificial fingernails (71.42%) should be avoided, as they are associated with an increased likelihood of colonization of hands with harmful germs which was concordant to the study conducted by Nair S et al[9].

### Conclusion

The present study finds awareness levels about hand hygiene practices among interns satisfactory. However, there are some areas where knowledge needs to be improved through regular sensitization workshops and onsite practical guidance.

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