

## Prevalence of hand hygiene awareness among medical and dental students in a teaching hospital

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### Abstract

**Introduction:** World Health Organization (WHO) reports increase in health care associated infections. Therefore, to ensure the delivery of health care safely, the assessment of hygiene practice's knowledge among medical professionals, especially budding doctors is current need of hour.

**Material and Methods:** Based on WHO questionnaire, hand hygiene practice knowledge of 100 medical and 100 dental students from Subbaiah Institute of Medical and Dental Sciences, Shimoga, Karnataka was assessed. First 25 questions were to assess their knowledge about hand hygiene and next question to assess their routine practice and knowledge about ABHR (Alcohol Based Hand Rub). Answers were given score value and were categorized in good, moderate, and poor.

**Results:** Among 100 medical students, only 12% had good knowledge while others had moderate to poor knowledge. On the other hand, out of 100 BDS students, only 8% had good knowledge while other had moderate to poor knowledge. Although medical students showed better knowledge than dental students, but only 5% medical students were using hand rub.

**Conclusion:** The results indicate that medical students had better hygiene knowledge than that of dental students. However, to improve the overall compliance of hand hygiene practices, the curriculum of medical students may be enhanced further so as to deliver health care, more safely.

**Keywords:** Bacterial contamination, Good hygiene practices, Knowledge

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### Introduction

Healthcare associated infections (HAI) are a major cause of concern due to the increasing severity of illness, complexity of treatment, and the emergence of multi-drug resistant pathogens. It also checks the spread of antimicrobial resistance across patient population. HAIs are the most adverse events arise due to stay in a hospital especially in underdeveloped countries. Hand hygiene is the most effective and practical aspect so as to reduce the HAIs.<sup>1</sup> It has come up as a global effort with the launch of "SAVE LIVES: Clean Your Hands" campaign in 2009. It was an extension programme of WHO First Global Patient Safety Challenge: "Clean Care is Safer Care" for infection control universally so as to ensure patient safety and the reduction of HAIs.<sup>2-3</sup>

Hands of healthcare workers get progressively colonized with different microbial flora either commensal or potential pathogens during routine patient care.<sup>4</sup> It has been learnt that bacterial count increases linearly over time. Further, failure of hand hygiene practices action leads to higher degree of hand

contamination during incessant patient care. Both duration and the type of patient care affect healthcare workers hand contamination.<sup>5</sup> Furthermore, using gloves merely provides protection against hand contaminants, completely. The dynamics of hand contamination are same for gloved and ungloved hands. Gloves protect hands from direct acquisition of pathogens during patient care but the same contaminated gloves cross transmit the pathogens via gloved hands.<sup>6</sup> Irrespective of gloved or ungloved hands, it is always insisted for good hand hygiene practices during health care practices. Therefore, to apply a good and broad spectrum hand disinfectant is pre-requisite to deliver safe healthcare. Although, this practice is a simple procedure but the compliance rate by healthcare workers with recommended hand hygiene procedures varied from 5% to 89%.<sup>7</sup>

To reduce the risk of HAIs, hand hygiene practice concept has been used pertinently for the improved understanding and use by healthcare workers.<sup>8</sup> In this regard; proper education of healthcare workers to the hand hygiene practices especially of medical students is an advanced strategy for the control of such infections. Therefore, this type of study is important during the clinical training phase of students so as to educate them for future when their practices will actually affect their infection control practices.

### Material and Methods

**Subjects and Study period:** The present institution based observational epidemiological study was

undertaken for 3 months during the months of September to November 2015. A total of 200 medical students, 100 each from MBBS undergraduate and BDS students of Subbaiah Institute of Medical and Dental Sciences, Shimoga, Karnataka were enrolled for the study.

**Study Method:** Knowledge was assessed using WHO hand hygiene questionnaire for health care workers.<sup>9</sup> This questionnaire included multiple choice questions; “yes” or “no” and “true” or “false” questions. In the questionnaire, first 25 questions were to assess the knowledge about hand hygiene and 26<sup>th</sup> question was to know the routine practice and awareness about ABHR (Alcohol based hand rub). 1 point was given for each correct response and maximum score was 26. A score of more than 75% was considered good, 50–74% moderate, and less than 50% was taken as poor knowledge. Before filling the questionnaire, study population was briefed about the purpose and nature of the study and their informed written consent were taken. The participants were asked to provide the information in the questionnaire truthfully and the results had no impact on their examination results.

**Statistical Analysis:** SPSS Version 16.0 was used for statistical analysis. Chi square test carried out and value less than 0.05 were considered statistically significant.

## Results

Questionnaires were provided to students and were asked to provide their response as YES/NO and FALSE/TRUE. After that, data was recorded and analyzed statistically. 1 mark was given to each correct response and total score was calculated against each student, individually. Among medical students, a total of 12 showed good knowledge of hand hygiene practices. Out of 100, 72 medical students had moderate knowledge and 16 medical students had poor knowledge. Among dental students, 8 students showed good knowledge of hand hygiene practices while 77 showed moderate and 15 students had poor knowledge (Table 1). In intra group comparison, medical students showed significantly more hand hygiene practices knowledge than that of dental students ( $p \leq 0.05$ ).

**Table 1: Table showing the status of knowledge of medical and dental students for hand hygiene practices questions individually. Desired answers are given in brackets against each question.**

Sr. No.	Questions	Medical (%)	Dental (%)	P-value
1.	Main route of transmission of potential pathogens between patients? (health care workers hands when not clean)	26	21	0.16
2.	Most common source of pathogens responsible for health care associated infections? (germs already present on or within the patient)	12	7	0.19
Which hand hygiene practice prevent the cross transmission of pathogens in the patients?				
3.	Before attending/ touching a patient (yes)	46	25	0.05
4.	Immediately after risk of body fluid exposure (yes)	43	23	0.06
5.	After exposure to patient immediate environment (no)	25	24	0.2
6.	Before a clean/aseptic procedure (yes)	41	28	0.05
Which hand hygiene practice prevent cross transmission of pathogens to health care worker?				
7.	After attending/ touching a patient (yes)	45	26	0.05
8.	Immediately after a risk of body fluid exposure (yes)	55	26	0.03
9.	Before a clean/aseptic procedure (no)	31	10	0.06
10.	After exposure to patient immediate environment (yes)	37	23	0.14
True/False statements on hand hygiene practices while using alcohol-based hand rub to that of hand washing with soap and water?				
11.	Hand rubbing is more rapid hand cleansing method than hand washing (true)	46	32	0.12
12.	Hand rubbing causes more skin dryness than hand washing (false)	30	22	0.1
13.	Hand rubbing is more effective against pathogens than hand washing (false)	30	10	0.07
14.	Both are recommended to be performed in sequence (false)	18	15	0.2
15.	Minimal time required by alcohol-based hand rub to kill most germs on hands? (20 seconds)	22	10	0.06
Type of hand hygiene practice required in the situations as follows?				
16.	Before palpation of the abdomen (rubbing)	28	18	0.1
17.	Before giving an injection (rubbing)	31	26	0.1

18.	After emptying a bed pan (washing)	48	31	0.14
19.	After removing examination gloves (rubbing/washing)	49	41	0.12
20.	After making a patient's bed (rubbing)	33	9	0.04
21.	After exposure to blood (washing)	46	23	0.07
Things to be avoided, as associated with increased likelihood of hands colonization with germs?				
22.	Wearing jewellery (yes)	41	15	0.1
23.	Damaged skin (yes)	54	39	0.06
24.	Artificial fingernails (yes)	44	33	0.08
25.	Regular use of a hand cream (no)	50	32	0.06
26	Do you routinely use alcohol based hand rub for hand hygiene? (yes)	5	15	0.05

## Discussion

In the era of rise in HAIs, there is an acute shortage of data with respect to factors contributing to this rise. During student life, each medical student is trained to deliver effective health care but safety is kept at least. Therefore, this study was carried out to assess the knowledge of hand hygiene practices among medical and dental students. Out of total 200 students (100 medical and 100 dental), only 12 medical and 8 dental students scored more than 75% and hence had good knowledge. Majority of students (72% medical and 77% dental students) had moderate knowledge about hand hygiene practices. However, 16 medical and 15 dental students had poor knowledge, which is a matter of deep concern. Chatterjee *et al.* (2015) have also showed similar results in a study carried out among medical students. In this study moderate Knowledge of hand hygiene was reported among 76% of the total study population. Only 8% of participants had good knowledge and 16% showed poor knowledge with respect to hand hygiene practices.<sup>10</sup> In another study, Nair *et al.* (2014) demonstrated that both medical and nursing students of a tertiary health care centre at Raichur, Karnataka, India had moderate knowledge on hand hygiene.<sup>11</sup> Similar results have also been reported by other groups where moderate to poor knowledge of hand hygiene practices was observed among health care professionals.<sup>4,5,8</sup> It depicts the real ground level situation where budding medical and nursing students have moderate understanding of good hygiene practices. This moderate information may turn out as poor practices during their professional course.

This is a matter of concern because HAI are on increase and these medical and dental students are the future health care providers. It's very important for them to incorporate the basic hand hygiene practice in their routine patient care. However, it cannot be achieved until they are not made aware about the significance of hand hygiene practice and how their little effort can save lives along with reduced health care costs and morbidity/ mortality.<sup>3,12</sup> Ansari *et al.* (2015) had conducted a study to evaluate the effect of hand hygiene practices on patient's health and cost. A pre and post test evaluation of hand hygiene practices among doctors and nurses from a tertiary health centre, was

done. A drastic and significant improvement in the right technique and significance of hand hygiene (7.1% to 46.4% among doctors and 2.2% to 45.5% among nurses) knowledge was observed after a health education programme.<sup>13</sup> The results of present study indicate that only 26% medical and 21% dental students know that hands can be a probable route of cross transmission of infections. Although medical students had better knowledge than that of dental students, but only 5% medical students routinely used hand rub for hand hygiene as compared to 15% dental students. Similar results have also been reported by other workers.<sup>14-15</sup> It shows the lack of knowledge for the importance of hand hygiene practices, which need to be improve in teaching hospitals. It implies that education of budding health care professionals about the significance of hand hygiene and its advantages can surely achieve a drastic improvement in the knowledge, attitude, and practice among future health care professionals to deliver safer health care.

## Conclusion

The results indicate that despite of good knowledge, only 5% medical students routinely practiced ABHR recommendation as compared to 15% dental students. Since both are future health care professionals, therefore medical students should be educated on the importance of hand hygiene and should also encouraged to use hand sanitizers whenever delivering health care in any format. Further, medical colleges should also motivate to modify their curriculum so as to achieve good hygienic environment among the students. The trained future health care professionals with good hand hygiene practices may play a role in controlling cross transmission of infections.

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