

# Knowledge regarding hand hygiene among MBBS II<sup>nd</sup> phase students and change in their knowledge with single video-based learning session

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## Abstract

**Background:** Hospital associated infections (HAI) are a global problem and if properly implemented, hand hygiene alone can significantly reduce the risk of cross-transmission of infection in healthcare facilities. All healthcare providers and medical students are at risk of transmitting/developing HAIs. Knowledge of hand hygiene among medical students is variable. Training all medical students in hand hygiene can be tedious task. **Materials and methods:** Knowledge about hand hygiene among MBBS 2nd phase students before and after a video-based learning session was assessed. Results obtained were analysed to determine the knowledge and its improvement after the single educational exposure. **Results:** In this study 140 students participated and for most of the questions 70-80% responded with correct answer. Only around 30% knew the correct duration of hand hygiene. Nearly half of the students were unaware that hand washing is indicated between tasks and procedures on the same patient and hand hygiene needs to be done before performing a procedure of surgery. Around 60% felt need for more training regarding hand hygiene. There was significant improvement in the knowledge level after the learning session for most of the components. **Conclusion:** The II<sup>nd</sup> phase MBBS students of this institute have reasonably good knowledge about hand hygiene. There is need for regular training regarding hand hygiene for MBBS students. Single learning exposure using videos could significantly improve the knowledge among the subjects.

**Key Words:** Hand hygiene, hospital acquired infections, MBBS students, video-based learning

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## INTRODUCTION

WHO has estimated about 1.4 million patients in developed and developing countries to be affected anytime by health care associated infections.<sup>1</sup> Scientific evidence supports the observation that if properly implemented, hand hygiene alone can significantly reduce the risk of cross-transmission of infection in healthcare facilities.<sup>2,3,4</sup> Hand washing causes a significant reduction in the carriage of potential pathogens on the hands.<sup>5</sup> Compliance with hand hygiene among health care providers is as low as 40%.<sup>6,7,8,9,10</sup> To improve the situation, continuous efforts are being made to identify effective and sustainable strategies. The observance of

hygiene by medical students is reported as being weak.<sup>11</sup> The importance of correct hygiene behaviour development at the early years of medical education will help them understand the importance of hand hygiene as suggested by other authors<sup>12</sup>. The medical college chosen for the study is a tertiary care centre where medical students come in close contact with patients for their learning of medicine and also as care providers. It is essential to train them, as early as possible in their course, in important hospital infection control skills to prevent nosocomial infections to patients and the students themselves. Teaching effective hand hygiene skills to all the personnel involved in the patient care can be a challenging task. This study explores usefulness of video demonstration as a learning tool. It is hoped that, if found effective, this video-based learning can be used as a simple, quick, less resource-intensive method to teach hand hygiene skills to a large group.

## MATERIAL AND METHODS

Approval from the Institutional Ethics Committee was obtained before starting this study. Descriptive cross-sectional study design was followed and students studying MBBS phase 2 who volunteered were included. Complete procedures involved in the study was explained to them and the assurance of confidentiality of the data collected was given. Written Informed consent was obtained. Structured paper-based questionnaire containing 20 multiple choice questions was used for pre-test and post-test. Explanations were given if the subjects could not understand the items. After administering the pre-test, videos were shown on importance of hand hygiene, steps and the WHO 5 moments of hand hygiene. Then the post-test was administered. Data obtained was tabulated in Microsoft excel and analysis of the results was done by calculating percentages.

## RESULTS

Study involved 140 students. Table 1 shows the responses to each component of the questionnaire both in pre-test and post-test.

**Table 1:** Responses to questions assessing knowledge about hand hygiene, before and after the learning session

S.No.	Question	Correct option	Correct answer in Pre Test	%	Correct answer in Post Test	%	P value	CI
1	Standard precautions need to be followed only if the patient has infectious disease	No	120	86	135	96	0.0035	-0.17 - -0.03
2	Healthcare workers with non-intact skin should avoid direct patient care until the condition resolves	Yes	124	89	132	94	0.1336	-0.30 - -0.16
3	Healthcare Associated Infections (HAI) are a significant problem in India	Yes	106	76	139	99	0.0000	-0.30 - -0.16
4	Contaminated hands of healthcare workers are the main routes of cross transmission of infections in the hospital	Yes	98	71	138	99	0.0000	-0.36 - -0.20
5	Hand hygiene is the most effective method to prevent hospital acquired infections	Yes	106	76	139	98	0.0000	-0.29 - -0.15
6	Wearing of gloves eliminates the need to perform hand hygiene	No	94	68	110	76	0.1360	-0.18 - -0.02
7	Hand washing is indicated between tasks and procedures on the same patient	Yes	72	52	138	84	0.00000	-0.42 - -0.22
8	Which of the following should be avoided because they increase the chances of colonization of hands with potential pathogens							
8.1	Wearing jewellery	Yes	49	35	126	90	0.0000	-0.64 - -0.46
8.2	Regular use of hand cream	No	58	42	89	64	0.0002	-0.33 - -0.11
9	Time needed for hand rub is	20-30 sec	38	27	112	80	0.0000	-0.63 - -0.43
10	Time needed for hand wash is	40-60 sec	46	33	116	83	0.0000	-0.60 - -0.40

11	Hand hygiene for hand and soiled while emptying urine bag	Handwash	75	55	132	72	0.0031	-0.28 - -0.06
12	Hand hygiene before general physical examination of the patient	Handwash/ handrub	113	75	140	93	0.0000	-0.26 - -0.10
13	Hand hygiene after touching the patient surroundings	Handwash/ handrub	108	79	138	94	0.0002	-0.23 - -0.08
14	Hand hygiene before urinary catheterisation	Handwash/ handrub	74	56	124	89	0.0000	-0.43 - -0.23
15	Hand hygiene before performing surgical procedure	Handscrub	70	52	140	89	0.0000	-0.47 - -0.27
16	Purpose of hand hygiene is to	Remove transient flora from hands	41	30	116	83	0.0000	-0.63 - -0.43
17	Studies have shown hand hygiene compliance to be lowest among	Doctors	12	8.6	136	97	0.0000	-0.94 - -0.84

For the question asking students' belief about awareness of hand hygiene, 70 (52%) students felt that hand hygiene was important and they need to learn it and once learnt they are ready to practice regularly and 57 (43%) students felt that hand hygiene was very important and already knew enough about it and were ready to practice whenever necessary. Remaining 7 (5%) of the students felt that hand hygiene was either unimportant or were not sure about it. For a question about their exposure to learning opportunities related to hand hygiene in the medical college, 60 (43%) felt there was little exposure, 38 (27%) felt that they had enough exposure and 15% each felt that there was no exposure at all and cannot comment.

## DISCUSSION

In developing countries like India the hospital-wide prevalence of HCAs varies from 5.7% to 19.1%, with a pooled prevalence of 10.1%<sup>13</sup>. In the wake of the growing burden of health care associated infections, the increasing severity of illness and complexity of treatment, superimposed by multi-drug resistant pathogenic infections, health care practitioners are reversing back to the basics of infection preventions by simple measures like hand hygiene.<sup>14</sup> Hand hygiene is a general term that applies to either hand washing, antiseptic hand wash, antiseptic hand rub, or surgical hand antisepsis<sup>15</sup>. The awareness about hospital infection control practices among medical students has been found to be quite variable. To improve compliance, it is important to understand how medical students think about infection control, and the first step is to identify the strengths and weaknesses of their education. Further research is required to determine the knowledge levels among medical students because many studies have been performed on professional healthcare workers, and few studies have involved undergraduate medical students<sup>13,16</sup>. In this study for most of the questions 70-80% of the students responded with correct answer. Only around

30% knew the correct duration for which hand wash and hand rub needs to be done. Nearly half of the students were unaware that hand washing is indicated between tasks and procedures on the same patient and hand hygiene needs to be done before performing a procedure of surgery. There was significant improvement in the knowledge level after the learning session for all the components. If there is no curriculum set with hand hygiene concepts and skills, students might end up by developing faulty hand hygiene practices<sup>12</sup>. It is stressed from different authors for the hand hygiene topic to be made as an educational priority<sup>17</sup>. Though the previous MBBS curriculum prescribed by the Medical Council of India did not have, the Competency Based Medical Education being introduced from the academic year 2019-20 has explicitly listed hand hygiene as an important competency<sup>18</sup>. Hand hygiene needs to be learnt by all the healthcare workers including medical and allied health professionals and students. Several methods have been tried to increase the medical students' knowledge about hand hygiene such as including it in prescribed syllabus, routine practice by teaching faculty to act as inspiring role models, including in examination checklist of OSCE stations, regular feedback/reminders to students erring in hand hygiene practices, dissemination of YouTube links to clips on application of hand hygiene by leading institutions of the world, followed by classroom discussion on these clips, pasting of posters based on the "Five Moments for Hand Hygiene", dedication of some faculty members to hand hygiene promotion programme, giving trophies to students posted in a ward with highest compliance, etc.<sup>19</sup> In a study a combination of such strategies increased awareness level from 56% to 78.4% and the compliance level from mere 17% to 47%<sup>19</sup>. Several studies have shown that hand hygiene practices of the teachers/seniors were found to be the most important behaviour modifying factor in students<sup>19,20,21</sup>. In this study video-based teaching-learning method was used thinking that if found effective it will be easy to use

multiple times and also can be shared among students to enable them to view the videos in their computers or cell-phones for reinforcement and reference. Studies have shown better hand hygiene knowledge and practice with higher year of medical students the reason could be that those at advanced years are more exposed to clinical practices with substantial exposures to patients, clinical practices and senior clinical staff in hospital wards.<sup>22</sup>

## CONCLUSION

The MBBS II<sup>nd</sup> phase students of this institute are aware that hand hygiene is important but need to learn proper technique and situations when to practice it. Single video-based learning session was found to increase their knowledge, at least immediately after the session and could be conveniently used for training and reinforcement purposes.

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