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## RESEARCH ARTICLE

### KNOWLEDGE AND AWARENESS ABOUT HAND HYGIENE PRACTICES AMONG DENTAL STUDENTS OF DENTAL COLLEGE, PUDUCHERRY: A CROSS SECTIONAL STUDY

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## INTRODUCTION

The most common method for transmission of infectious diseases in a healthcare setting is by direct transmission (Beggs *et al.*, 2006). It was Ignaz Semmelweis in the 19<sup>th</sup> century who has first recognized the role of the practitioner's hand in the transmission of infections in his article on the aetiology and concept of childbed fever (Semmelweis, 1983). Monitoring of practices and regularly getting a feedback, education of students staff and other personnel about the effectiveness of hand hygiene practices, regular reminders in the form of illustrations and checklists in the hospital or dental setting, Regulation by the respective institution to give the best environment, Use of an alcohol based hand scrub are the five main strategies to reduce the rate of transmission of infectious diseases. (Amorim-Finzi *et al.*, 2010) According to the CDC guidelines, the skin contains both transient and resident microorganisms, and the more superficial organisms are most likely associated with infections in a healthcare setting compared to the organisms in the deeper layers. Non-surgical procedures necessitate hand washing without restriction to use by antantimicrobial soap. Surgical procedures require more

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#### ABSTRACT

The most common mode of transmission of pathogen from patient to patient and within healthcare environment is healthcare worker's hand. So the hand hygiene is very important measure for preventing the spread of infection and antibiotic resistance. This study aims to evaluate the knowledge and awareness about hand hygiene practice among dental students in puducherry. The objective of this study was to assess the awareness and also to create the self-awareness among dental students about the importance of effective hand hygiene in prevention of nosocomial infection as well as their compliance to follow the correct procedure for hand washing.

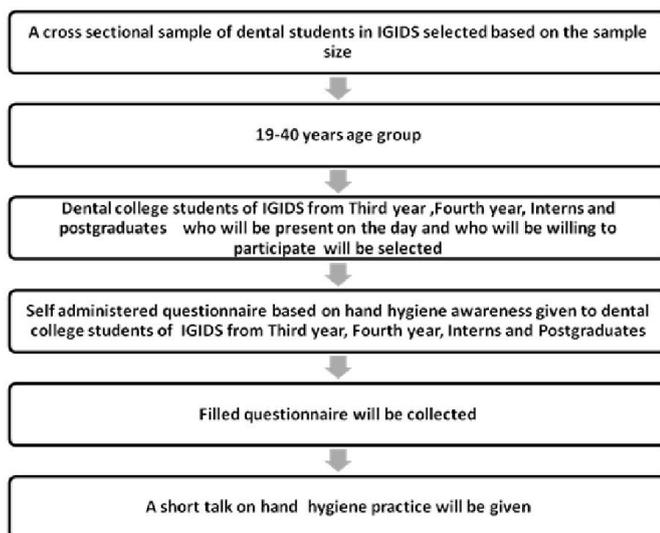
meticulous hand washing with the help of an alcohol based hand rub or an antimicrobial soap. The protocol for hand hygiene as given by the centre for disease control serves as a valuable guideline for prevention of hospital based infections in a health care setting. (Mangram *et al.*, 1999) Previously many cross sectional and questionnaire studies have been done to analyse the effectiveness of hand hygiene practices among medical and dental practitioners (Amorim-Finzi *et al.*, 2010; Omogbai *et al.*, 2011; Sulaiha *et al.*, 2010; Glad Mohesh and AbinayaDandapani, 2014). The present study is unique in that no questionnaire studies have previously done among dental students in Puducherry to evaluate hand hygiene practices. The aim of this study is to evaluate the knowledge and awareness about hand hygiene practice among dental students in Puducherry. The objective of this study was to assess the awareness and also to create the self-awareness among dental students about the importance of effective hand hygiene in prevention of nosocomial infection as well as their compliance to follow the correct procedure for hand washing.

## MATERIALS AND METHODS

This descriptive cross sectional study was conducted at Indira Gandhi Institute of Dental Sciences, Puducherry, among the postgraduate and undergraduate students. The study was approved by the Institutional ethical committee and was conducted for a period of 2 years. The sample size included all

the students who will be present on the day of examination. Selection criteria was based on students who volunteered themselves for the study and if they fit into inclusion criteria which was dental college students from Third year, Fourth Year, interns and Postgraduates who were present on the day of examination. Dental college students from Third year, Fourth year, interns and Postgraduates who were not present on the day of examination were excluded from the study. For data collection pre-structured questionnaire was used. Explanations were given if the subjects could not understand the items. The instrument used was questionnaire on, knowledge, attitude and practice of hand hygiene was used. Quality control of the questionnaire was ensured as the questionnaire was pretested for the quality and the principal investigator had made herself available for clarifications on the doubts raised by the subjects. To ensure confidentiality all subjects' identity was coded and stored safely. Subjects were assured of the confidence in the handling of their responses. For data Analysis and Statistical assessment, data collected were tabulated and compiled in MS Excel. Data collected were grouped into data for undergraduates, postgraduates and total summation of the entire sample. Descriptive statistics was used in terms of the frequency and percentage

### Study Protocol



### RESULTS

165 students had participated in the study of which 125 students were undergraduates and 40 students were postgraduates, the mean age of the undergraduates participating in the study was 21.648 years and the postgraduates had a mean age of 26.625 years (Table 1). The number of correct answers given for each question in the questionnaire was calculated separately for undergraduates and postgraduate students separately (Table 2) and the percentage of correct answers for each question were calculated for the entire sample (Table 3). The results have shown that the overall number of right answers given by the undergraduates and the postgraduates were almost similar (Table 2). The sample was unbiased in the awareness that hand hygiene was essential for the benefit of the patients as was evidenced from the maximum percentage of right answers given for the first question (98%). They were also in agreement that watches, bracelets and rings were to be avoided in surgical preparation (95%).

**Table 1. Details of participants**

Number of students (n)			
Undergraduates	125		
	III year	Iv year	Interns
	53	41	31
Postgraduates	40		
Gender			
Male	49		
Female	116		
Age (yrs)			
Mean age ug	21.648		
Mean age pg	26.625		

**Table 2. Number of right answers UG & PG**

Question number	UG / 125	PG/ 40
1	123	40
2	62	25
3	117	39
4	24	14
5	103	38
6	23	6
7	15	3
8	51	22
9	105	29
10	51	17
11	45	11
12	79	23
13	33	9
14	21	13
15	92	19
16	89	12
17	54	22
18	64	16
19	variable	variable

**Table 3. Hand hygiene questionnaire (n = 165)**

Question number	Question
1	Do you think hand hygiene is a quality indicator for patient's safety?
2	Do you think usage of gloves replace the need for hand hygiene by either hand rubbing or hand washing?
3	During surgical preparation rings, wrist, watches, and bracelets – are they allowed?
4	Can soap and alcohol based hand rub be used concomitantly?
5	Which among the below should be given priority during selection of hand hygiene products?
6	Which among the following has good effect on STAPH Aureus?
7	What should be the % of alcohol in alcohol based sanitizer?
8	Among the below which content of antiseptics can be used to decrease the infections caused by METHYICILLIN RESISTANT STAPH.aures?
9	Poor hand hygiene is responsible for spread of nosocomial infection
10	Both ENTEROCOCCUS FAECALIS and FALICUM can survive in the gloved and un gloved fingertips for at least
11	Do you know there are chemotherapy gloves for handling chemotherapeutic agents
12	Does routine hand hygiene is useful to remove normal bacterial flora of hands
13	Which among below significantly decreases the transient organism in hand?
14	How much seconds should we scrub our hand during washing with soap (whatever soap it might be)
15	Why hand hygiene compliance is still low in society?
16	Do you prefer to use hand scrub when your hands are visibly dirty before entering the operation room area?
17	Do you believe that hand washing helps to prevent spread of flu?
18	Is there any possibility for an HCW (health care provide health care workers) to contaminate their gloves with MRSA and vancomycin resistant enterococci by touching patient and patient environment?
19	Should we make campaign on bare below elbow?

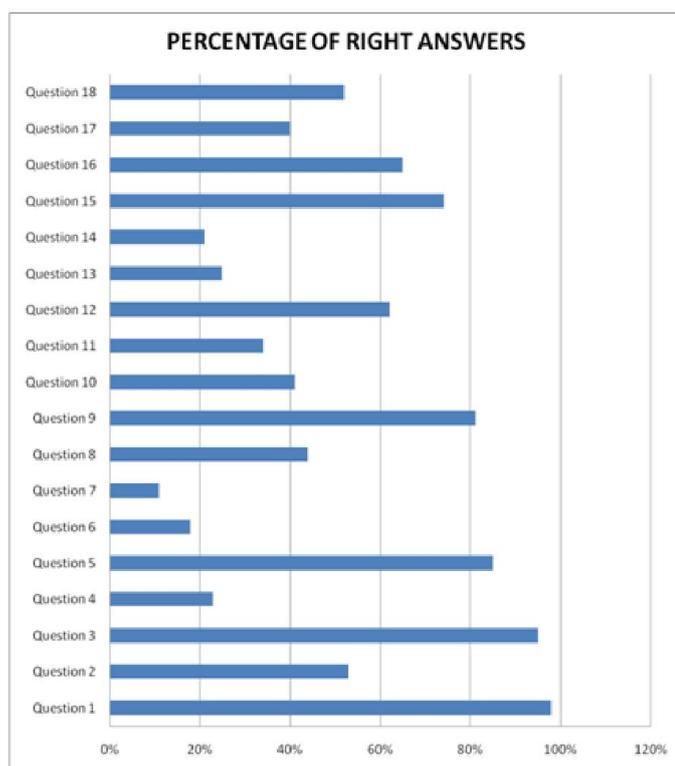


Chart 1

The lowest percentage of right answers were for knowledge based questions like percentage of alcohol in hand sanitizer (11%), the agent most effective against Staph aureus (18%) and the seconds of scrubbing with soap during washing (21%). The last question was opinion based, on whether a campaign for bare below the elbow was necessary. 59% chose not to answer the question, 28 % answered as lack of awareness or knowledge, 5% as negligence or laziness, 2% for poverty or cost, 1% for time factor, 2 % for both lack of awareness /knowledge and negligence/laziness, 2% for lack of awareness or knowledge and time factor and 1% for 8 lack of awareness or knowledge and lack of motivation.

## DISCUSSION

On the whole the results of the study are in have shown that a gap exists between attitude, the knowledge and practice of hand hygiene practices among the students. The results of this study show that the students of different categories have shown a positive attitude towards the necessity of hand washing however the percentage of right answers goes down for knowledge and practice related questions. The results of this study are similar to studies previously done by Sulaiha *et al.* (2010), in which discrepancy was found between the knowledge and actual practice of hand hygiene and they had concluded that strict enforcement to practice hand hygiene appeared essential. Similarly in the study done by J B Suchitra *et al.*, they had observed that on the whole, education had had a positive impact on improving the practice of hand hygiene from their observations on 150 health care workers. (Suchitra and Lakshmi Devi, 2007) However the positive indications for hand hygiene have been higher for our study with 98% of the participants choosing a correct answer for the question unlike the study done by Azzam al Kadi and Sajad Ahmad Salati, where only 56% of the participants were aware of the positive indications of hand hygiene. (Azzam al Kadi and Sajad Ahmad

Salati, 2012) The results of our study are also contradictory to the study done by Ahmet Ergin *et al.* (2011), where 63.7% of the participants has believed that there was no need to do hand washing and the authors had once again stressed on the need for more educational programmes. Compared to the previous two studies, the results of our study show that there is a positive attitude of the participants of the present study towards practice of hand hygiene. The results of our study for knowledge based questions were similar to the study done by Abhinav Singh *et al.* (2011), among dental students of central India in which students had shown a poor response to knowledge based questions, the authors had stressed on the need for more education programs for infection control as mandatory along with Hepatitis B immunisation measures. In contrast, in the study done by Glad Mohesh and Abinaya Dandapani (2014), the difference between knowledge and attitude had been much lesser compared to the actual practice of hand hygiene.

In the last question, 59% of the students had chosen not to answer the question, which necessitates the need for more educational programs for all categories of health care workers. The need for more educational programs had previously been highlighted in the systematic review done by Ward *et al.* (2014), who studied the automated and electronically assisted hand hygiene monitoring systems. They assessed the existing evidence surrounding the adoption and accuracy of automated systems or electronically enhanced direct observations and also reviewed the effectiveness of such systems in health care settings. The actual implementation of adequate educational programmes and the proper surveillance of hand hygiene regulations appear to go a long way in prevention of nosocomial infections. Similarly, Mani *et al.* (2010) evaluated the hand hygiene practice among the health care workers. Their study provides a comprehensive review of data regarding hand washing and hand antisepsis in health care settings. They have provided recommendations and suggested the significance of hand health hygiene in infection control.

## Conclusion

The questionnaire has on the whole given us a view into the general attitude of dental students who commonly deals with patients on a regular basis, towards hand hygiene practices. We have observed a huge gap between the positive attitude expressed by the students towards hand hygiene practices and the Knowledge and actual practice of this procedure. This study further stresses the need to conduct more educational programmes to all categories of health care workers and the need to implement good surveillance systems to observe whether the regulations are strictly followed.

The authors have no conflicts of interest.

## REFERENCES

- Abhinav Singh *et al.* Knowledge, Attitudes, and Practice Regarding Infection Control Measures among Dental Students in Central India. *Journal of Dental Education*, March 2011; 75(3):421-27.
- Ahmet Ergin *et al.* 2011. Evaluation of students' social hand Washing knowledge, practices, and skills In a university setting. *Cent Eur J Public Health*, 19 (4): 222–227.
- Amorim-Finzi *et al.* 2010. Rate of Compliance with Hand Hygiene by Dental Healthcare Personnel (DHCP) within a

- Dentistry Healthcare First Aid Facility *Eur J Dent*, 4:233-237
- Azzam al Kadi and Sajad Ahmad Salati. 2012. Hand Hygiene Practices among Medical Students. Hindawi Publishing Corporation. Interdisciplinary Perspectives on Infectious Diseases Volume, Article ID 679129, doi:10.1155/2012/679129.
- Beggs CB, Noakes CJ, Shepherd SJ, Kerr KG, Sleigh PA, Banfield K. 2006. The influence of nurse cohorting on hand hygiene effectiveness. *Am J Infect Control*, 34(10):621-6.
- Glad Mohesh and Abinaya Dandapani. UJMDS 2014, 02 (03): Page 127-131
- JBSuchitra, Lakshmi Devi N. 2007. Impact of education on knowledge, attitudes and practices of hand hygiene among various categories of health care workers on nosocomial infections. *Indian Journal of Medical Microbiology*, 25(3):181-7.
- Mangram AJ, Horan TC, Pearson ML, et al. 1999. Guideline for prevention of surgical site infection, Centres for Disease Control and Prevention (CDC) Hospital Infection Control Practices Advisory Committee. *Am J Infect Control*, 27:97-134.8
- Mani A, Shubangi AM, Saini R. 2010. Hand hygiene among health care workers, Jan-Mar;21(1):115-8. doi: 10.4103/0970-9290.62810
- Omogbai JJ et al. 2011. Hand hygiene amongst dental professionals in a tertiary dental clinic. *Afr. J. Clin. Exper. microbiol.*, 12(1): 9- 14.
- Semmelweis I. 1983. Etiology, Concept, and prophylaxis of childbed fever. Carter KC, ed. 1<sup>st</sup> Ed. Madison, WI: The University of Wisconsin Press.
- Sulaiha S A. et al. 2010. The lack of effective hand washing practice despite high level of knowledge and awareness in medical students of clinical years. *IeJSME*, 4(2): 18-26
- Ward MA, Schweizer ML, Polgreen PM, Gupta K, Reisinger HS, Perencevich EN. 2014. Automated and electronically assisted hand hygiene monitoring systems: A systematic review, May;42(5):472-8. doi: 10.1016/j.ajic.2014.01.002.

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