

Dental Student Hand Hygiene Decreased With Increased Clinical Experience

Nanmanas Yaembut, DDS, MS,* Ruchanee S. Ampornaramveth, DDS, PhD,[†]
Pagaporn P. Pisarnturakit, DDS, PhD,[‡] and Kesanya Subbalekha, DDS, PhD[§]

*Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Chulalongkorn University, Bangkok, Thailand; [†]Department of Microbiology, Faculty of Dentistry Chulalongkorn University, Bangkok, Thailand; [‡]Department of Community Dentistry, Faculty of Dentistry, Chulalongkorn University, Bangkok, Thailand; and [§]Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Chulalongkorn University, Bangkok, Thailand

OBJECTIVE: To investigate the effectiveness, related knowledge, attitudes, and practices of hand hygiene (HH) among dental students with different levels of clinical experience.

DESIGN: This was a cross-sectional analytical study. Bacterial samples on the participants' hands were obtained using a swab technique before and after handwashing, for oral surgical procedures. After culturing, the colony-forming units were counted. Self-reported questionnaires reflecting the knowledge, attitudes, and practices related to HH were completed by the participants.

SETTING: This study was performed in a primary oral health care institution, Faculty of Dentistry, Chulalongkorn University (Bangkok, Thailand). Bacterial samples and self-reported questionnaires were collected in the Department of Oral and Maxillofacial Surgery. Bacterial culture was performed in the Department of Microbiology.

PARTICIPANTS: The 120 participants comprised first, second, third-year clinical training students (CTs), and postgraduate dental students (PGs) (32, 34, 30, and 24 participants, respectively).

RESULTS: More than 99% of the bacteria were eliminated from the participants' hands after handwashing. Significantly higher numbers of bacteria were recovered from the hands of the PGs compared with those of the CTs, and the hands of the third-year CTs compared with those of the first-year CTs ($p < 0.001$), after HH. The first-year CTs had the highest attitude scores, whereas the PGs had the

lowest practice scores. The knowledge scores were similar in all groups.

CONCLUSION: HH effectiveness, attitudes, and practices of dental students decreased as students gained more clinical experience, whereas knowledge did not. Our results suggest that HH instruction should be given throughout the duration of dental students' education. (J Surg Ed ■■■■-■■■. © 2016 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: clinical experience, dental students, hand hygiene, handwashing, oral surgery

COMPETENCIES: Medical Knowledge, Practice-Based Learning, Practice-Based Improvement

INTRODUCTION

The hands are one of the most common sources of microbial transmission in patient care, especially during surgical procedures. Microorganisms on health care workers' hands may be transferred to patients via injection sites or surgical wounds, and eventually cause surgical site infections (SSIs). SSIs can reduce patients' quality of life because of delayed wound healing, longer hospitalization time, higher risk of re-admission to the hospital or intensive care unit, increased use of antibiotics, and additional costs. Moreover, SSIs also increase morbidity and mortality rates.^{1,2} Proper hand hygiene (HH) reduces the transmission of health care-associated pathogens and the incidence of infection.^{3,4} The use of sterile gloves, for surgical procedures can protect surgeons from patients' pathogens, however, they cannot replace the necessity for HH. When HH is neglected, pathogens on surgeon's hands might be transferred to surgical wound via small unnoticeable defects in gloves⁵⁻⁷ and may cause SSIs.⁸ The likelihood of SSI rate was

Correspondence: Inquiries to Kesanya Subbalekha, DDS, PhD, Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Chulalongkorn University, Henri-Dunant Road, Bangkok, Thailand, 10330; fax: (66)22-188-581; E-mail: skeskanya@gmail.com, wsiriwan@chula.ac.th

higher in the procedures in which gloves were perforated compared with the ones without perforation.⁸ Additionally, despite the absence of any detectable glove perforations, microorganisms from patients could be recovered from health care workers' hands.⁷ When HH is not properly done after patient care, pathogens may spread.

Although HH is considered to be a principal and the simplest way to reduce the incidence of SSIs, the average HH compliance of health care workers is less than 40%.⁹ The explanations for noncompliance include lack of time, lack of sinks and antiseptic agents, forgetfulness, poor knowledge regarding the clinical effectiveness of HH, bad attitudes, and the negative influence of senior staff considered as role models.^{10,11} A survey of beliefs about HH revealed that only 21% of first-clinical year medical students knew the indications for HH. These students also expected that compliance with HH methods was lower in more experienced physicians.¹² A study of Italian nursing and medical students demonstrated that HH knowledge, attitudes, and compliance improved over time, particularly with increased experience in patient care.¹³ In contrast, a study in Saudi Arabia revealed that adherence to handwashing before and after patient contact was highest among medical students and interns, followed by nurses, with the lowest adherence found among residents and consultants.¹⁴ Undergraduate Greek medical students and nursing students had different HH knowledge, beliefs, practices, and education because of differences between the disciplines.¹⁵ Moreover, a study of dental practitioners reported that dental students had a low concern for routine handwashing before and after patient care.¹⁶ Dental students and residents were found to have lower HH adherence than that of professors.¹⁷

HH practices are emphasized to be regularly performed before and after oral surgical procedures for prevention of SSI and microbial cross-contamination.¹⁸ Pathogens on operator's hands might be transferred to surgical site via perforation on the gloves^{19,20} and cause deleterious effects. Although the relationship of HH and oral SSI has never been clarified, postoperative infection rates of affected mandibular third molar removal varied between 0.8% and 5.8%.²¹ Moreover, oral cavity is rich of microorganisms including pathogenic virus and bacteria. In spite of wearing gloves, Gram-negative or enterococci microorganisms from patients were found on health care workers' hands after contact with patients' oral mucosa.⁷ The contaminated hands of team members can transfer pathogens to environment and other patients if HH is not properly achieved. Observation in our oral surgery clinic revealed that the first-year clinical training dental students had greater HH compliance than that of higher-level clinical training students (CTs). Therefore, questions were raised about the HH effectiveness, knowledge, attitudes, and practices of dental students. The objective of this study was to investigate and compare the effectiveness of HH before

performing oral surgical procedures, and the related knowledge, attitudes, and practice of HH in dental students with different amounts of clinical experience.

MATERIALS AND METHODS

Study Design

A cross-sectional study was undertaken from September-December 2013 in the Oral and Maxillofacial Surgery Department of the Faculty of Dentistry, Chulalongkorn University (Bangkok, Thailand). The protocol was approved by the Ethics Committee of the Faculty of Dentistry.

The participants comprised 120 dental students attending the Oral Surgery Clinic, 32, 34, 30, and 24 first-, second-, third-year CTs, and postgraduate dental students (PGs), respectively. Bacterial samples were collected from the participants' dominant hands before performing HH. The participants then performed surgical handwashing with 5 mL of chlorhexidine gluconate (Ecoland, Garforth, England) using their usual technique that they routinely did, without emphasizing the World Health Organization's (WHO) recommended HH guideline. Immediately after hand drying with sterile towels, a second collection was done from the participants' nondominant hand. After completing the oral surgery procedure, a third collection was done from the dominant hand instantly after glove removal. Then the participants completed a self-administered questionnaire.

Bacterial Specimen Collection

Sterile cotton swabs were used to collect bacteria from 4 areas of the hand, 1 swab per area, using a reproducible technique. A cotton swab was (1) rubbed across the palm, starting from the wrist to each fingertip and the interfinger area from the thumb to the little finger, (2) rubbed across the back of the hand in the same manner as for the palm, (3) rubbed across the border of each finger, starting from the tip of the thumb to the tip of the little finger, and (4) rubbed twice around the wrist.

The tip of the cotton swab was cut off using sterile scissors and put into a test tube containing 1 mL of sterile phosphate buffered saline. The tubes were sent to the Microbiology Department of the Faculty of Dentistry for culturing.

To recover the bacteria from the cotton swab, the test tubes containing the cotton swab tips were placed on a shaker at 100 rpm for 10 minute and vortexed vigorously for 1 minute. An 100 mL of each sample was spread on Tryptic soy agar plate using sterile glass balls. After 48 hours of aerobic incubation at 37°C, the number of colonies was counted and colony-forming units (CFUs) were calculated.

Download English Version:

<https://daneshyari.com/en/article/10176382>

Download Persian Version:

<https://daneshyari.com/article/10176382>

[Daneshyari.com](https://daneshyari.com)