

Assessment of Hand Hygiene Practice among Undergraduate Female Students at College of Dentistry, Taibah University, Saudi Arabia

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Abstract

Background: In medical dentistry field, there are some studies been conducted, almost they confirmed that soiled hands of health care workers play an active role in diseases transfer and infection.

Objectives: To assess adherence and quality of hand hygiene practice of undergraduate female dental students.

Subjects and Methods: A cross-sectional descriptive study was carried out throughout the period 8th- 19th March, 2015 at clinics of undergraduate female dental students at College of Dentistry, Taibah University in Almadinah Almunawarah, Saudi Arabia. It included all students enrolled in 3rd, 4th and 5th academic levels during the Academic year 2014 - 2015. Hand hygiene practices adherence and quality were measured using Covert observational method.

Results: Out of total 148 observations, (76 before patient contact and 72 after patient contact), all students showed high rate of compliance after patient contact (93.1%) compared to the compliance rate (17.1%) before patient contact. This difference was statistically significant, $p < 0.001$. The total number of observed hand hygiene techniques was 115 either before or after patient contact. For alcohol based hand rub technique only 11.8% were performed correctly out of 51 observations and 14.1% for hand washing technique out of 64.

Conclusion: Hand hygiene compliance rate among undergraduate female students was very low before patient's contact. In addition, quality of both alcohol based hand rubs and hand washing techniques was poor. Their curriculum must be modified in order to improve hand hygiene practices as this is expected to play a major role in preventing disease transmission when the students pass out and start their healthcare work carrier in future.

Keywords: Hand Hygiene; Dental; Female Students; Compliance; Practice

Introduction

It's highly recommended to prevent Healthcare Associated Infections (HAI), as to implement strict regulations of diseases spread precautions. Implementation of such regulations and procedures are essential matter to control that type of infection and diseases spread [1].

Implementing such regulations and policies are not enough to prevent and control diseases spread, other personal care also is needed and important, hand washing is one of the most important steps towards achieving healthier life with less possible infection which been

considered several centuries ago [2]. Many other factors rather than personal affect such as habits, religious rituals, or cultural inherited practices, not only these factors but also the type, place and standard of living, where cities inhabitants have different life practices than villages inhabitants, as the standards of families they are belonging to is also impose a different practices during daily activities, all these factors can control the personal habit of washing hands as a protection against infections. ⁽²⁾ The link between hand washing and infection has been discovered earlier by Ignaz Semmelweis who could prove the direct relation between hand washing habit and infection [3].

History of written guidelines of hand hygiene started in 1980s where center for disease control and prevention (CDC) published the first one, this guideline recommended washing of hand between one patient contact and another, and using antiseptic after and before each surgery of invasive therapy [4]. An updated guideline has been issued in 2002 by Healthcare Infection Control Practices Advisory Committee (HIPAC) that recommended the need of using antibacterial soap or antiseptic product after leaving the patient's room with multidrug-resistant pathogens [5].

Hand hygiene is extremely important action for decontaminating and control diseases spread by cleaning or washing hands to remove or reduce any microorganisms, hand hygiene techniques includes hand cleaning and washing by soap with running warm water, giving special care to all areas of fingers and areas been used while contact patient in the front and back sides. As it includes but not limited to washing by means of antiseptic or hand wash, such as waterless antiseptic hand wash, even surgical antiseptic hand wash, or rubbing hands using alcohol based product [6].

Hand washing is necessary when hands become visibly dirty or came in contact with blood and other body secretions or when exposure to potential spore forming pathogens is suspected. Adequate hand hygiene should be ensured before and after contact with patient [7].

Using soap and running water is sufficient for transit type, with using enough amount of soap to be used on the hands then rubbing them using running water to clean the hands surface dry hands thoroughly using a method that does not contaminate hands. Also, alcohol based products are sufficient to be used with rubbing hands for cleaning with giving special attention to all parts of the hands [7].

In medical dentistry field, there are some studies been conducted, almost they confirmed that soiled hands of health care workers play an active role in diseases transfer and infection [8-10].

Aim of the Study

The current study aimed to assess hand hygiene practice of undergraduate 3rd, 4th, and 5th year female dental students at College of Dentistry, Taibah University.

Subjects and Methods

A cross-sectional descriptive study was carried out throughout the period 8th- 19th March, 2015 at clinics of undergraduate female dental students at College of Dentistry, Taibah University in Almadinah Almunawarah, Saudi Arabia. It included all students enrolled in 3rd, 4th and 5th academic levels during the Academic year 2014-2015. Hand hygiene practices were measured using Covert observational method. Students were observed before and after contact with patients. Data were collected using an observation special form. Hand hygiene alcohol based hand rub techniques were classified as technically correct if the duration was 20 seconds or more for alcohol based hand rub, 40 seconds or more for hand hygiene and if correct steps were made and sufficient amount of product were use. Approval from the Research Ethics Committee TUCD-REC was obtained before starting this study.

Data was analyzed using SPSS, version 22 and compiled in Excel. Data collected were grouped into three groups. First, before patient contact samples of 3rd, 4th and 5th year students, Second, after patient contact samples of 3rd, 4th and 5th year students and third, samples of hand washing and alcohol based hand rub techniques. McNemmar test was applied to compare hand hygiene compliance rates before and after patients` contact among students.

Results

Sixty-two female dental students participated in the study. They were recruited from 2nd (22 students), third (22 students) and fourth (18 students) years. Out of total 148 observations, (76 before patient contact and 72 after patient contact), all students showed high rate of compliance after patient contact (93.1%) compared to the compliance rate (17.1%) before patient contact. This difference was statistically significant, $p < 0.001$ (Figure 1).

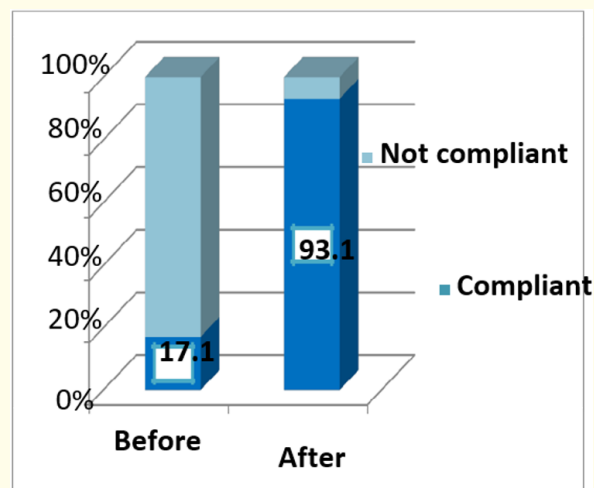


Figure 1: Student's adherence to hand hygiene guidelines in relation to patient's contact.

The total number of observed hand hygiene techniques was 115 either before or after patient contact. For alcohol based hand rub technique only 11.8% were performed correctly out of 51 observations (Figure 2) and 14.1% for hand washing technique out of 64 as shown in figure 3.

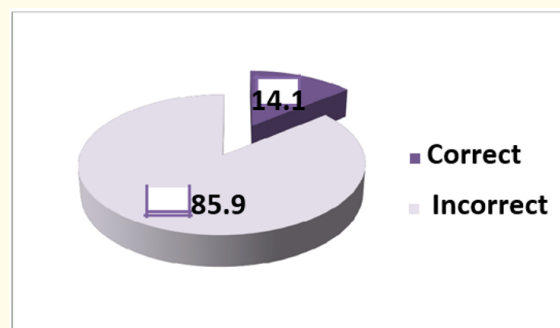


Figure 2: Evaluation of hand washing technique performance among students.

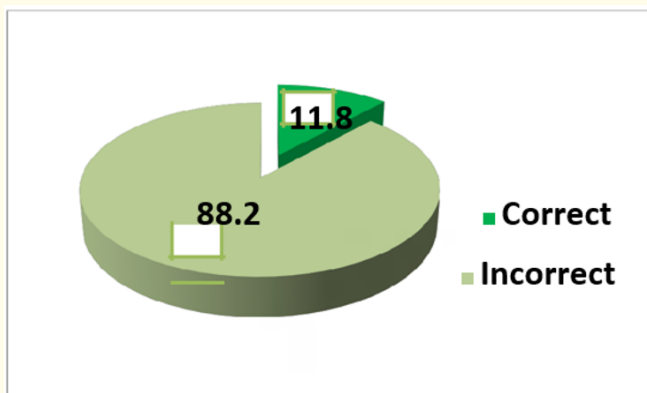


Figure 3: Evaluation of alcohol-based hand rub technique performance among students.

Discussion

Globally, healthcare-associated infection is an essential health issue, and hand hygiene is considered as an effective technique in infection control. Hand hygiene technique is a simple one [1]. Despite of that, compliance rates of hand hygiene among medical students and healthcare providers globally are low.

This study aimed to assess the hand hygiene adherence and practices of undergraduate female dental students. According to the findings of collected data the compliance rate of hand hygiene before patient contact was only 17.1%. A figure of 17% has been reported among medical students at Quassim University, Saudi Arabia [10]. Online searching yielded [11-13] similar studies with quite similar figures. In UK, 8.5% of final year medical students at The Royal London Hospital School of Medicine and Dentistry washed their hands before patient contact, this figure rose up to 18.3% when hand hygiene signs were displayed [14]. In developing world, the situation in healthcare centers is more unacceptable [15]. In Saudi Arabia [8] compliance with hand hygiene was reported among 70% of medical students, 18.8% of nurses, and 9.1% of senior medical staff. In Nigeria, a low compliance rate of hand hygiene before wearing a gloves (25.7%) has been reported in a tertiary Hospital [16]. Only half of the seniors dental students at college of dentistry, university of Sharjah mentioned washing hands between each glove change [17]. Another study was carried out in a dental teaching center at University of Lyon in France showed 57.8% compliance rate before wearing gloves which reflects a higher hand hygiene comparing to our study [18].

The reasons standing behind this behavior could be multifactorial which means it could be from students attitude toward the importance of hand hygiene before patient contact as they will wearing a gloves so no need for hand hygiene or could be from the stress on the students as they focusing in the case between their hands and the correct steps to finish it correctly so hand hygiene seem not a very important steps for them or may be due to lack of time which seem not a convincing reason. Other reasons may be related to the training provided to the students that not clarifying the importance of hand hygiene before patient contact or the students not receive enough instructions during clinical time.

In the current study, a high overall compliance rate of hand hygiene after patient contact was reported (93.1%). Students showed a good behavior and reflected their awareness toward the importance of cleaning contaminated hands after patient contact.

This result is higher than the results of other studies, in a study conducted in Tertiary hospital in Nigeria [16] the hand hygiene compliance rate was only 46.7% after removing gloves. Another study carried out in a dental teaching center at University of Lyon in France showed 30.4% compliance rate of hand washing after removing gloves [18].

In our study, the quality of the hand hygiene techniques was poor. For alcohol based hand rubs and hand washing techniques, only 11.8% and 14.1% of students, respectively performed the techniques correctly. The main error source were students not following WHO steps for alcohol based hand rubs and hand washing techniques. Another study from Saudi Arabia reported substandard techniques of hand washing among medical students, nurses and senior medical staff [8]. Also, in dental teaching center at University of Lyon in France, 36.6% of alcohol based hand rub techniques were performed correctly whereas 50% of hand washing techniques were optimal [18].

Among important limitation of this study is the inclusion of students from only one college in one city in the Kingdom of Saudi Arabia which could affect the generalizability of results. Also, the case-control nature of the study did not prove causality between compared variables. Despite of these limitations, the study discussed an extremely important matter in infection prevention and control in oral health care facilities.

Conclusion

In conclusion, hand hygiene compliance rate among undergraduate female students was very low before patient`s contact. In addition, quality of both alcohol based hand rubs and hand washing techniques was poor. Multifaceted and dedicated efforts must be carried out to modify their behavior at early phases. Their curriculum must be modified in order to improve hand hygiene practices among the dental students as this is expected to play a major role in preventing disease transmission when the students pass out and start their healthcare work carrier in future.

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