

Original Article

Hand Washing of Nursing Students: An Observational Study

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Abstract

Background: Hand washing is the most important way in transmission of hospital infections and is the easiest, most efficient and cost-effective method to prevent hospital infection. Therefore, health care workers should pay attention to hand washing. Especially, because nursing spend more time with patients than any other health care workers group, their compliance with hand washing seems to be more vital. Similarly, nursing students spend a long time during their studies on clinical placements and therefore have to be exceptionally sensitive in hand washing for one more reason that is for gaining this habit in their preparation for their future nursing role. The purpose of this observational study was to determine behaviors of the nursing students towards hygienic hand washing.

Method: The students observed by observers during the nursing practice. The observers were selected in each practice group. The participant of the study were 106 nursing students.

Results: Students were evaluated according to the frequency of their hand washing in required situations. It was found that 50% of the students washed their hands 1-3 times. Considering the students' reasons for hand washing; the study determined that they were washing their hands at a maximum rate of 36.2% after the medicine administration at the clinic. In terms of the duration of hand washing it was found to be lasting for 60 second or above only for a 4.7%.

Conclusion: Nursing students did not use the correct technique to wash hands in sufficient number and duration and that they usually washed their hands for the reason of protecting themselves.

Key Words: Hand washing, Observational study, Nursing students.

Introduction

Healthcare-associated infections (HAI) result in excess deaths, length of hospital stay and healthcare costs (Stone et al. 2002; Roberts et al 2003; Chen et al. 2005; Rosenthal et al 2008). For example, 5,000,000 cases of healthcare-associated infection occur annually in Europe,

contributing to 50,000–135,000 additional deaths, and excess healthcare costs of €13–24 billion (World Health Organization 2009), and a HAI can add 18–24 days to the length of hospital stay (Chen et al 2005). According to the data of the World Health Organization (WHO), HAI occurs in one out of approximately ten patients who

receive treatment as an inpatient (World Health Organization 2002). The worldwide incidence of hospital infections is between 7% and 10% and the treatment costs of these infections are quite high. Incidence of hospital infection in Turkey was reported to vary between 3.1% and 14.1% (Mustafa et al 2009). Especially, HAI incidence of multi-bed hospital is over 10% and increases the resistance development.

Hand hygiene (HH) in the healthcare setting is considered as an important infection control measure in the prevention of HAIs (Centers for Disease Control and Prevention 2002). Hand washing is the most important way in transmission of hospital infections and is the easiest, most efficient and cost-effective method to prevent HI (Ward 2000; Rosner 2007; Gencer 2008; Malliarou et al 2013).

Unfortunately, although health professionals are aware that health care associated infection has an impact on patient outcome (Kusain and Jeffrey 2015) the simplicity of hand washing procedure, studies continue to report unacceptably low hand washing compliance rates amongst health workers (Bischoff et al 2000; Pittet et al 2004; 2000; Lankford et al 2003; Hugonnet & Pittet 2000).

Nurses constitute the largest percentage of the health care workers, (Buerhaus et al 2007), and they are the “nucleus of the health care system.” (Abualrub 2007) Because they spend more time with patients than any other health care workers, their compliance with hand washing guidelines seems to be more vital in preventing the disease transmission among patients. Also during practices, student nurses who spend a long time with the patients and are in contact with them at most must be exceptionally sensitive.

Student nurses are receive the theoretical knowledge of hand washing in First-Year especially and apprehend the importance of hand washing. There for, the students who involved in a continuous interaction with the patients during clinical practices are expected to wash their hands using a correct method and in sufficient frequency. From this point of view, the purpose of this observational study was to determine behaviors of the nursing students towards hygienic hand washing during clinical practices.

Methods

An observational and descriptive design was adopted.

Design

This study is an observational study. To meet the aim of this study, an observational descriptive design was deemed most appropriate, because observation is an excellent method for the assessment of behavior in conjunction with nurses student' skills and clinical performance (Polit & Hungler 1999). However, this method of structured observation requires the investigator to be knowledgeable in the area under investigation (Polit & Hungler 1999). Therefore, each observer was selected from practice the group which consisted on an average ten students.

Setting and Sample

The population of the study composed of the First-Year students (137) who attended in the nursing department of the Faculty of Health Sciences in a university. Data were collected during the period May-June 2010. Due to inaccessibility of some students during the dates of the observation those students were excluding from the study and students who were doing the observations were also excluded from the study, and thus the final sample of the study consisted of 106 students.

Data were collected by means of non-participant structured observation. The observers observed all the students during the nursing practice. Each student was observed through a practice day. When collecting the data, in order not to create a behavioral change in the student, students were not informed about who was going to be observed by and when. The observation forms were completed without their presence, and it was ensured that the observed student was unaware of the observation. Data was collected, through observation, in the clinics between the hours of 8:00 and 16:00 during nursing practice of the “Fundamentals of Nursing” lesson. The “Fundamentals of Nursing” lesson is a course on which lays the foundation of numerous nursing practices. Therefore, the data was collected during clinical practice of this lesson.

Observation and personal information forms prepared by the researcher in accordance with the

literature (Balci Akpınar 2011; Gencer 2008; Hugonnet & Pittet 2000; Parini 2004; Sabuncu et al 2008; Sarvan 2007) were used to collect data. There are questions about personal information of the students in the personal information form. And in the observation form, there is a check list containing information such as hand washing reasons, number of hand washing, time spent for hand washing and hand washing techniques, etc. aiming at determining hygienic hand washing states of the students.

An observer chosen for each clinic was trained, before the study, on how to carry out the observation. The observers observed all the students during the nursing practice and recorded the necessary information in the observation form.

Ethical Consideration

The students were informed regarding the observation for their behaviors towards hand washing and their written permissions were obtained. However, in order not to create a behavioral change in the student, they were notified not to provide the information about whom they will be observed by and when. Students who accepted to participate in the study, under the light of this information, were included in the study. Thus, the principle "Informed Consent" was met by informing the students, who were included in the study, about the purpose of the study, the principle "Confidentiality and Confidentiality Protection" was met by informing that the information obtained will be kept confidential and the principle "Respect for Autonomy" was met with the voluntary participation of the students.

In addition, prior to collect the data, the necessary permissions were obtained from the

Faculty of Health Sciences in the university in order to conduct the study.

Data Analysis

The SPSS 11.0 statistical package program was used to assess statistical analysis of the data. The percentage test was used to evaluate the data.

Results

The results of the study concluded that majority of the students included in the study (61.5%) were between the ages of 20 and 23 and most (88.7%) were graduated from high school. Furthermore, the students generally (73.6%) provided care to the patients between 1 to 3 patients in the practices (Table 1).

Table 2 illustrates the practice situations of the students' hygienic hand washing steps. The correct hand washing steps did by the students mostly were the *lathering the hands with soap* (94.3%) and *rinsing hands from the wrist down* (82.0%) (Table 2).

Table 3 illustrates frequency and the duration of hygienic hand washing made by the students participating in the study. Frequency of hand washing was evaluated according to the situations the hand washing was required and in the right technic. 50.0% (maximum rate) of the students washed their hands 1-3 times and 0.9% (minimum rate) washed their hands 10 times or more. In terms of the students' duration of hand washing, the hand washing duration of 60 second or above was only 4.7%.

Considering the students' reasons for hand washing; the study determined that reasons for the hand washing at maximum rate were *after the medicine administration* (36.2%) and *after the practices are completed* (12.4%) at the clinic (Table 4).

Table1. Characteristics of the Students

Characteristics	N	%
Age		
17-19	37	34.8
20-23	65	61.5
24 and above	4	3.7
Level of Education		
Private high school	12	11.3
High school	104	88.7
Number of patients		
1-3	78	73.6
4-6	23	21.7
7 and above	5	4.7

Table2. Implementation Status of the Students the Steps of Hygienic Hand Washing

The Steps of Hygienic Hand Washing	The correct application		The incorrectly application	
	N	%	N	%
	With paper towels turn on the tap	34	32.0	72
Soak the hands from the wrist down	21	19.8	85	80.2
Lathering the hands with soap	100	94.3	6	5.7
Cleaning the inside of combining the two hands palms	11	10.3	95	89.7
Rubbing it between your fingers to wash their hands thoroughly	47	44.3	59	55.7
Wash the thumb	13	12.2	93	87.8
Rinsing hands from the wrist down	87	82.0	19	18.0
Drying hands	71	67.0	35	33.0
Turn off the faucet with a towel	21	19.8	85	80.2

Table 3. Hygienic Hand Washing Frequency and Duration

Frequency of hand washing	N	%
1-3	53	50.0
4-6	43	40.6
7-9	9	8.5
10 and above	1	0.9
Duration of hand washing	N	%
9-17 second	21	19.8
18-28 second	45	42.5
29-39 second	35	33.0
60 second and above	5	4.7

Table 4. The students' reasons for hand washing

Reasons for Hand Washing	N	%
Before practices are start at the clinic	22	5.6
After the practices are completed at the clinic	49	12.4
Before the signs of life	12	3.0
After the signs of life	38	9.6
Before the medicine administration	37	9.4
After the medicine administration	143	36.2
Passing from a patient to another patient	35	8.9
All hands are dirty	12	3.0
We have our hands by touching infected matter	28	7.1
After applying to the patient care	19	4.8

Discussion

The source of transferring and spreading microorganisms with high virulence and multi-drug resistance between the patients in the hospital is the dirty hands of the health workers at rate of 20-40% (Erdoğan 2006; Pittet 2000). Therefore, the health workers as well as the student nurses who are the health workers of the future and spend the most time with the patients at the hospital are expected to frequently wash their hands with the appropriate technique.

Effectively washing hands is associated with the hand washing technique and its duration. However, the study proved that the effective hand washing steps were often applied incorrectly. The study concluded that the most accurate hand washing step is "lathering the hands with soap" (Table 2). The reason behind why this step was carried out accurately at most may be the habit of using a soap to wash our hands in our social lives.

The study determined that the students washed their hands 1-3 times at most depending on the situations where hand washing is necessary. As for the students' hand washing duration, accurate had washing time was fulfilled a few times (Table 3). During daily activity, nursing students progressively accumulate microorganisms on their hands from direct patient contact or contact with contaminated environmental surfaces and devices. These organisms are easily removed by hand washing with soap (Masadeh & Jaran 2009; Chakraborty et al 2010). Failure to wash hands appropriately could predispose these nursing students to diseases caused by the organisms. When washing hands, the duration affects the effectiveness of hand hygiene as much as the technique. Depending on the contamination amount, the hands must be washed for at least 60 seconds in order to completely remove the organisms (WHO 2009, Balci Akpınar 2011; Gencer 2008; Sabuncu et al 2008).

Although the hands are washed accurately, the organisms are not removed from the hands due to washing not made for a sufficient period. The insufficient number of sinks at hospitals, hand washing units not being proportionally installed at the service areas physically and the intense work pace of the nurses are thought to have an

adverse effect on number and duration of hand washing. A study conducted reported that the health care personnel did not adopt the hand washing protocols, which was based on the lack of their knowledge and motivation and that excessive workload along with the lack of hand washing and drying materials increased the issue further (Ay & Karabey 2001).

In this study, it was determined that the rate of students' hand washing after Passing from a patient to another patient was low (Table 4). Whereas, hand washing when going from patient to patient and before and after care is given to every patient plays a major role in the prevention of hospital infections (Centers for Disease Control and Prevention 2002).

The reason behind the students' hand washing at most is to protect themselves (Table 4). The reason for this is that the first-year students have insufficient theoretical knowledge regarding the transmission of infections and therefore, they tend to wash their hands more in order to protect themselves. Therefore, awareness of patient's safety should be enhanced among nurses to promote their hand washing compliance.

Conclusion

The results of the study concluded that the nursing students did not use the correct technique to wash hands in sufficient number and duration and that they usually washed their hands for the reason of protecting themselves. In addition, the students often failed to fulfil the hygienic hand washing steps. In order for the students to effectively wash their hands at the clinics, it is very important to organise routine training seminars on the subject and to use reminder posters for the students. Furthermore, for the hand washing habits of the students, it is thought that it may be beneficial to personally train the student and to check his/her situation with feedback.

In order to increase compliance, it is important to provide a sufficient amount of sinks in work areas, to have them operate with an arm or a knee and to place the liquid soap, lotion and disposable towels in an easily accessible manner.

References

- Ay, P., Karabey, S. (2001) Hand washing and hand disinfection. *Actual Medical Journal*, 6: 52-6.
- Balci, Akpınar, R. (2011) Infection Control. In: *Clinical Practice Skills and Methods*. (pp.192-195) Atabek, Aşti, T., Karadağ, A. (ed) Nobel Kitapevi.
- Bischoff, W.E., Reynolds, T.M., Sessler, C.N., Edmond, M.B. and Wenzel, R.P. (2000) Handwashing compliance by health care workers: The impact of introducing an accessible, alcohol-based hand antiseptic. *Arch. Intern. Med.*, 160: 1017-1021.
- Buerhaus, P.I., Auerbach, A.I. and Staiger SO. (2007) Recent trends in the registered nurse labor market in the U.S: short-run swings on top of long-term trends. *Nurs Econ.*, 25:59-67.
- Centers for Disease Control and Prevention (2002) Guideline for hand hygiene in health care settings: recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Taskforce. *Morbidity and Mortality Weekly Report* 51(RR-16), 1-48.
- Chakraborty, D., Basu, S. and S. Das, (2010) A study on infections caused by metallo beta lactamase producing gram negative bacteria in intensive care unit patients. *Am. J. Infect. Dis.*, 6: 34-39.
- Chen, Y., Chou, Y. and Chou, P. (2005) Impact of nosocomial infection on cost of illness and length of stay in intensive care units. *Infection Control & Hospital Epidemiology*, 26(3):281-297.
- Erdinç, S. (2006) Knowledge and Practices Relating to Universal Precautions Nurses, *Marmara University Institute of Health Sciences M.Sc.*, İstanbul.
- Gencer, S. (2008) Prevention and control of hospital infections essential: Hand wash. In: *Nosocomial infections: Prevention and Control Symposium Series*. pp.71-78
- Hugonnet, S., and Pittet, D. (2000) Hand hygiene-beliefs or science? *Clin Micr Inf*, 6, 350-356.
- Kusain Amil T. and Jeffrey O. (2015) Assessing Healthcare Associated Infections and Hand Hygiene Perceptions amongst Healthcare Professionals. *International Journal of Caring Sciences* 8 (1), 108
- Lankford, M.G., Zembower, T.R., Trck, W.E., Hacek, D.M. and Noskin, G.A. et al., (2003) Influence of role models and hospital design on hand hygiene of healthcare workers. *Emerg. Infect. Dis.*, 9: 217-223.
- Masadeh, H.A. and Jaran, A.S. (2009) Determination of the antibacterial efficacy of common chemical agents in cleaning and disinfection in hospitals of North Jordan. *Am. J. Applied Sci.*, 6: 811-815.
- Parini, S. (2004) Know your hand in hygiene. *Nurse Management*. 35,12-15
- Pittet, D. (2000) Improving Compliance With Hand Hygiene in Hospitals. *Infect Control Hospital Epidemiology*, 21,381-386.
- Pittet, D., Simon, A., Hugonnet, S., Pessoa-Silva, C.L. and Sauvan, V. et al., (2004) Hand hygiene among physicians: performance, beliefs, and perceptions. *Ann. Intern. Med.*, 141: 1-8.
- Pittet, D., Hugonnet, S., Mourouga, P., Sauvan, V. and Touveneau, S. et al., (2000) Effectiveness of a hospitalwide programme to improve compliance with hand hygiene. *Lancet*, 356: 1307-1312.
- Polit, D. and Hungler, B. (1999) *Nursing Research: Principles and Methods*, Lippincott, New York.
- Roberts, R., Scott, R., Cordell, R., Solomon, S., Steele, L., Kampe, L., Trick, W.E., Weinstein, R.A. (2003) The use of economic modelling to determine the hospital costs associated with nosocomial infections. *Clin Inf Dis* 36:1424-1432.
- Rosenthal, V.D., Maki, D.G., Alvarez-Moreno, C., Leblebcioglu, H., Higuera, F., Cuellar, L.E., Madani, N., et al. (2008) *American Journal of Infection Control* 36(9), 627-637.
- Rosner, F. (2007) Hand washing and infection Control. *Mount Sinai Jour of Medicine*, 74,33-35,
- Sabuncu, N., Ecevit, Alpar, Ş., Karabacak, Ü., Gülseven, Karabacak, B., Şenturan, L., Şahin, Orak, N., and Oksay, Şahin, A. (2008) Medical / Social / Hygienic Hand Wash In: *Fundamentals of Nursing Basic Skills Guide*, (pp.35) Sabuncu N. (Ed.) İstanbul: İstanbul Medikal Publishing.
- Sarvan, S. (2007) Infection control In: *Basic Nursing Concepts, Principles and Applications* (pp.163-170). Akça, Ay, F. (ed), İstanbul: İstanbul Medikal Publishing.
- Stone, P., Larson, E. and Kowar, L. (2002) Systematic audit of economic evidence linking nosocomial infections and infection control interventions: 1990-2000. *American Journal of Infection Control* 30(3), 145-152.
- Ward, D. (2000) Hand washing facilities in the clinical area: a literature review. *British Journal of Nursing*, 9(2),82-85
- World Health Organization (2009) WHO Guidelines for Hand Hygiene in Health Care. First Global Patient Safety Challenge: Clean Care is Safer Care. Retrieved from http://whqlibdoc.who.int/publications/2009/9789241597906_eng.pdf on
- World Health Organization (2009) WHO Hand Hygiene: Why, How & When? Retrieved from http://www.who.int/gpsc/5may/Hand_Hygiene_Why_How_and_When_Brochure.pdf