

A STUDY ON HAND HYGIENE COMPLIANCE FOR EDUCATION AMONG VISITORS IN MEDICAL UNIT

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ABSTRACT

The study aims to assess and compare hand hygiene compliance among visitors, pre and post education of hand hygiene in medical units, Thailand. The sample of 40 visitors were selected by purposive sampling. The researcher observed hand hygiene compliance of visitors with pre and post education of hand hygiene, followed by an evaluation tool for hand hygiene. Data was analyzed by program for statistic values as frequencies, percentages and were compared by the percentages of hand washing correctly between pre and post education by McNemar chi-square test. The result showed that before and after touching a patient, the hand washing correctly was significantly improved from 7.5% in pre education to 70% in post education ($P=0.000$). After being at risk of exposure to body fluids, the hand washing correctly was significantly improved from 15% in pre education to 65% in post education ($P=0.006$). Also, after touching patient surroundings, the hand washing correctly was improved from 20% in pre education to 30% in post education. But these was no significant difference ($P=0.338$).

Keywords—Hand Hygiene Compliance, Education, Visitors

INTRODUCTION

Infection is a major problem for health care systems in many countries [1]. Infections cause deaths, longer lengths of stay and a lot of money. According to the U.S. Centers for Disease Control (CDC) more than 2 million infections start every year in a hospital, nursing home or another healthcare setting, 70,000 people die every year as the result of getting an infection in a hospital, nursing home or another healthcare setting, the United States spends more than \$45 billion every year for the extra care and treatment that is needed when infections start in a hospital, nursing home or another healthcare setting [2]. In Thailand, prevalence rates have been averaged 7.3% in 2011, resulting for length of stay averaged 10 days per infection, costing for antibiotics were 4,380 million baht per year and 73,000 people die per year [3].

Hand hygiene is recognized as the leading measure to prevent cross-transmission of microorganisms and to reduce the incidence of health care associated infections, thereby protecting both patients and visitors in healthcare settings [1, 2]. The study about microorganisms on hands found that the amount of microorganism on hand estimated to be 1,700 colony per cm^2 [4]. Microorganisms that cause nosocomial infections are most commonly transmitted by the hands [5]. According to previous studies have shown that total hand hygiene compliances (HHC) ranging from 14% to 48% [6]. In a study by David J. B. & et al. [7] using the observational method, the overall HHC among hospital visitors found that the baseline HHC rate was 0.52%. HHC rates when using the desk sign, the freestanding alcohol-based hand sanitizer dispenser, and the sign and dispenser combination were 0.67%, 9.33%, and 11.67% respectively. Similarly, in an observational HHC of visitors study in an intensive care unit found from the 55 participating visitors, 35 did not disinfect their hands [8], which showed that the HHC rates remained low. Thus if the visitors miss hand hygiene, it will increase the spread of pathogens in the hospital.

Despite widespread evidence that hand hygiene is the simple and most cost-effective intervention to reduce transmission of hospital-acquired infections [9,10,11], compliance with hand hygiene among health

care providers and hospital visitors are as low. To address this problem, the Centers for Disease Control and Prevention (CDC) and World Health Organization (WHO) [12] jointly declared the indications for hand hygiene, split into five moments during health care delivery. These five moments that call for the use of hand hygiene include the moment before touching a patient, before performing aseptic and clean procedures, after being at risk of exposure to body fluids, after touching a patient, and after touching patient surroundings. But the visitors don't do the moment that is needed before performing aseptic and clean procedures. Hence the moments of hand hygiene for visitors are: before touching a patient, after being at risk of exposure to body fluids, after touching a patient, and after touching patient surroundings. For effective hand hygiene, adequate knowledge by training, recognition of these moments by monitoring, and reporting hand hygiene compliance are necessary.

The Medical Unit is an inpatient unit that provides acute care to a patient with a medical condition. The majority of patients are admitted with gastrointestinal disorders, heart and lung conditions ranging from acute episodes to chronic. Other admits are for uncontrolled metabolic disorders, infectious processes, and circulatory impairment, as well as secondary conditions such as kidney disease or diabetes. Thus most of the patients have low resistance and have the opportunity of infection from multidrug-resistant organisms, such as methicillin-resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant, *Enterococcus* and carbapenem-resistant. Whereas these infectious agents are most commonly transmitted from patient to patient on the hands of healthcare workers, the involvement of visitors in patient-centered care in medical units. If hospital visitors carry certain pathogenic organisms on their hands and do not practice hand hygiene by five moments, a vulnerable patient population might be at increased risk of infection [13]. Therefore, the best practice for prevention of contact transmission from visitors is encouraging visitors to join the fight against infection, educational initiatives should be implemented because several studies showed that knowledge was correlated with compliance [14] and good knowledge, the better the activity compliance [15,16], followed by studies to assess visitors' HHC. However, reports regarding hand hygiene compliance (HHC) among visitors are limited. Thus, the present study was conducted to assess hand hygiene compliance among hospital visitors according to WHO guidelines.

OBJECTIVE

The aims of this study is to assess and compare hand hygiene compliance among visitors, pre and post education of hand hygiene.

METHODOLOGY

Sample

This study was a cross-sectional research design which was performed from October to November 2017 to assess and compare hand hygiene compliance among visitors pre and post education of hand hygiene. The sample is visitors at a government medical unit in Bangkok, Thailand.

Property of participants

Inclusion criteria :

1) Visitors, relatives or caregivers who take care of the patient at government medical unit, during October - November 2017.

2) Participant's age more than 18 years old.

3) They can communicate, speak, read and write Thai language.

3) They can visit the patient after they have been educated for at least 2 days.

4) Participants volunteer to be in the research.

Exclusion criteria : Have psychiatric problems.

The initial sample counts of the research is based on G*power program. In difference certification, when medium effect size .50, significance level .05 and statistical power 90% , a sample size of 36 was mathematically determined [14] , and plus 10% drop out. There were 40 hospital visitors participating in this study and selected by purposive sampling.

Instrument

An evaluation tool was developed by the observer that included a checklist for

: Pre education or post education.

: Hand hygiene compliance include

1) Hand washing correctly, the 7 steps of hand hygiene are

Step 1: rub palms together.

Step 2: rub the back of both hands.

Step 3: interlock fingers and rub hands together.

Step 4: interlock fingers and rub the back of fingers of both hands.

Step 5: rub thumb in a rotating manner followed by the area between index finger and thumb for both hands.

Step 6: rub fingertips on palm for both hands.

Step 7: rub both wrists in a rotating manner.

Hand washing correctly include

The moments of hand hygiene for visitors	Type of Hand Hygiene	Time spent washing hands
- Before touching a patient - After touching a patient - After touching patient surroundings	Normal hand washing (water and soap)	At least 15 second
- After being at risk of exposure to body fluids	Hygienic hand washing (disinfectant solution and water)	At least 30 second
- Before touching a patient - After touching a patient - After touching patient surroundings	Alcohol hand rub	At least 20-30 second or hands were dried

2) Hand washing incorrectly is missing one item of hand washing correctly.

3) Don't wash your hand

Data collection

When the study was approved by Suan Sunandha Rajabhat University Institutional Review Board. With considering aspect of ethics of the subjects of research, the researcher explained the purpose of the research and subject's right to freely join and quit the research. The participants signed the volunteer contract document of the research.

The observations were conducted 11.00 AM. to 16.00 PM. which time they visited patients. First the researcher observed HHC visitors pre education of hand hygiene, followed by an evaluate tool for hand hygiene. Then the researcher taught about hand hygiene practice and the visitors then demonstrate hand hygiene practice until correct. After education of hand hygiene 1-2days, the researcher observed HHC visitors again and recorded all potential opportunities for hand hygiene.

Data Analysis

The data from an evaluate tool was coded and entered into a computerized data base. Frequencies and percentages were used for analyzing the selected demographic data of visitors and assessing hand hygiene compliance. McNemar chi-square test was used to compare the percentage of hand washing correctly between pre and post education. A *P* value less than 0.05 was considered significant.

RESULTS

The results of the present study are categorized as follows:

Table 1
Descriptive Sample Demographics

Sample Demographics	n	Percentages (%)
Gender		
Male	10	25
Female	30	75
AGE		
10-20	6	15
21-30	4	10
31-40	8	20
41-50	6	15
51-60	12	30
61-70	2	5
71-80	2	5
Have you ever been trained about hand hygiene?		
Yes	34	85
No	6	15
Total	40	100

There were 10 (25%) male and 30 (75%) female participants. Majority of the participants 12 (30%) were within the age between of 51 to 60 years old. The most of visitors had been trained about hand hygiene.

Table 2
The Compliance rate for hand hygiene among visitors.

Moment of Hand Hygiene	Hand Washing	Pre Education	Post Education
Before touching a patient	Hand washing correctly	3/40(7.5%)	28/40 (70%)
	Hand washing incorrect	14/40 (35%)	6/40 (15%)
	Didn't wash their hands	23/40 (57.5%)	6/40 (15%)
After touching a patient	Hand washing correctly	3/40 (7.5%)	28/40 (70%)
	Hand washing incorrect	20/40 (50%)	8/40 (20%)
	Didn't wash their hands	17/40 (42.5%)	4/40 (10%)
After touching patient surroundings	Hand washing correctly	8/40 (20%)	12/40 (30%)
	Hand washing incorrect	8/40 (20%)	12/40 (30%)
	Didn't wash their hands	24/40(30%)	16/40 (40%)
After being at risk of exposure to body fluids	Hand washing correctly	3/20 (15%)	13/20 (65%)
	Hand washing incorrect	13/20 (65%)	7/20 (35%)
	Didn't wash their hands	4/20 (20%)	0/20 (0%)

Note : The numerator is the number of hand washing. The denominator is the number of observed visitors.

Denominator of after being at risk of exposure to body fluids is 20 observed visitors because it has a few in the moment of hand hygiene.

This table showed the compliance rate for hand hygiene among visitors by the moment of hand hygiene. On observation method, it was found that compliance of hand hygiene rate for hand washing correctly in post education is higher than pre education in all moments of hand hygiene. Pre education, most of the visitors wash their hands correctly in the moment of after touching patient surroundings (20%). Post education, most of visitors wash their hands correctly in the moment of before and after touching a patient (70%).

Table 3
The Comparison of Hand Washing Correctly between Pre and Post Education.

Moment of Hand Hygiene	Hand washing correctly		P-value
	Pre Education	Post Education	
Before touching a patient	3/40(7.5%)	28/40 (70%)	0.000
After touching a patient	3/40(7.5%)	28/40 (70%)	0.000
After touching patient surroundings	8/40 (20%)	12/40 (30%)	0.388
After being at risk of exposure to body fluids	3/20 (15%)	13/20 (65%)	0.006

Significance level $P < 0.05$

This table showed the comparison of hand washing correctly between pre and post education. It was found that before and after touching a patient, the hand washing correctly was significantly improved from 7.5% in pre education to 70% in post education ($P=0.000$). After being at risk of exposure to body fluids, the hand washing correctly was significantly improved from 15% in pre education to 65% in post education ($P=0.006$). Also, after touching patient surroundings, the hand washing correctly was improved from 20% in pre education to 30% in post education. But these was no significant difference ($P=0.338$).

DISCUSSION

The present study was conducted to assess the compliance of hand hygiene for education among visitors in medical units. The study showed that the compliance hand hygiene rate for hand washing correctly in pre education such as before touching a patient, after touching a patient, after touching patient surroundings and after being at risk of exposure to body fluids were 7.5%, 7.5%, 20%, and 15% respectively. Similarly, In a study by David J. B. & et al.[7] using the observational method, found that the baseline HHC rate among visitors was 0.52%, which showed that the HHC rates remained low. However, compliance hand hygiene rate for hand washing correctly was improved in post education in all moment of hand hygiene. This reinforces the need to intensify and strengthen hand hygiene training for visitors.

Result of the study expressed that hand hygiene compliance for hand washing correctly in post education was significantly different from pre education such as before touching a patient ($p=0.000$), after touching a patient ($p=0.000$) and after being at risk of exposure to body fluids($p=0.006$). This result firmly suggests that hand hygiene training was a positive influence to hand hygiene compliance for visitors.

CONCLUSION

In the medical unit, patients are particularly vulnerable to infections, which might lead to an increase of morbidity and mortality. It has been suggested that healthcare worker should become more

active infighting against healthcare-associated infections. After the study of hand hygiene compliance for education among visitors, it's verify that "hand hygiene compliance for hand washing correctly" in post education was significantly different from pre education. We believe that the result should be used continuously for preventing infectious disease and the promotion of hand washing training. Health care program for decreasing health care-associated infections should educate hand hygiene for visitors and monitor hand hygiene compliance continuously, and feedback for those who didn't wash their hands correctly to encourage them to follow correct hand hygiene practices.

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