

Original Article

# Effectiveness of an Intervention Program to Improve Compliance with Hand Hygiene among Health Staff in NAFH

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## Abstract

Background : Hand Hygiene, either by hand washing or hand disinfection, remains the single most important measure to prevent nosocomial infections.

Objective: To increase Hand Hygiene compliance to at least 10% among health care staffs in female and medical wards after six months of a pilot intervention program.

Methods : It was a pre-post intervention study in Najran Armed forces Hospital during the year 2015. knowledge was assessed using WHO's hand hygiene questionnaire Measurement of attitude was done on the basis of 13 questions where the subjects had to give their opinion on a 1 to 5 point Liker Scale ranging from strongly disagree to strongly agree. Compliance was measured and directly observed by experienced infection control linkers.

Results : the results of our study showed a positive effect of the pilot intervention program on knowledge, attitude and compliance on hand hygiene. An increase in compliance of 6.44% and 7.56% were observed in Female Ward and Male Ward respectively in post-intervention.

Conclusions : All should be done to maintain the positive trend of hand hygiene compliance. The infection control team should be encouraged to maintain a continuous monitoring of hand hygiene compliance and have a positive interaction with the health staff.

## Introduction

Healthcare associated infections occur in 5–10% of hospitalized patients during their hospital stay. HAI is a major source of anxiety to patients and is very costly to health services.<sup>(1-4)</sup>

HAI is a principal cause of the increase of morbidity, mortality and additional costs.<sup>(5)</sup> It is well recognized that the risk of transmission of pathogens when providing medical care and the incidence of HAI can be kept low through appropriate standardized prevention procedures.<sup>(7-8)</sup> Hand hygiene is recognized as the leading measure to prevent cross-transmission of micro-organisms and to reduce the incidence of health care associated infections.<sup>(9)</sup>

The importance of hand hygiene in preventing HAIs is well sustained in evidence-base models. Although adherence to appropriate HH practices is considered one of the

cornerstones for HAI prevention.<sup>(10)</sup> Average compliance with HH recommendations varies between hospital wards, among professional categories of health care workers and according to working conditions.<sup>(11)</sup>

In our hospital, we documented disappointing levels of hand hygiene compliance among medical and paramedical staff especially in male and female wards. Our main objective in this study was to increase Hand Hygiene compliance to at least 10% among health staff in female and male wards after six months of a pilot intervention program.

## Materials and Methods

Study design : It was a pre-post intervention study in Najran Armed forces Hospital during the year 2015.

Studied population : All doctors and nurses in male and female wards in Najran Armed Forces Hospital were included in the study:

Study phases

Phase 1 : pre-intervention assessment of knowledge, attitude and compliance of health staff on hand hygiene

Phase 2 : intervention with diverse activities to improve hand hygiene knowledge and attitudes of health staff

Phase 3 : post-intervention assessment of health staff hand hygiene knowledge, attitudes and compliance with hand hygiene

Data collection

Self administered pretested and anonymous questionnaire was used to collect data. knowledge was assessed using WHO's hand hygiene questionnaire carrying both multiple choice and "yes" or "no" questions in the knowledge section. Measurement of attitude was done on the basis of 13 questions where the subjects had to give their opinion on a 1 to 5 point Liker Scale ranging from strongly disagree to strongly agree. Compliance was measured and directly observed by experienced infection control linkers in male and female wards according to a standardized protocol.

Statistical analysis

SPSS 17.0 software was used for the data entry and analysis. Frequency and percentage were used to describe the socio-demographics, knowledge, attitude, satisfaction, and response of respondents. McNamara test was used to compare percentages before and after intervention with risk error alpha fixed at 5%.

Results

The studied population was composed of 21 (58.3%) nurses and 15 (41.7%) medical doctors. In terms of age, the population showed an equal age distribution between the different age intervals (table 1). The gender population was also equally distributed comprising 18 (50%) male and 18 (50%) female. The majority of the studied population (75%) was trained in hand hygiene. About 11 (30.6%) of the population is working in Najran Armed Forces Hospital for less than 1 year, 10 (27.8%) for 1 to 3 years, 7 (19.4%) for 3 to 5 years, and 8 (22.2%) for more than 5 years.

Table 2 showed the positive improvement in the most percentages of knowledge items especially those regarding

main route of cross-transmission, frequent source of germs and hand hygiene actions.

Table 3 showed the assessment of healthcare workers attitude on hand hygiene. All of the healthcare workers (100%) agreed that they adhere to correct hand hygiene practices at all times and have sufficient knowledge about hand hygiene. Most of them (94.4%) feel frustrated when others and them omit hand hygiene. The majority of the studied population (97.2%) stated that adhering to hand hygiene practices is easy in the current set-up.

Positive attitude was consistently 100% during pre-intervention and post-intervention on aspects concerning adhering to correct hand hygiene practices and hand hygiene current set-up.

Figure 3 showed the improvement of hand hygiene compliance in Female and Male Ward. At the pre-intervention phase hand hygiene compliance of Female Ward and Male Ward were respectively 63% and 77.89%. After the intervention, an increase of 6.44% and 7.56% were observed in Female and Male Ward respectively. As a result, Female Ward hand hygiene compliance reached 69.44% vs 85.45% in Male Ward.

Table 1 : Socio-Demographic Characteristics of the Studied Population

AGE		
SOCIO-DEMOGRAPHIC CHARACTERISTICS	N	%
21-30	12	33.3
31-40	12	33.3
41-60	12	33.3
GENDER		
SOCIO-DEMOGRAPHIC CHARACTERISTICS	N	%
Male	18	50.0
Female	18	50.0
HIGHEST EDUCATIONAL ATTAINMENT		
SOCIO-DEMOGRAPHIC CHARACTERISTICS	N	%
Bachelors Degree	21	58.3
Doctor of Medicine	15	41.7
PROFESSION		
SOCIO-DEMOGRAPHIC CHARACTERISTICS	N	%
Nurse	21	58.3
Medical Doctor	15	41.7
NURSE WARD/UNIT		
SOCIO-DEMOGRAPHIC CHARACTERISTICS	N	%
Male Ward	11	52.4
Female Ward	10	47.6

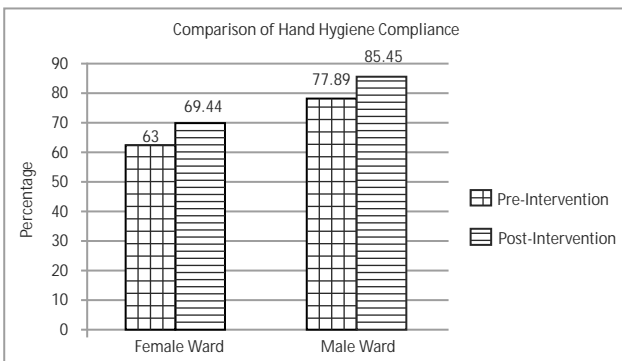
Table 2 : Assessment of Healthcare Workers in Male and Female Wards According to Knowledge on Hand Hygiene

QUESTIONS	PRE-INTERVENTION		POST-INTERVENTION	
	N	%	N	%
Which of the following is the main route of cross-transmission of potentially harmful germs between patients in a healthcare facility?*** (Healthcare workers' hands when not clean)	30	83.3	36	100.0
What if the most frequent source of germs responsible for healthcare-associated infections?*** (Germs already present on or within the patient)	18	50.0	35	97.2
Which of the following hand hygiene actions prevents transmission of germs to the patient?				
Before touching a patient (Yes)	36	100.0	36	100.0
Immediately after a risk of body fluid exposure** (Yes)	25	69.4	27	75.0
After exposure to the immediate surroundings of a patient (Yes)	26	72.2	28	77.8
Which of the following hand hygiene actions prevents transmission of germs to the healthcare worker?				
Before touching a patient** (Yes)	15	41.7	30	83.3
Immediately after a risk of body fluid exposure (Yes)	36	100.0	36	100.0
After exposure to the immediate surroundings of a patient* (Yes)	35	97.2	36	100.0
Immediately before a clean/aseptic technique** (Yes)	25	69.4	31	86.1
Which of the following statements on alcohol-based hand rub and hand washing with soap and water are true?				
Hand rubbing is more rapid for hand cleansing than hand washing** (True)	30	83.3	35	97.2
Hand rubbing causes skin dryness more than hand washing** (False)	22	61.1	29	80.6
Hand rubbing is more effective against germs than hand washing** (False)	24	66.7	28	77.8
Hand washing and hand rubbing are recommended to be performed in sequence** (False)	13	36.1	25	69.4
What is the minimal time needed for alcohol-based hand rub to kill most germs on your hands?* (20 seconds)	34	94.4	35	97.2
Which type of hand hygiene methods is required in the following situations?				
Before palpation of the abdomen** (rubbing)	31	86.1	34	94.4
Before giving an injection** (rubbing)	22	61.1	29	80.6
After emptying a bedpan* (washing)	30	83.3	35	97.2
After removing examination gloves (rubbing/washing)	36	100.0	36	100.0
After making a patient's bed** (rubbing)	20	55.6	28	77.8
After visible exposure to blood* (washing)	31	86.1	35	97.2
Which of the following should be avoided, as associated with increased likelihood of colonization of hands with harmful germs?				
Wearing jewelry** (yes)	34	94.4	36	100.0
Damaged skin (yes)	35	97.2	35	97.2
Artificial fingernails (yes)	35	97.2	35	97.2
Regular use of a hand cream* (no)	26	72.2	31	86.1

NB: Test Mc Nemar level of significance  $p < 0.05$ ,

\*No statistical difference \*\* Statistical difference

Figure 1 : Hand Hygiene Compliance of Nurses and Doctors in Male and Female Wards Pre and Post Intervention Results.



Discussion

Medical staffs come into close contact with patients and are frequently contaminated during routine patient care<sup>12</sup>. Therefore hand hygiene is considered an essential, cheap and most effective means of preventing HAI. This method is designed to save lives and provide a safe treatment atmosphere for all patients and health staff.<sup>13,14</sup>

Many factors lie behind hand hygiene adherence among health staff. It has been demonstrated that simple

Table 3 : Assessment of Healthcare Workers in Male and Female Wards According to Attitude on Hand Hygiene

QUESTIONS	PRE-INTERVENTION				POST-INTERVENTION			
	AGREE		DISAGREE		AGREE		DISAGREE	
	N	%	N	%	N	%	N	%
I adhere to correct hand hygiene practices at all times	36	100.0	0	0.0	36	100.0	0	0.0
I have sufficient knowledge about hand hygiene	36	100.0	0	0.0	36	100.0	0	0.0
Sometime I have more important things to do than hand hygiene	10	27.8	26	72.2	7	19.4	29	80.6
Emergencies and other priorities make hand hygiene more difficult at times	16	44.4	20	55.6	12	33.3	24	66.7
Wearing gloves reduce the need for hand hygiene	8	22.2	28	77.8	9	25.0	27	75.0
I feel frustrated when others omit hand hygiene	34	94.4	2	5.6	34	94.4	2	5.6
I am reluctant to ask others to engage in hand hygiene	11	30.6	25	69.4	11	30.6	25	69.4
Newly qualified staff has not been properly instructed in hand hygiene in their training	7	19.4	29	80.6	5	19.4	31	80.6
I feel guilty if I omit hand hygiene	34	94.4	2	5.6	34	94.4	2	5.6
Adhering to hand hygiene practices is easy in the current set-up	35	97.2	1	2.8	36	100.0	0	0.0

interventions can easily increase hand hygiene compliance.<sup>15-17</sup> Although the limited number of doctors and nurses involved and the relative short period of the intervention, the results of our study showed a positive effect on knowledge, attitude and compliance on hand hygiene.

Other studies reported similar results. Feather et al<sup>18</sup> studied the hand hygiene practices at the Royal London Hospital School of Medicine and dentistry in UK and found a positive trend of hand hygiene practice after a simple intervention of displaying hand hygiene signs.

Pittet et al<sup>19</sup> monitored the compliance with hand hygiene during routine patient care in a teaching hospital in Geneva, before and during implementation of a hand hygiene campaign. The main findings showed that compliance has been improved progressively from 48% in 1994 to 66% in 1997 accompanied with a significant decrease of nosocomial infections.

Routinely conducting hand hygiene training program and

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making the health care workers knowledgeable on hand hygiene guidelines improve progressively hand hygiene compliance. It is also important to encourage the infection control team to continue their active role in hand hygiene training in the hospital. They should be encouraged to interact with the staff members and thereby exert a positive influence on their attitudes and practices regarding hand hygiene.

Conclusion

Direct contact between patients and healthcare workers who are transiently contaminated with nosocomial pathogens is believed to be the primary route of transmission for several organisms and can lead to patients becoming colonized or infected. Although hand hygiene is a vital component for controlling hospital acquired infections, the entire healthcare team has to maintain a positive trend of hand hygiene compliance. The infection control team should be encouraged to maintain a continuous monitoring of hand hygiene compliance and have a positive interaction with the health staff.

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