

## PRACTICE OF FIVE MOMENTS OF HAND HYGIENE AMONG THE NURSES IN SELECTED HOSPITALS IN UAE

Ms. Jayoung Lee<sup>1</sup>, Ms. Amal Abdo Saeed Othman<sup>2</sup>,  
Ms. Zubaidah Abdo Saeed<sup>3</sup>, Dr. Veena M Joseph<sup>4</sup>,  
Ms. Vimala Varatharajan<sup>5</sup>

<sup>1,2,3</sup>(RN-BSN Student, Gulf Medical University, Ajman, UAE)

<sup>4</sup>(Assistant Professor, Gulf Medical University, Ajman, UAE)

<sup>5</sup>(Lecturer, Gulf Medical University, Ajman, UAE)

*Corresponding author: Ms. Vimala Varatharajan*

**ABSTRACT :** A Quantitative Research approach with a Cross sectional descriptive survey design was used in the study. 100 Nurses from Thumbay University Hospital, Ajman, UAE who met the sampling criteria were selected. Written consent was taken. A structured questionnaire to elicit the demographic profile, as well as a modified Self-reported hand hygiene practice scale, was used online to assess the practice of five moments of hand hygiene. The majority of the nurses 94-99 % of them had moderate to adequate hand hygiene practice during the five moments of hand hygiene of which 99% before touching the patients, 95 % before carrying out clean and aseptic procedures, and after body fluid exposure, 96 % after touching patient unit and 94 % after touching patient surroundings. Overall, 90 % of the nurses had good hand hygiene practice. No significant association was found between hand hygiene practices among the nurses with their demographic variables.

**KEYWORDS:** *Five moments, Hand Hygiene, Infection, Nurses.*

### I. INTRODUCTION

The act of hand rubbing with an alcohol-based antiseptic solution or hand washing with soap and water to reduce or inhibit the growth of micro-organisms on the hands is referred to as hand hygiene<sup>1</sup>. For several decades' hand hygiene has been known to be a very simple and effective measure for preventing Healthcare Associated Infections (HCAIs)<sup>2,3</sup>, but compliance with recommended standards for hand hygiene among Healthcare Workers (HCWs) has not been satisfactory globally<sup>4</sup>. Studies in Nigeria have also shown that hand hygiene compliance among Nigerian HCWs is very poor<sup>5,6</sup>. The implication of this is a high prevalence of HCAIs with an associated increase in morbidity, mortality, and cost of healthcare in a country battling with a high burden of preventable infectious diseases.

To improve compliance with hand hygiene as well as provide a solid basis to understand, teach, monitor, and report hand hygiene practices, the World Health Organization (WHO) in collaboration with some patient safety and infection control experts developed a concept referred to as 'Five Moments for Hand Hygiene'<sup>7</sup>. This concept defines key moments during routine patient care activities when hand hygiene is required to stop the transmission of infectious organisms via the hands in healthcare settings. It represents a shift from the traditional 'two moments' view of hand hygiene which emphasizes hand hygiene immediately before and at the end of patient care activity. The traditional view is an oversimplification of hand hygiene and practice may not be as effective as the 'five moments' approach in preventing HCAI when applied. This is because the hands can be contaminated during the process of care making it possible to transmit pathogens from a colonized to a sterile body site on the same patient.

According to the 'five moments' concept, healthcare workers should perform hand hygiene 'before touching a patient, 'after touching a patient, 'before any sterile or aseptic procedure', 'after touching the patient's environment', and 'after exposure to blood or body fluids. The "before" moments are aimed at preventing the risk of transmitting pathogens to the patient and from one body site to a sterile site on the same patient while the "after" moments are intended to prevent the transmission of pathogens from the patient to the healthcare worker, the healthcare environment, and other patients. Several studies on hand hygiene in the

healthcare setting have simply and broadly described compliance in terms of before and after patient care activity<sup>8</sup>. This approach falls short of describing the most critical indications for hand hygiene during the sequence of care. This study was designed to study compliance with hand hygiene with a view to describing compliance with each of the key moments for hand hygiene during routine patient care activity.

Hand hygiene has been recognized as a leading measure to prevent the spread of infection especially during the COVID-19 pandemic. To address this issue, continuous efforts are being made to identify effective and sustainable strategies especially among health care providers with the introduction of an evidence-based concept of “My five moments for hand hygiene” (WHO). Despite the relative simplicity of this procedure, compliance with proper hand hygiene is a matter of concern during the COVID-19 post lockdown period as many countries are still reporting a resurgence of COVID-19 infection. Health care workers are the most common vehicle for the transmission of infection from patient to patient and within the healthcare environment and nurses constitute the largest percentage of the health care workers (HCW) and they are the “nucleus of the health care

## II. LITERATURE REVIEW

According to WHO, The WHY, HOW, and WHEN of hand hygiene practices emphasizes that thousands of people die every day around the world from infections acquired while receiving health care as Hands are the main pathways of germ transmission during health care. Hence, any healthcare worker, caregiver, or person involved in direct or indirect patient care needs to be concerned about hand hygiene and should be able to perform it correctly and at the right time. Cleaning hands by rubbing them with an alcohol-based formulation is the preferred means for routine hygienic hand antisepsis if hands are not visibly soiled. It is faster, more effective, and better tolerated by your hands than washing with soap and water. Wash hands with soap and water when hands are visibly dirty or visibly soiled with blood or other body fluids or after using the toilet. On exposure to potential spore-forming including outbreaks of *Clostridium difficile*, hand washing with soap and water is the preferred means (WHO 2009)<sup>9</sup>.

Health care workers are the most common vector in the transmission of microorganisms causing infections. This fact comes as a surprise since Ignaz Semmelweis established the connection between mortality and contaminated hands more than 150 years, since then hundreds of reports and research articles have identified the imperative actions for proper hygiene among those caring for hospital patients. Yet, compliance rates in most reports remain less than 50 %. Clearly, lack of hand hygiene by health care workers continues to be a challenge (DavidBirnbach, 2017)<sup>18</sup>.

A cross-sectional study by Zeyad A. Sallami (2016), the university of Aden to assess hand hygiene attitude, knowledge, and practice among Health Science Students revealed that almost all participants were aware of hand hygiene, however, knowledge and practice were below 100% score for the correct response in particular knowledge and practice. and this was an indication that any future training would reinforce the safe practice of hand hygiene as an important component of controlling HCAs<sup>10</sup>.

A descriptive cross-sectional study carried out by Deham R (2018) in Arar city, Northern Saudi Arabia aimed to assess the knowledge, attitude, and practice of hand washing among health care workers (HCW) in health care units based on WHO’s, Five Moments of Hand Hygiene Questionnaire”. 116 respondents were involved which included 32 residents, 92 nurses and 37 nursing assistants enrolled. The majority of the participants (90.5%) had a high level of knowledge of hand hygiene. The attitude level was found to be moderate at 81.9% and high at only 17.2%. The level of the practice of hand hygiene was high in 23.3%, moderate at 75.9% and almost none of the participants had a low level of practice<sup>11</sup>.

## III. METHODOLOGY

A Quantitative research approach with a Cross sectional descriptive survey was used to assess the practice of five moments of hand hygiene. All the nurses who provided routine patient care in the wards and OPDs at Thumbay University Hospital who fulfil the inclusion criteria during the period of study were included as samples which were around 100 nurses. A defined population sampling technique was used to select all the nurses involved in routine patient care during the period of study. Tools were a structured questionnaire used to assess the demographic profile and a Standardized Self-reported hand hygiene practice scale used to assess the practice of five moments of hand hygiene. It consisted of 17 items with a four-point Likert scale as- Always (4), Often (3), Sometimes (2), Seldom (1) & Never (0) and the Total Score was 68. Content validity was obtained from Nursing Expert. The Reliability of the Research instrument was 0.94 (Cronbach’s alpha value) which was good and hence was used for the main study without any changes.

#### IV. DATA ANALYSIS AND RESULTS

Hospital permission was procured following which electronic informed consent was obtained from the nurses willing to participate in the study. An Electronic survey was carried out using the structured questionnaire to elicit the profiles of the nurses and self-reported practice of five moments of hand hygiene was obtained using the Self-reported hand hygiene practice scale. Informed consent from the nurses was obtained before the conduct of the study as well IRB approval was obtained.

Descriptive statistics like frequency and percentage were used to describe the profile of the nurses, average and dispersion were used to describe the total score of hand hygiene practices, and Inferential statistics like Fischer's exact test was used to find the association between the practice of five moments of hand hygiene and selected demographic variables. Descriptive statistics like frequency and percentage were used to describe the profile of the nurses, average and dispersion were used to describe the total score of hand hygiene practices, and Inferential statistics like Fischer's exact test was used to find the association between the practice of five moments of hand hygiene and selected demographic variables.

**Table 1: Frequency and Percentage distribution of the Demographic variables of the Nurses  
n = 100**

Demographic Variables	Frequency	Percentage (%)
<b>Gender</b>		
Male	14	14.0
Female	86	86.0
<b>Age(Years)</b>		
<=35	42	42.0
36-50	53	53.0
>50	5	5.0
<b>Professional Qualification</b>		
Diploma Nursing	28	28
Bachelor's degree	66	66
Master's degree	5	5
Ph.D Nursing	1	1
<b>Years of experience (Years)</b>		
<= 10	43	43.0
11-20	46	46.0
>20	11	11.0
<b>Nursing Unit currently working</b>		
Surgical Ward	15	15
Medical Ward	9	9
OPDs	55	55
Post natal Ward	11	11
Long Term Care Unit	10	10
<b>Exposure to Information Hand Hygiene</b>		
Yes	98	98
No	2	2
<b>If Yes, Source of Information</b>		
Mass Media	21	21
Attend Training Program	79	79
<b>Hand Hygiene Practice</b>		
Soap and water	3	3
Sanitizer	-	-
Both	97	97

Table 1 describes the demographic characteristics of the nurses such as gender, age, professional qualification, years of experience, the nursing unit currently working, exposure to information on hand hygiene, source of exposure to information on hand hygiene, and hand hygiene practice.

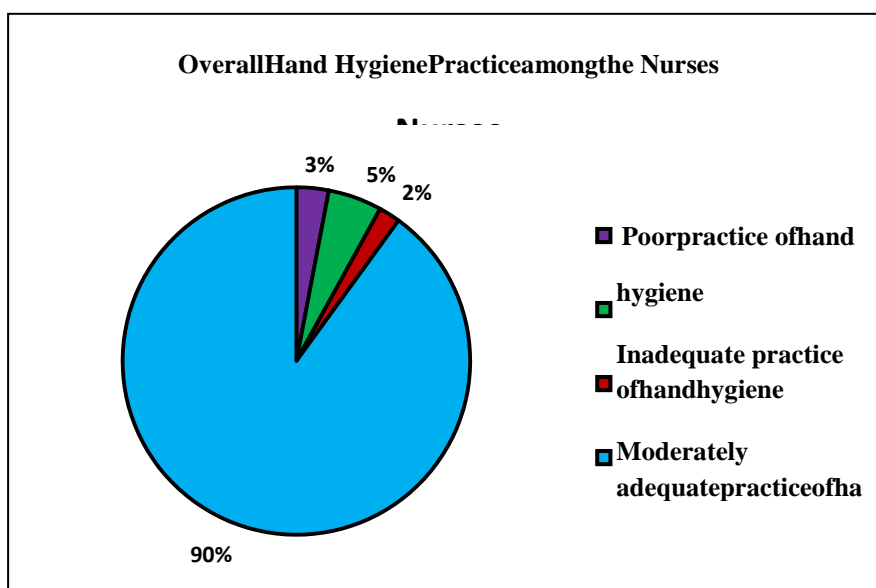
Concerning gender of the nurses, the majority of the nurses, nearly 86 % were females. 53% of the nurses were in the age group of 36 – 50 years. The majority of the nurses, nearly 66 % had a bachelor’s degree in nursing. 46 % of the nurses had to their credit 11-20 years of clinical experience. Nearly 55 % of the nurses were currently employed in OPDs. 98 % of the nurses had prior exposure to information on hand hygiene of which 79 % of them received information on hand hygiene by attending a training program on hand hygiene. Nearly 97 % of the nurses use both soap and water and hand sanitizer to practice hand hygiene.

**Table 2: Distribution of Total score of the practice of five moments of hand hygiene**

Average Dispersion	Total Score(17*4=68)	Before touching patient (4*3=12)	Before Clean /Aseptic Procedure (4*4=16)	After Body Fluid Exposure/(6*4=24)	After touching Patient unit(1*4=4)	After Touching Patient Surroundings (4*3=12)
Mean	62.95	11.58	14.7	22.24	3.57	10.86
Median	68.0	12.0	16.0	24.0	4.0	12.0
Minimum	12.0	3.0	0	0	0	0
Maximum	68.0	12.0	16.0	24.0	4.0	12.0
Range	57.0	10.0	16.0	24.0	4.0	12.0

Table 2 describes the average and dispersion distribution of the total score of the practice of five moments of hand hygiene along with the total score distribution under each domain of five moments of hand hygiene.

The total score of the practice of five moments of hand hygiene is 68.0 with interquartile range of 57.0. The total score is distributed among the five domains of practice of five moments of hand hygiene as the total score of 12 with a range of 10.0 before touching the patient, the total score of 16 with a range of 16 before carrying out clean and aseptic procedures, the total score of 24 with a range of 24 after body fluid exposure, the total score of 4 and range of 4 after touching patient unit and a total score 12 with a range of 12 after touching patient surrounding.



**Figure 1: Overall Hand Hygiene Practice among the Nurses**

**Table 3: Association of Total hand Hygiene Practice Scores with selected demographic variables.**

Demographic Variables	Hand Hygiene Practice Scores		Test	value	Pvalue
	Inadequate - Poor Hand Hygiene Practice(0-34)	Moderate –Good Hand Hygiene Practice(35- 68)			
<b>Gender</b>			Fischer's Exact Test	0.596	*
Male	0(0.0%)	14(100 %)			
Female	8(9.3%)	78(90.7%)			
<b>Age</b>					
<=35	4(9.5%)	38(90.5%)			
36-50	4(7.5%)	49(92.5%)			
>50	0(0.0%)	5(100.0)			
<b>Marital Status</b>					
Single	0(0%)	6(100%)			
Married	4(9.1%)	40(90.9%)			
<b>Professional Qualification</b>					
Diploma Nursing	3(10.7%)	25(89.3%)			
Bachelor's Degree	4(6.1%)	62(93.9%)			
Master's Degree	0(0.0%)	5(100.0%)			
Ph.D in nursing	1(100.0%)	0(0.0%)			
<b>Nursing Unit currently working</b>					
Surgical ward	0(0.0%)	15(100.0%)			
Medical Ward	2(22.2%)	7(77.8%)			
OPDs	6(10.9%)	49(89.1%)			
Postnatal ward	0(0.0%)	11(100.0%)			
Long term care Units	0(0,0%)	10(100.0%)			
<b>Exposure to information on Five moments of hand hygiene</b>			Fischer's Exact Test	.846	*
Yes	8(8.2%)	90(91.8%)			
No	0(0.0%)	2(100.0%)			
<b>Source of exposure</b>			Fischer's Exact Test	.058	*
Mass Media	4(19.0%)	17(81.)			
Attended Training Program	4(5.1%)	75(94.9%)			

\*P&gt;0.05

There was no statistically significant association between hand hygiene practices among the nurses with their selected demographic variables.

Hence the Hypothesis, H<sub>0</sub>: There is no significant association between five moments of hand hygiene and selected demographic variables is accepted.

## V. DISCUSSION AND CONCLUSION

In the present study, majority of the nurses 94-99 % of them had moderate to adequate hand hygiene practice during the five moments of hand hygiene of which 99% before touching the patients, 95 % before carrying out clean and aseptic procedures and after body fluid exposure, 96 % after touching patient unit and 94 % after touching patient surroundings.

Supportive study findings include a cross-sectional study in Rwanda by **Uwimana& Mbombo 2015**<sup>12</sup> which revealed a self-reported hand washing compliance rate of 82% with the highest rate of hand washing (89.33%) reported after new-borns body fluids exposure. However, the results showed that nurses performed less hand washing after touching objects surrounding the client (73.43%).

However, in an epidemiological study on hand washing practices among healthcare workers in India conducted by **Kumar & Dileep 2013**<sup>13</sup> revealed low hand washing rates of 28% for nurses and 23 % for doctors. Perceived barriers to practicing hand washing included increased workload (71.3 %), lack of time (66.7%), location and shortage of sinks (62.8%), lack of encouragement (60.5%) hand dryness and irritation (55%), lack of role model from senior (54.3%) and shortage of water (45.0%).

So also, Busaidi 2013<sup>14</sup>, stipulated that nurses often do not practice hand hygiene because of being busy and often perceive that gloves use can be an alternative to hand hygiene. In addition, it was also claimed that nurses avoid hand hygiene because of fearing skin problems that could develop especially with alcohol hand-rub use. Other barriers enumerated in the same literature that contributed to poor hand hygiene compliance included over workload, understaffing, lack of role models among colleagues and seniors, lack of organizational pledge to good hand hygiene practice, lack of hand hygiene products and facilities, and lack of motivation. Interestingly, the same literature highlighted that patient involvement by simply reminding healthcare providers to wash hands raises hand hygiene compliance by 50 %.

The major findings of the study are revealed as follows. The total score of the practice of five moments of hand hygiene was 68.0 with interquartile range of 57.0, the total score of 12 with a range of 10.0 before touching the patient., the total score of 16 with a range of 16 before carrying out clean and aseptic procedures, the total score of 24 with a range of 24 after body fluid exposure, total score of 4 and range of 4 after touching patient unit and total score 12 with a range of 12 after touching patient surrounding. The majority of the nurses 94-99 % of them had moderate to adequate hand hygiene practice during the five moments of hand hygiene, 99% before touching the patients, 95 % before carrying out clean and aseptic procedures and after body fluid exposure, 96 % after touching patient unit and 94 % after touching patient surroundings. 90 % of the nurses had an overall good hand hygiene practice. Using Fisher's exact test of association, no significant association was found between hand hygiene practices among the nurses with their demographic variables. Hence the Hypothesis, **H0**: There is no significant association between five moments of hand hygiene and selected demographic variables is accepted.

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