



## Is Hand Hygiene Given Appropriate Importance in Tertiary Care Centres ?

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### ABSTRACT

*Is hand hygiene given appropriate importance in tertiary care centres?*

*Introduction : Hand hygiene is a major component of standard precaution and one of the most effective methods to prevent transmission of pathogens associated with health care.1 Transmission of microorganisms from the hands of health care workers is the main cause of nosocomial infections. It is pertinent to know the practice of hand hygiene among health care providers and reasons for non adoption so that the problems can be overcome in future.*

#### Objectives

1. To assess the adoption of Appropriate hand hygiene practices among health care providers at tertiary levels of health care.
2. To find out the reasons for non-adoption.

*Methodology : A cross sectional study was done to assess the adoption of appropriate hand hygiene among health care providers (Doctors, nurses, lab technicians) in a government and private tertiary hospital. The total subjects included in the study were 950. The data was analysed by SPSS-16. Proportion & chi square test was used to assess the statistical significance at 5%  $\alpha$ .*

*Results : The number of subjects included for the study in private tertiary care centre were 439(46.2%), and in Government tertiary care centre were 511(53.8%) with a total of 950 health care providers.*

**KEYWORDS : Health Care providers, Hand Hygiene, Tertiary care**

### Introduction

The hands are the main transmitters of microorganisms. Poor hand hygiene has contributed to the origin and spread of multi-resistant bacteria and viruses. There is extensive evidence that contaminated hands are responsible for transmitting infections. Effective hand decontamination has been proved to significantly reduce infection rates<sup>2</sup>.

All health care providers, patients, visitors and caregivers must practice effective hand washing. Patient and primary care givers need to be instructed in proper techniques and situations for hand washing. Appropriate hand washing can minimize microorganisms acquired on the hands by contact with body fluids and contaminated surfaces. Hand washing breaks the chain of infection transmission and reduces person-to-person transmission. The concept of cleansing hands with an antiseptic agent probably emerged in the early 19th century. Transmission of microorganisms from the hands of health care workers is the main cause of nosocomial infections particularly in high-risk areas of the hospital and hand washing remains the most important measure for preventing and controlling such infections. Hand washing is the simplest and cost effective way of preventing the transmission of health care associated infection<sup>3</sup>. CDC has stated: "It is well-documented that one of the most important measures for preventing the spread of pathogens is effective hand washing. Regular hand washing is the most effective way to prevent the spread of infectious diseases including respiratory illnesses. Finding out the reasons for not adopting the standard precautions by health care providers will help to identify strategies for improving adoption of hand hygiene practices.

### Objectives

- To assess the adoption of Appropriate hand hygiene practices among health care providers at tertiary levels of health care.

- To find out the reasons for non-adoption.

### Methodology

A cross sectional study was done to assess the adoption of appropriate hand hygiene among health care providers (Doctors, nurses, lab technicians) in a government and private tertiary hospital. The total subjects included in the study were 950. All health care providers who gave the informed consent were included in the study. The data was collected over a period of 6 months from November 2009 to April 2010. The study was approved by the members of the institutional ethics committee. After obtaining the informed consent, data was collected as per questionnaire. The data was analysed by SPSS-16. Proportion & chi square test was used to assess the statistical significance at 5%  $\alpha$ .

### Results

The number of subjects included for the study in private tertiary care centre were 439(46.2%), and in Government tertiary care centre were 511(53.8%) with a total of 950 health care providers.

In private tertiary there were 215 doctors, 232 nurses and 64 lab technicians of which 4 doctors, 2 nurses were on long leave and 21 doctors, 40 nurses and 5 lab technicians refused to participate in the study. In Government tertiary care centre, there were 214 doctors, 326 nurses, 26 lab technicians of which 10 nurses were on leave during my data collection period and 24 doctors and 27 nurses refused to participate in the study. 4 lab technicians were deputed to the PHCs. Hence they were not eligible for the study.

Hand hygiene includes 3 components namely when to wash hands, how to wash hands and how to dry hands<sup>3</sup>

Appropriate hand hygiene practices is practices among 50.8% HCPs in private and 25 % HCP in government tertiary hospitals and the differ-

ence is found to be statistically significant (Table 1)

In private, large proportion of lab technicians to the extent of 72.9% had appropriate hand hygiene practices and the difference is found to be statistically significant (p=0.0001). Appropriate hand hygiene practices was around 25% among doctors and nurses. The difference is found to be statistically significant (p=0.04). (Table 2)

The appropriate hand washing practices with reference to “when to wash hands” were found among 277(63.1%) of HCPs in private 226(44.2%) of HCPs in government. The difference is statistically significant (p <0.0001). The appropriate hand washing practices with reference to “how to wash hands” were found among 396(90.2%) of HCPs in private, 297(58.1%) of HCPs in government. The difference is statistically significant (p <0.0001). The appropriate mode of drying of the hands was highest among HCPs in private (61.0%) compared to GRH (43.8%) and the difference is found to be statistically significant. (p<0.0001) (Table 3)

Antiseptic solution, alcohol hand rub, povidine-iodine solution is considered appropriate method. Air dryer, disposable tissues and reusable towels which should be changed at least daily were considered as appropriate method for drying of the hands<sup>3</sup>. If the HCPs always use antiseptic alcohol hand rub, they should dry their hands in air till it completely dries.

Among HCPs using reusable towels, it was changed on daily basis by 49.6% in private and 49.8% in government. The frequency of changing towel among reusable towel users ranged between 1 day & 30 days, with a mean of 2.7 days and the standard deviation of 3.0. (Table 4)

**Reasons for non adoption:**

The main reason given by the HCPs for inadequate hand hygiene was lack of facilities available for hand hygiene. In government, water was not available adequately most of the times. In private the main reasons given were the “hand washing area” is far away from patient beds, the alcohol hand rub was not available in all the beds and the reusable towels are not changed adequately hence they use their own towels to dry their hands. (Figure 1)

Appropriate hand hygiene practices were carried out by 200(53.3%) HCPs in private and 108(25.2%) HCPs, in government. (Table 5).

**Discussion:**

Hand hygiene includes 3 components namely when to wash, how to wash and how to dry hands. Hand hygiene was considered as appropriate if all the 3 components were followed correctly by HCPs.

A study done on compliance with hand washing in a teaching hospital at Geneva, Switzerland concluded that the average compliance with hand washing was 48% which is comparable to the rates in private but the rates in Government is lower compared to the rates in a teaching hospital at Geneva<sup>4</sup>.

According to the present study, the appropriate hand washing practices with reference to “when to wash hands” were found among 320(66%) of HCPs in private, 277(48.5%) of HCPs in government. And hand washing practices after caring for each in-patient was 66.2 % in private, 53.5% in government. A study done on health workers in haemo dialysis unit concluded that washing of hands after patient contact were 35.6% and hand washing before patient contact was only 13.8%. The values in the present study were higher than the values in the study done at haemo dialysis unit<sup>5</sup>.

The hand washing practices after removing hand gloves in the study was 94.1% in private, 88.3% in government which was more than the values compared to the study done at Nigeria which says the hand washing practices after removing gloves was higher among nursing students (57.7%) compared to medical students (26.2%).<sup>6</sup>

The appropriate hand washing practices with reference to “how to wash hands” were found among 396(90.2%) of HCPs in private, 297(58.1%) of HCPs in government. This was mainly attributed to unavailability of antiseptics.

Alcohol hand rub is used among 60% HCPs in private, 25.8% HCPs in government. A study done on compliance with hand washing in a teaching hospital at Geneva, Switzerland concluded that the hand washing was done with soap in 34% instances and with hand antiseptics in 14% of instances which is comparable to the results seen in government.

In the present study, nurses had good hand hygiene practices than doctors which is comparable with the study which also shows nurses had better hand hygiene practices than doctors. An observational study at the intensive care unit (ICU) of St. Luke’s Medical Center over a 24-hour period also shows higher compliance for hand washing among nurses (43%) and lower compliance among physicians (19%)<sup>24</sup> which is similar to the results found in this study.

The hand washing practices after handling blood, body fluids, secretions and excretions and contaminated items were highest in private (100%) but slightly lower in government which was attributed to the fact that constant water supply is not available at all times.

The hand hygiene practices in-between two procedures on same patient was lower in private (82.7%) which may be because the HCPs felt that the surgical hand washing was done before the first procedure hence they change only their gloves unless the hands got contaminated while removing. The hand antiseptics use among the HCPs was lesser in government (65.4%) which may be because the antiseptics were not readily available. Also the duration of hand washing for at least 15 sec among the HCPs was lesser in government which was attributed to the fact that constant water supply was not adequately available most of the times. For drying of hands, large proportion of HCPs in government (50.3%) used reusable towels. Some HCPs let their hands to dry by itself due to lack of reusable towels or lack of clean towels. This was attributed to the fact that the reusable towel was not available in adequate numbers.

Among the 3 components of appropriate hand hygiene practices, “drying of washed hands” has the lowest compliance. Improving appropriate method of drying washed hands will improve the overall appropriate hand hygiene. In view of this, it is recommended to provide “disposable tissues” for drying of washed hands. Other methods of ensuring constant water supply and conducting periodic training programs to update the knowledge of HCPs would also improve the hand hygiene.

**Table 1: Appropriate hand hygiene practices**

Institutions	n	%	95% CI	p value
Private tertiary	223	50.8	44.2-57.3	0.0001
Govt tertiary	128	25.0	17.5-32.5	

**Table 2: Appropriate hand hygiene among health care providers**

	Private tertiary		Govt tertiary	
	%	95%CI	%	95%CI
Doctors	34.2	27.7-41.1	25.3	19.5-31.8
Nurses	60.5	53.4-67.3	25.4	20.7-30.6
Lab technicians	72.9	60.5-83.0	18.2	6.1-38.2

**Table 3: Appropriate hand hygiene**

	Private		Govt		p value
	n	%	n	%	
After handling blood	439	100.0	492	96.3	0.0001
After handling body fluids	439	100.0	498	97.5	0.001
After handling secretion & excretions	439	100.0	500	97.8	0.002
After handling contaminated items	439	100.0	502	98.2	0.01
After caring for each in-patient	235	66.2	271	53.5	0.0001
After removing gloves	413	94.1	451	88.3	0.001
In- between two procedures on same patient	277	82.7	388	87.6	0.05
Antiseptics use	407	92.7	334	65.4	0.0001
Duration (>15 sec)	433	98.6	463	90.6	0.0001
Rubbing of hands	431	98.2	504	98.6	0.05
Drying of hands	268	61.0	224	43.8	0.0001

**Table 4: Hand hygiene – “Methods of drying washed hands”**

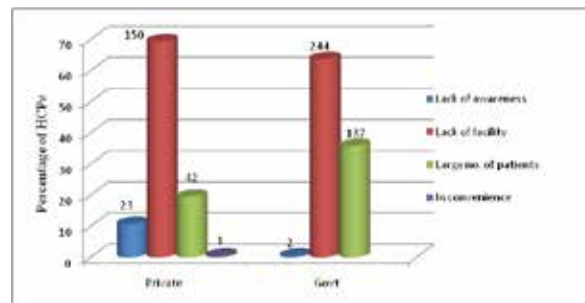
	Private		Govt	
	n	%	n	%
Air dryer	1	0.2	0	0.0
Disposable tissues	117	26.7	5	1.0
Reusable towels	112	25.5	257	50.3
Dries by itself(alcoholic hand rub users)	95	21.6	92	18.0
Dries by itself	49	11.2	50	12.3
Own towels	39	8.9	59	9.8
Own dress	12	2.7	23	4.5
Cotton/ gauze	9	2.1	13	2.5
Others*	5	1.1	12	2.3

Others\* includes pillow cover, curtains, coat, bed spread and news paper.

**Table 5 : Appropriate hand hygiene practices among those trained**

	Private		Govt	
	n	%	n	%
Adequate	200	53.3	108	25.2
In adequate	175	46.7	320	74.8
Total	375	100.0	428	100.0

**Figure 1: Reasons for not adopting appropriate hand hygiene practices**



**REFERENCES**

1. Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008 [http://www.cdc.gov/ncidod/dhqp/pdf/guidelines/Disinfection\\_Nov\\_2008.pdf](http://www.cdc.gov/ncidod/dhqp/pdf/guidelines/Disinfection_Nov_2008.pdf) | 2. American Nurses Association. Needle stick Prevention Guide, 2002, p 13. | 3. WHO Epidemic and pandemic alert response: standard precautions in health care WHO 2006. | 4. Pruss-Ustun A, Rapiti E, Hutin Y. Sharps injuries: global burden of disease from sharps injuries to health-care workers. Geneva, Switzerland: World Health Organization, 2003 (WHO Environmental Burden of Disease Series, No. 3). | 5. M. Dolores Arenas, José Sánchez-Payá, Guillermina Barri, Juan García-Valdecasas, Jose Luis Gorriz, Antonio Soriano, Andres Antolin, José Lacueva, Sergio García, Ana Sirvent, Mario Espinosa and Manuel Angoso A multi-centric survey of the practice of hand hygiene in haemodialysis units: factors affecting compliance • Volume20, Issue6 Pp. 1164-1171 | 6. Wilson E. Sadoh, MD; Adeniran O. Fawole, MD; Ayebo E. Sadoh, MD; Ayo O. Oladimeji, MD; and Oladapo S. Sotiloye, MD Benin, Ibadan and Abeokuta, Nigeria Practice of Universal Precautions among Healthcare Workers JOURNAL OF THE NATIONAL MEDICAL ASSOCIATION VOL. 98, NO. 5, MAY 2006 |