Section: Microbiology

Original Research Article

EVALUATION OF HAND HYGIENE COMPLIANCE AMONG HEALTH CARE WORKERS IN A GOVERNMENT TEACHING HOSPITAL, KERALA

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Received : 03/01/2023
Received in revised form : 01/02/2023
Accepted : 11/02/2023

Keywords:
Hand hygiene, viruses, bacteria, and other microorganisms, health care workers.

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DOI: 10.47009/jamp.2023.5.2.8

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2023; 5 (2); 38-42

Abstract

Background: Hand hygiene is the act of either hand washing with soap and water or hand disinfection to eliminate viruses, bacteria, and other microorganisms, as well as dirt, grease, and other harmful and unwanted substances that have become attached to the hands. It has been shown to be highly effective in preventing/reducing the occurrence of health-related infections from advanced healthcare systems to primary healthcare settings. **Materials and Methods:** A Across sectional study, among different categories of health care workers of the institution. This hospital is an 1800 bedded hospital with more than 600 health care workers. It has 14 ICUs with about 132 bed strength and the rest ward beds. In this particular study 96 staff nurses were selected and given training for Hand Hygiene Audit using direct observation with down loaded Speedy Audit App in their smart phones. The study was conducted in various ICUs and Cardiothoracic and vascular postoperative and preoperative wards, other sites include Labour room, dialysis room. **Results:** In the study period around 600 HCW were audited for compliance of hand hygiene either by hand wash with soap and water or alcohol based hand rub. 2750 hand moments were available. Overall hand hygiene complete adherence rate was 32 %. The trend of hand hygiene compliance over the study period was non-monotonic, with ups and downs. In the present study, though there was a gradual increase in adherence rate during the early phase of the study, but the rate was not sustained thereafter. **Conclusion:** Although the HH procedure is simple, HH compliance among HCWs is so low that it cannot be easily explained or changed. The authors believe that a lack of motivation and increased workload may be the two causes of poor compliance. In the present study, the highest compliance rates were after patient contact and contact with the patient environment, and for this reason the authors believe that HCWs prefer to protect themselves to a greater extent than the patients.

INTRODUCTION

Hand hygiene is the act of either hand washing with soap and water or hand disinfection to eliminate viruses, bacteria, and other microorganisms, as well as dirt, grease, and other harmful and unwanted substances that have become attached to the hands. It has been shown to be highly effective in preventing/reducing the occurrence of health-related infections from advanced healthcare systems to primary healthcare settings.[1] Hand hygiene should be practiced at five crucial points in health care: before contact with a patient, before an aseptic procedure, after contact with a patient, after contact with body fluids, and after touching a patient's surroundings, according to the World Health Organization.[2]

Hand hygiene compliance is the most critical factor in preventing and controlling the spread of healthcare-associated illnesses; nevertheless, hand hygiene compliance remains low over the world. In Ethiopia, hand hygiene compliance among healthcare workers varies from health facility to health facility or from regional state to regional state.[3] Hand hygiene compliance among healthcare workers in the country ranges from 9.2 to 89.5%, according to study findings, and the factors associated with hand hygiene compliance have been inconsistent.[4]

Hand hygiene is an important and effective measure in the prevention of healthcare-associated infections.[5] Hand hygiene compliance was one of the quality indicators of the hospital infection control department when the organization applied for the accreditation process along with written protocols, posters at strategic locations, conveniently located

ISSN (O): 2687-5365; ISSN (P): 2753-6556

functional sinks with elbow operated taps, an uninterrupted water supply, availability of liquid hand wash, and paper towels.[6] In this context, we planned to conduct a surveillance of adherence to hand hygiene practices among hospital personnel.

MATERIALS AND METHODS

This is a cross sectional study which was conducted after submitting the abstract to the Institutional review board of Govt. medical college, Kottayam, Kerala. The study period was 3 months i.e December 2019, January 2020, and February 2020.

Across sectional study, among different categories of health care workers of the institution. This hospital is an 1800 bedded hospital with more than 600 health care workers. It has 14 ICUs with about 132 bed strength and the rest ward beds. In this particular study 96 staff nurses were selected and given training for Hand Hygiene Audit using direct observation with down loaded Speedy Audit App in their smart phones. The study was conducted in various ICUs and Cardiothoracic and vascular postoperative and preoperative wards, other sites include Labour room, dialysis room. Each staff nurse taking part in the study was given prior training by me regarding the usage of the Speedy Audit app. for 2 days. In the study period around 600 HCW were audited for compliance of hand hygiene either by hand wash with soap and water or alcohol based hand rub. As soon as the HCW has completed auditing during their shift of duty, the observations were sent to me as a file by Email. The daily observations were compiled by me and entered in a day to day basis in Excel sheet. In this study the following formulas were used to calculate compliance rate.

Overall compliance rate of each health care worker in each site to be calculated along with Hand Hygiene Compliance Rate (HHAR):

No. of times hand hygiene followed completely (all steps performed for 40-60sec X 100

no. of opportunities of hand hygiene moments available

Hand Hygiene Partial Adherence Rate (HHPAR)=

No. of times HH followed partially (ie < 40-60secs for hand wash and < 20-30 secs) X 100 no. of opportunities of HH moments available

WHO 5 moments of hand hygiene was observed

Moment specific HHAR= no. of times HH followed for that particular moment X100

No. of WHO hand hygiene opportunities (that particular) available profession specific

HHAR (for each category of HCW) = No. of times HH followed for a specific profession X 100 total no. of opportunities available for that profession

WHO moment1=before touching a patient

Moment 2= before a procedure

Moment 3=after a procedure/ body fluid risk

Moment 4=after touching a patient

Moment 5= after touching a patient surroundings.

During the 3 months about 600 HCW were audited who belonged to different categories like Doctors, nurses, medical students, nursing students, others. 12 ICUs and 4 other sites took part in the study. The auditing was done by all concerned staff nurses assigned to 24x7 basis, in all shifts of duty.

RESULTS

In the study period around 600 HCW were audited for compliance of hand hygiene either by hand wash with soap and water or alcohol based hand rub. 2750 hand moments were available.

Table 1: Month-wise hand hygiene complete adherence rate (HHCAR)

Month	HH Moments available	HH Completely followed	HH Complete adherence rate (HHCAR%)
December 2019	1000	350	35%
January 2020	800	442	52%
February 2020	950	475	50%

Overall hand hygiene complete adherence rate was 32 %. The trend of hand hygiene compliance over the study period was non-monotonic, with ups and downs. In the present study, though there was a gradual increase in adherence rate during the early phase of the study, but the rate was not sustained thereafter.

Table 2: Overall HH compliance rate in the institution

Location	HH Moments available	HH Completely followed	overall HH compliance rate
Cathlab	**250**	**75**	**30%**
CCU	**261**	**68**	**26%**
CTVSICU	**149**	**39**	**29%**
CTVS post OP	**50**	**15**	**30%**
GICU	**250**	**72**	**29%**
Gynec Post OP	**115**	**35**	**30%**

ISSN (O): 2687-5365; ISSN (P): 2753-6556

HD	**219**	**75**	**34%**
MCCU	**220**	**77**	**35%**
MICU	**136**	**40**	**30%**
NSICU	**140**	**39**	**28%**
SCCU	**164**	**47**	**29%**
SCNU	**270**	**81**	**30%**
SICU	**240**	**76**	**32%**
TICU	**160**	**56**	**35%**

Location-wise hand hygiene complete adherence rate. Each ICU had a single secured entrance with alcohol-based hand rub dispensers available. One alcohol-based hand rub dispenser for every bed within each unit. Hand hygiene posters were available at appropriate sites. All nursing, housekeeping staff, and allied health staff received basic infection control training as a continuous process and an induction course for all new recruits. But patients in different types of ICUs had different requirements of care, resulting in differing hand hygiene opportunities. Nurse patient ratio and staff attrition rate were different among ICUs. Adherence rates ranged from 26% in CCU to 35% in neonatal TICU, MCCU.

Table 3: Profession specific HH

Profession	HH Moments available	HH Completely followed	overall HH compliance rate
Doctors	760	76	10%
Interns	540	189	35%
Nurses	950	380	40%
Post graduates	470	47	10%
Others	30	2	5%

Profession-specific hand hygiene adherence rate. The highest adherence rate was seen among nurses (40%), followed by interns (35%) and doctors and post graduates (10% each), others (5%).

Table 4: Moment specific compliance rate

Moment	HH Moments available	HH Completely followed	HHCAR %) (hand hygiene complete adherence rate)
Moment 1	550	264	48%
Moment 2	470	235	50%
Moment 3	606	309	51%
Moment 4	530	265	50%
Moment 5	560	263	47%

Almost equal adherence rates of 50%, 51%, and 50% for moments 2, 3, and 4, respectively. Adherence rate was comparatively low for moments 1 and 5, i.e., 48% and 47%, respectively.

Table 5: Profession specific partial compliance of each station

Station	Doctors	Interns	Nurses	Post Graduates	Others
Cathlab	0.7%	5%	3%	0.2%	0.2%
CCU	1%	2.5%	3.5%	0.3%	0%
CTVSICU	0.2%	2.5%	4%	2.5%	0.5%
CTVS post OP	0.1%	2%	3%	1%	0.3%
GICU	1%	2%	3.5%	0.7%	1%
Gynec Post OP	1%	2%	2%	0.5%	0.2%
HD	0.3%	2%	2%	0.3%	0.3%
MCCU	0.6%	3%	3%	0.5%	0.2%
MICU	1%	3%	2%	1%	0.5%
NSICU	1%	2%	2%	0.5%	0.3%
SCCU	1%	3%	2%	0.5%	0%
SCNU	0.5%	2%	2%	0.5%	0.5%
SICU	0.5%	1%	3%	0.5%	0%
TICU	1%	2%	5%	1%	1%
Total	10%	35%	40%	10%	5%

ISSN (O): 2687-5365; ISSN (P): 2753-6556

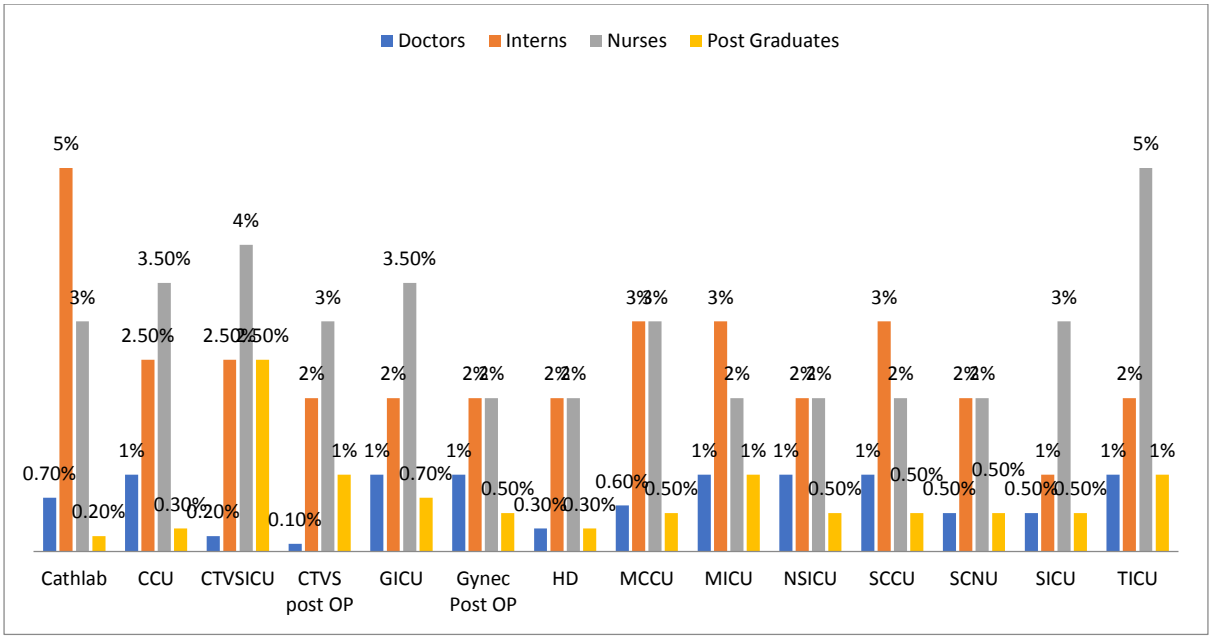

Figure 1: Profession specific partial compliance of each station.

DISCUSSION

In the present study, though there was a gradual increase in adherence rate during the early phase of the study, the rate was not sustained thereafter. This implies that HH studies with such a large duration of observation period are critical to producing more accurate and reliable data on HH compliance. Even after long periods of intensive education and training programs, there was a progressive decline in the HH compliance rate.[7] A number of investigators have reported improved adherence after implementing various interventions, but most studies had short follow-up periods and did not establish if improvements were of long duration. Few studies have reported sustained improvement as a consequence of the long-running implementation of programs aimed at promoting optimal adherence to hand hygiene policies.[8]

In the present study, doctors were not oriented to basic infection control measures, and no induction course was offered for any of the newly employed. Most of the senior doctors never had any sensitization to hand hygiene practices.

Some of them were skeptical regarding the value of hand hygiene. Some of them were resistant to change or considered it a threat to their autonomy. Senior visiting consultants got offended when they were verbally reminded by junior intensivists. Among doctors, decreasing order of compliance is as follows - intensivists, interns, and visiting consultants. One way that can be tried is to empower and encourage patients to challenge non-compliant staff to increase adherence to appropriate hand hygiene.[9]

Moment-specific adherence rates showed an almost equal adherence rate of 51%, 50, and 50 % for moments 2, 3, and 4, respectively. Adherence rate was comparatively low for moments 1 and 5, i.e., 48% and 47%, respectively. This pattern is similar to other studies, including a meta-analysis that found lower compliance rates before patient contact (21%) compared to after patient contact (47%).[10]

CONCLUSION

Although the HH procedure is simple, HH compliance among HCWs is so low that it cannot be easily explained or changed. The authors believe that a lack of motivation and increased workload may be the two causes of poor compliance. In the present study, the highest compliance rates were after patient contact and contact with the patient environment, and for this reason the authors believe that HCWs prefer to protect themselves to a greater extent than the patients.

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ISSN (O): 2687-5365; ISSN (P): 2753-6556

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ISSN (O): 2687-5365; ISSN (P): 2753-6556