CODEN [USA]: IAJPBB **ISSN: 2349-7750**

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

http://doi.org/10.5281/zenodo.3334390

Available online at: http://www.iajps.com ***Research Article***

HAND HYGIENE IN INTENSIVE CARE UNIT: A LIFE-SAVING OPPORTUNITY IN PATIENT CARE

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Article Received: May 2019 **Accepted:** June 2019 **Published:** July 2019

Abstract:

Background: *Health care associated infections (HCAI) are common in critically ill patients of ICU and hand hygiene compliance helps to reduce the incidence of HCAI.*

The purpose of this study is to assess the knowledge, attitude, practices and barriers in compliance of hand hygiene among Intensive care staff.

Materials and methods: *This cross-sectional descriptive study was conducted at Services Hospital Lahore and Mayo Hospital Lahore. The target population was the intensive care unit staff. Systematic non-probability Consecutive sampling technique was used. A well-structured questionnaire was developed from WHO Guidelines on Hand Hygiene in Health Care and past literature. Statistical Package for Social Sciences (SPSS) version 22 was used for data entry and analysis.*

Results*: A total of 363 participants were included in this study. 267 (73.6%) of the participants had received formal education on hand hygiene. 57% of the participants correctly knew the main route of germ transmission in HCAI as hands of healthcare workers. 241 (66%) of the participants knew that the main source of germ transmission was from patients in case of healthcare-associated infections. 209 (57.6%) of the participants knew that 20 sec is the minimum time required to achieve effective hand hygiene according to WHO guidelines. According to 147(40.5%) of the participants liquid hand wash is available for hand washing in the hospital setting, 106 (29.2%) of the Participants reported alcohol-based hand rubs,28. (7.7%) soap bar 52(14.3%) only water availability, ,and 30(8.3%) nothing was available for hand washing. Majority, 264(72.7%) of the participants reported the use of atmospheric air for hand drying. 324 (89%) of the participants showed willing to attend training session on hand hygiene. Hand hygiene practices were found to be suboptimum in junior doctors and there was a statistically significant association between hand hygiene practices and designation. Main barriers leading to non-compliance with hand hygiene include lack of knowledge regarding the impact of hand hygiene on HCAI, forgetting to wash hands and lack of time.*

Conclusion*: Despite the satisfactory knowledge and attitude of health hygiene among intensive care unit staff, Hand hygiene practices are found to be sub-optimum.*

Keywords: *Hand hygiene, hand wash, germ transmission.*

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Please cite this article in press Sarwat Saif et al., ***Hand Hygiene In Intensive Care Unit: A Life-Saving Opportunity In Patient Care****., Indo Am. J. P. Sci, 2019; 06(07).*

INTRODUCTION:

Healthcare worker associated infections are associated with significant morbidity and mortality.1 Contaminated hands of healthcare workers assist in the transmission of Infectious pathogens from one patient to another.2, 3

15 October is declared as global hand washing day by UNICEF. Hand hygiene is associated with decreased incidence of hospital-acquired infections.4, 5 According to the United States Center for Disease Control and Prevention, each day 1 in every 31 hospitalized patients acquires healthcare-associated infection (HAI).6 According to the report of The Agency for Health care Research and Quality, in United States, each more than 1 million healthcare-associated infections (HCAI) are acquired each year.7 HAI is very common in critically ill patients of ICU, where 0.5 million patients acquire HCAI annually.8 Literature suggests that hand hygiene compliance helps to decrease the incidence of health care acquired Infections.9. Washing hands with soap, water, and disinfectant hand rub are cost-effective, efficient and easy methods to prevent the spread of pathogenic organisms.10. In 2009, WHO launched an annual global campaign to improve hand hygiene by the name of "SAVE LIVES: Clean Your Hands" 11. WHO defined key moments when healthcare workers should wash their hands. Hands should be washed before and after touching patients, before any aseptic procedure, after contact with any body fluids or surroundings of patients.12. Proper hand washing technique and antiseptic products are important to effectively remove pathogenic microorganisms.13. The purpose of this study is to assess the knowledge, attitude, practices and barriers in compliance of hand hygiene among Intensive care staff regarding hand hygiene. This study will help to fulfill knowledge gaps and will help in designing educational and training programs.

MATERIALS AND METHODS:

this cross-sectional descriptive study was conducted at Services Hospital Lahore and Mayo Hospital Lahore.

The target population was the intensive care unit staff.

Systematic non-probability Consecutive sampling technique was used.

A well-structured questionnaire was developed from WHO Guidelines on Hand Hygiene in Health Care and literature.3, 14

Questionnaire included

Part A: demographic details including age, gender, designation

Part B: Formal education on hand hygiene, knowledge about the main source of germ transmission and minimum time

Availability of hand washing products,

Part C:

Hand hygiene and hand drying practices

Part D:

Barriers for non-compliance with hand hygiene

willingness to attend a training session on hand hygiene.

This study was initiated after approval from the institutional research ethics committee

The questionnaire was distributed among House officers, medical officers, residents, fellows and consultants of intensive care units.

Medical students, nurses and other ICU staff were excluded from the study

Participants have explained the purpose of this study.

Informed consent was taken from the subjects before administering the questionnaire. Unwilling subjects were excluded from study.

SPSS version 22 was used for data entry and analysis.

Frequency and percentage tables were generated and chi-square test was used to determine statistical significance. 50% correct answers were considered as the satisfactory level of knowledge.x2 value of $\leq .05$ was considered as significant.

RESULTS:

363 participants were included in this study.

173(47.7%) were male and 190 (52.3%) of the participants were female.

Mean age of the participants was 31 with a standard deviation of 11 years.

Among the participants 123 (33.9%) were House officers, 85 (23.4%) were medical officers, 71 (19.6 %) were residents, 49 (13.5 %) were fellows and 35 (9.6%) were consultants.

267 (73.6%) of the participants had received formal education on hand hygiene.

There is significant association between designation of the participants and formal education on hand hygiene (p=0.002).

Table 1 Knowledge of ICU staff regarding main route of germ cross transmission with in hospital:

Main route of cross contamination in HCAI	Frequency n= 363	Percentage (%)
Contaminated hands of HCW	207	57
Contaminated hospital air	82	22.6
Exposure of patient to colonized surfaces	41	11.3
Use of non-invasive products between patients (Stethoscopes, BP cuffs etc.)	33	9.1

Table 2:

hand hygiene practice	**House officers n= 123**	**Medical officers n= 85**	**Residents n=71**	**Fellows n= 49**	**Consultants n= 35**	**P value**
Before any direct patient contact						< 0.00001*
Always	29	17	20	12	24	
Sometimes	23	41	32	26	9	
Never	71	27	19	18	2	
Between contact with different patients						.000021*
Always	29	**19**	**16**	**13**	**16**	
Sometimes	42	**21**	**34**	**29**	**11**	
Never	**52**	**45**	**21**	**7**	**08**	
Between moving from a contaminated to a clean body site of the same patient						.133533
Always	**54**	**41**	**34**	**24**	**21**	
Sometimes	**23**	**24**	**21**	**13**	**9**	
Never	**46**	**20**	**16**	**12**	**5**	
After contact with patient's intact skin						.030506*
Always	**21**	**29**	**13**	**11**	**7**	
Sometimes	**56**	**22**	**24**	**14**	**16**	
Never	**46**	**34**	**34**	**24**	**12**	
After contact with inanimate objects in the immediate vicinity of the patient						.003154*
Always	**49**	**37**	**24**	**23**	**13**	
Sometimes	**26**	**31**	**10**	**9**	**7**	
Never	**48**	**17**	**37**	**17**	**15**	

Before using (any) gloves						.000829*
Always	**41**	**27**	**13**	**14**	**12**	
Sometimes	**43**	**28**	**47**	**16**	**11**	
Never	**39**	**30**	**11**	**19**	**12**	
After glove removal						< 0.00001*
Always	**52**	**19**	**13**	**18**	**3**	
Sometimes	**54**	**46**	**47**	**13**	**12**	
Never	**17**	**20**	**11**	**18**	**20**	

Hand hygiene practices among intensive care unit staff
*statistically significant

Table 3: Perceived barriers leading to non-compliance with hand hygiene

Barriers for noncompliance with HH	**Frequency n= 363**	**Percentage (%)**
Lack of Hand washing products availability at point of care	157	43.3
Lack of hand washing facility at point of care	49	13.5
Lack of time	217	59.8
Hand hygiene is not emphasized enough	142	39.1
Lack of knowledge regarding impact of hand hygiene on HCAI	284	78.2
Absence of hand washing guidelines in hospital	21	5.8
Lack of role model from senior doctors	183	50.4
Lack of priority for hand hygiene in hospital	91	25.1
Skin irritation	94	25.9
Wearing gloves is enough to prevent HCAI	184	50.7
I forget to do it sometimes	274	75.5

HH: hand hygiene. Knowledge of ICU staff regarding the main route of germ cross transmission within the hospital is given in table 1. 57% of the participants correctly knew the main route of germ transmission in HCAI as hands of healthcare workers. 241 (66%) of the participants knew that the main source of germ transmission was from patients in case of healthcare-associated infections. 209 (57.6%) of the participants knew that 20 sec is the minimum time required to achieve effective hand hygiene according to WHO guidelines. According to 147(40.5%) of the participants liquid hand wash is available for hand washing in the hospital setting, 106 (29.2%) of the Participants reported alcohol-based hand rubs,28 (7.7%) soap bar 52(14.3%) only water availability, ,and 30(8.3%) nothing was available for hand washing. Hand hygiene practices among intensive care unit staff is given in table 2 regarding hand drying practices, 264(72.7%) of the participants reported the use of atmospheric air, 38(10.5%) used workplace towel, 31(8.5%) single-use towels, 27(7.4%) personal towel,3(0.8%) hand dryer. Perceived barriers for non-compliance with hand hygiene are given in table 3. 357 (98.4%) of the participants believed that health care-associated infections can be significantly reduced by effective hand hygiene. 324 (89%) of the participants showed willing to attend training session on hand hygiene.

DISCUSSION:

In this study, about 3/4th of participants reported that they have received formal training on hand hygiene during their career. In a similar study conducted in Pakistan, 81.4% of the respondents have received formal Hand hygiene training.15. In our study, 66% and 57% of members had knowledge of the main source and route of germ transmission in HCAI, respectively. Our observation is similar to the study

carried out by Afzal et al.16. In our study, 57.6% of the participants had knowledge of the minimum time required for hand hygiene. According to the United States Center for Disease Control and Prevention for effective hand, hygiene hands should be scrubbed for at least 20 second.17. In our study, only 29.2% of the participants used alcohol-based hand rubs.

They are self-drying and are effective against most pathogenic bacteria and many viruses.18 for effective hand hygiene, alcohol-based hand rubs are considered as a gold standard.19, 20. In a similar study conducted in Punjab, Pakistan alcohol-based hand rubs were available to 59% of the study population.16. Hand hygiene practices were found to be suboptimum in junior doctors and there was a statistically significant association between hand hygiene practices and designation. Studies suggest that with the support of senior doctors hand hygiene compliance can be improved.21, 22. Many studies showed Suboptimum hand hygiene practices among health care workers.23-25. Main barriers leading to non-compliance with hand hygiene include lack of information regarding impact of hand hygiene on HCAI, forgetting to wash hands and lack of time. Similar barriers were observed in other studies [26, 27].

CONCLUSION:

Despite the satisfactory knowledge and attitude of health hygiene among intensive care unit staff, Hand hygiene practices are not satisfactory.

Recommendations:

Continued Medical Education (CME) Programs should be conducted for Health care workers and the knowledge of hand hygiene should be refreshed at regular intervals.

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