

## Assessment of Hand Hygiene Practices and Barriers to hand Hygiene among Healthcare workers of Government Medical College Hospital Jammu

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### Abstract

**Introduction:** Hand hygiene is most effective interventions to reduce spread of pathogens and prevent Hospital Acquired Infections (HIAs). Compliance of healthcare workers with hand hygiene practices is vital in preventing transmission of HIAs.

**Aims:** To assess practices and barriers of hand hygiene among healthcare workers of GMCH Jammu.

**Methodology:** Cross sectional study was conducted among healthcare workers of Government Medical College Hospital Jammu. Simple random sampling was used to interview 250 participants. Data was collected using pretested, validated and semi structured questionnaire. Details like products used for hand hygiene, moments of hand hygiene, barriers to hand hygiene practices and knowledge about hand hygiene were asked. Appropriate statistical tests were applied

**Results:** Out of 250 healthcare workers majority were using soap and water 203(81%) and alcohol based sanitizers 202(80%).Majority 234(93.6%) were always performing hand hygiene after touching blood, body fluids and secretions,222(88.8%) and after contact with the patients but only 138(55.2%) were following hand hygiene practices while switching from one patient to other.Most common barrier to wash hands was lack of soap/water115(46%) and inconvenient location of sinks 112(44.8%). Only 117(46.8%) were following six steps of hand wash. The association between designation of health care worker and steps of handwashing was found to be statistical significant.

**Conclusion:** Observed compliance to hand hygiene practices is low. There is lack of knowledge to perform six steps of hand washing and lack of facilities to maintain hand hygiene.

**Key words:** healthcare worker, hand-hygiene practices, compliance

### Introduction

The provision of healthcare services is associated with potential range of safety problems. Despite the

advances in healthcare globally, patients always remain susceptible to unintended adverse events in hospitals. Hospital acquired infection (HAI) can

endangers the health of patients, healthcare workers and community members<sup>1</sup>.

As per World Health Organization, prevalence of hospital acquired infections is about 5-10% in developed countries and roughly 40% in the developing countries<sup>2</sup>. Hand hygiene is a key tool for interrupting infection transmission in the health care environment. Washing hands with soap and water or using alcohol-based hand rub are considered the most effective methods for preventing the transmission of infectious diseases<sup>3</sup>. Maintaining proper hand hygiene is a single most cost-effective and practical measure to reduce the incidence of HAI. Thus it can prevent the spread of antimicrobial resistance across from tertiary care hospital to primary healthcare centres<sup>4</sup>. Adequate hand hygiene among hospital personal could prevent an estimated 15 to 30% of the HAI<sup>1</sup>.

Lack of knowledge and lack of recognition of hand hygiene opportunities during patient care are mainly responsible for poor hand hygiene among HCWs. Although many countries have guidelines regarding hand hygiene for healthcare settings, overall compliance among HCWs remains poor<sup>5,6</sup> despite hand hygiene being regarded as one of the most important elements of infection control activities<sup>7</sup>.

The World Health Organization (WHO) has developed the "My 5 Moments for Hand Hygiene" approach as key to protect the patients by improving hand hygiene and prevent the spread of pathogens, reducing HAIs. That approach encourages HCWs to clean their hands: before touching a patient, before clean/aseptic procedures, after body fluid exposure/risk, after touching a patient and after touching patient surroundings<sup>8</sup>.

Factors like lack of knowledge and interest, time constraints, skin irritation, understaffing, hand irritation, inaccessibility or shortage of handwashing equipment, dense working conditions and poor knowledge are some of the reasons for following proper hand hygiene among health care workers<sup>9</sup>. The importance of hand hygiene is not sufficiently recognized by health care workers and poor compliance has been documented repeatedly<sup>10</sup>.

It is essential to explore knowledge practice gap about hand hygiene for effective infection control measures in health care settings. Still there is deficiency of research related to this topic in India even when the prevalence of HAI is high in the whole of Asia<sup>11</sup>, J & K being no exception. Thus to improve Health Care Workers compliance with health Hygiene, it is therefore necessary to find out hindering factors and attempt to improve them. Keeping this in mind, the study was conducted to assess practices and find out barriers to hand hygiene practices among healthcare workers of Government Medical College Hospital Jammu.

### Methodology

This cross sectional study was done in Government Medical College Hospital Jammu a teaching hospital in Jammu, India from June to August 2020. Jammu is the winter capital of Jammu & Kashmir and GMCH hospital provides tertiary health care for residents of Jammu as well as patients referred from other districts in vicinity. Study subjects included healthcare workers like resident doctors, interns, nurses, lab technicians etc. working in different departments.

The sample size was calculated using similar study result on knowledge on hand hygiene with the prevalence of 23%, 5% allowable error at 95% confidence which came out to be 283. Due to time constrain 250 participants from different departments of GMC Jammu were included in the study<sup>12</sup>.

Ethical approval for this study was provided by the Institutional Ethical Committee GMC Jammu with number C-124. The investigator visited the participants in hospital wards and explained the nature of the study. Informed consent was taken from every participant. Simple random technique using lottery method. A pretested self structured close ended questionnaire was administered to participants asking demographic information and details about knowledge, attitude and practice about hand hygiene such as products used for hand hygiene, moments of hand hygiene, barriers to hand hygiene practices, knowledge about hand hygiene, and methods of hand drying.

For question analysis, Likert type of grading

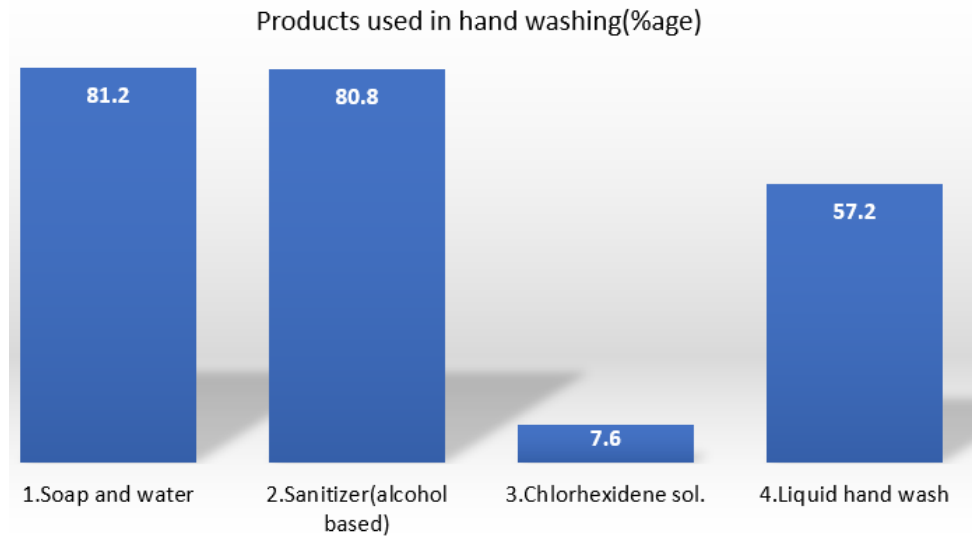
was used for the answer of strongly agree, agree, neutral, disagree and strongly disagree. Data was entered in IBM SPSS version 21 for Windows (IBM Inc. Armonk, New York, USA) and summarized by using descriptive statistics. A Chi square test was employed to test the association between knowledge and practice of hand hygiene with selected variables of interest. A P value of <0.05 was considered as statistically significant.

Participants who refused to participate in the study and who could not be contacted even after three consecutive visits in the respective work place were excluded from study.

## Results

This study was conducted among two hundred two hundred fifty (250) health workers working in a Government tertiary care hospital. The mean age of the participants was  $30.88 \pm 8.15$  years, more than half 168 (67.2%) were female, 166(66.4%) were of age group 20 to 30 years and 140(56%) were resident doctors.

Majority of healthcare workers i.e. 203(81%) were using soap and water and alcohol based sanitizers 202(80%), followed by liquid hand wash 143(57.2%) and chlorhexidine 19(7.6%).



**Fig 1: Figure showing the percentage of participants using various products for hand washing**

In our study majority participants 234(93.6%) always perform hand hygiene after touching blood, body fluids and secretions, 222(88.8%) after contact with the patients, after performing procedures(92%)

after day's work(91.6%) but only 138(55.2%) always follow hand hygiene practices while switching from one patient to other as shown in Table 1.

**Table 1: Table depicting the distribution of moments of hand hygiene among participants.**

Moments of hand hygiene	Occasional n(%)	Frequent n(%)	Always n(%)
1. Immediately on arrival at work	54 (21.6)	69 (27.8)	127(50.8)
2. Before putting on gloves	90 (36.0)	48(19.2)	112(44.8)
3. After removing gloves	24 (9.6)	40(16.0)	186(74.4)
4. After touching blood, body fluids/secretions	4 (1.6)	12(4.8)	234(93.6)
5. Before contact with patients	50 (20)	64(25)	136(54.4)
6. After contact with patients	5 (2.0)	23(9.2)	222(88.8)
7. Between patients	34 (13.6)	78(31.2)	138(55.2)
8. Before performing a procedure	16 (6.4)	31(12.4)	203(81.2)
9. After performing a procedure	5 (2.4)	14(5.6)	230(92.0)
10. After day's work	4 (1.3)	18(7.2)	228(91.6)

The most common barriers to compliance with hand hygiene reported by the respondent was lack of water and soap (62.4%) followed by inconvenient

sinks (44.8%). Only 117(46.8%) were following the six steps of hand wash.

**Table 2: Barriers to compliance with hand hygiene practices among the respondents(multiple answers)**

Barriers to compliance with hand hygiene practices among health care workers	Frequency	Percent (%)
Lack of soap and water	115	62.4
Sinks are inconveniently located	112	44.8
Lack of water	94	37.6
Always wearing gloves during working hours	70	28.0
No place for hand wash	69	27.6
Too busy in work	68	27.2
Non availability of alcohol hand rub	57	22.8
Understaff	51	20.4
Hand washing agents causes irritation	42	16.8
Patient's needs take priority	32	12.8
I easily forgot to wash hands	17	6.8
Low risk of infection	15	6.0
Lack of knowledge	13	5.2

**Table 3: Table showing association of socio demographic variables of participants with how often they follow 6 steps of handwashing**

Variable	Steps of handwashing			p value
	Always	Frequent	Occasional	
1. Age				0.207
a) 20-30	83	15	68	
b) 31-40	26	8	23	
c) 41-50	5	3	10	
d) 51-60	3	3	3	
2. Gender				0.398
a) Male	35	8	39	
b) Female	82	21	65	
3. Designation				<0.001
a) Resident doctors	71	7	62	
b) Interns	31	2	12	
c) Laboratory technician	7	2	3	
d) Nursing orderly	3	9	7	
e) Female nursing staff	2	5	5	
f) HDU staff	2	4	15	

## Discussion

This study was done among 250 healthcare workers to assess practices and barriers of hand hygiene among them. The mean age of the participants was 30 years with majority of participants of age group 20 to 30 years (66.4%). In a similar study done in Ethiopia mean age of healthcare workers participating was 30 years and the majority of them were between the ages of 20 and 34 years<sup>13</sup>. Similar findings were also reported in studies done in Nigeria and Ghana<sup>14,15,16</sup>. The main reason behind majority of study participants being young population is that majority of the study participants are newly recruited with average of five years doing service in facility.

In our study, majority of the participants (93.6%) always perform hand hygiene after touching blood, body fluids and secretions, after performing procedures (92%) and after day's work (91.6%). In similar study done in Ethiopia, hand washing practice after touching blood, body fluids, secretions was 100%<sup>13</sup>. This is comparable with the findings of Kingston<sup>17</sup>. This shows that health workers were primarily concerned with protecting themselves from acquiring pathogenic organisms from their patients; rather than trying to prevent the occurrence and spread of nosocomial infections amongst patients admitted under their care.

Most of participants i.e 81.2% were using soap and water for hand washing, The result showed that it is more than study done in Afar (72.53%)<sup>18</sup> but less than study done in Bahir Dar City (98%)<sup>19</sup>. In this study 80.1% of the participants used alcohol base sanitizer, which is in turn higher than study conducted at Bahir Dar City (2%)<sup>19</sup> and in Afar (27.47%)<sup>18</sup>.

The most common barriers to compliance with hand hygiene reported by respondents were lack of water and soap (62.4%) followed by inconvenient sinks (44.8%). Similar findings are reported in another study where lack of water and soap was major constraints against washing hands which was seen among 122 (73.49%) HCWs<sup>13</sup>. Same findings were reported in a study done in Uttarakhand India, which reported that 85.21% HCWs feels that hand hygiene facility are not conveniently placed and 80.87% of HCWs said that because of overburden of patient care, hand hygiene practices is not followed

<sup>1</sup>. Present study findings are also in line with study conducted by Segum B et al revealed that 66.8% of health care workers believed that there is inadequate facility for hand hygiene practices<sup>20</sup>.

In our study 20.4% respondents said understaffing/ overcrowding or insufficient time, leads to poor adherence to hand hygiene practices which is low if compared with results of study done in Utrakhand which reported that 81.73% of HCWs felt that understaffing/ overcrowding or insufficient time, leads to poor adherence to hand hygiene practices<sup>1</sup>. In this study 22.8% of health care workers felt non availability of alcohol hand rub as a barrier to complete hand hygiene practices. Literature also reported that availability of hand rub solutions at bedside patient intend to increase in adherence to hand hygiene practices<sup>21</sup>.

Only 117 (46.8%) participants were following the six steps of hand wash. This can be compared to results in a similar study done on undergraduate and junior doctors in Imphal where only 43.5% of the postgraduate students (43.5%) and 17.9% MBBS students follow the six steps of hand washing always<sup>22</sup>. This is in contrast to the finding of Chakraborty T et al. where a majority (80.8%) of the participants followed the six steps of hand washing always<sup>23</sup>. This may be because the participants might not be aware of the importance of the six steps of hand washing or might take it to be time consuming.

Our study reported that the professional status of the healthcare worker was significantly associated with hand hygiene knowledge score ( $P= 0.005$ ). this can be compared to study done in teaching hospital of Ghana<sup>16</sup> where professional status of the healthcare worker was also significantly associated with hand hygiene knowledge score. In other study also it was noticed better hand hygiene compliance among healthcare workers working in Paediatrics and Medicine departments as compared to those involved in surgical and intensive care units<sup>16</sup>.

## Conclusion

Observed compliance to hand hygiene practices among studied Health Care Workers was low overall. The main barriers identified by respondents were lack of resources for maintaining proper hand

hygiene. The professional status of the healthcare worker was significantly associated with following six steps of hand washing.

**Limitations:** The main limitation of the current study is that results are based on self-reported questionnaire. There may be an exaggeration of hand hygiene compliance among participants. Another limitation of the study is that no proxy measures like hospital acquired infection rates of different departments, and access to hand hygiene facilities were not assessed in study to validate the self-reported hand hygiene practice.

**Recommendation:** There is need to educate and demonstrate to healthcare workers of steps of handwashing which can be done by regular seminars. Necessary steps need to be taken to provide proper place and supplies for hand washing. Written guidelines should be posted in well-known places to serve as a constant reminder.

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**Conflicting Interest:** Nil.

**Ethical clearance:** Institutional Ethical Committee GMC Jammu with number C-124.

### References

1. Kumar R, Gupta PK, Sharma P et al. Hand hygiene, attitude and barriers among health care workers at a tertiary care teaching hospital, Uttarakhand. *Int J Health Sci Res.* 2017; 7(9):159-165.
2. WHO Guidelines on Hand Hygiene in Health Care: First Global Patient Safety Challenge Clean Care Is Safer Care. Geneva: World Health Organization; 2009. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK144023>(Last accessed on 2022 Mar 30)
3. Zakeri H, Ahmadi F, Rafeemanesh E, Saleh L. The knowledge of hand hygiene among the healthcare workers of two teaching hospitals in Mashhad. *Electronic Physician.* 2017; 9(8):5159-5165.
4. Ott M, French R. 'Hand hygiene compliance among healthcare staff and student nurses in a mental health setting. *Mental Health Nursing.* 2009; 30: 702- 4.
5. Wendt C. Hand hygiene-comparison of international recommendations. *J Hosp Infect.* 2001;S(A):23-8.
6. Suchitra J.B., Lakshmidevi N. Hand washing compliance – is it a reality? *Online J Health Allied SCs.* 2006;4:2.
7. Mathur P. Hand hygiene: back to basics of infection control. *Indian J Med Res.* 2011;134:611–620.
8. Sax H, Allegranzi B, Uçkay I, Larson E, Boyce J, Pittet D. 'My five moments for hand hygiene': A usercentred design approach to understand, train, monitor and report hand hygiene. *J Hosp Infect* 2007;67:921.
9. WHO. Risk Factors Influencing Children,s Healthy Environment in Kaplamai Division Trans-Nzoia District. Baseline Survey Report. Geneva : WHO; 2010.
10. Mathai E, Allegranzi B, Kilpatrick C, Pittet D. Prevention and control of health care-associated infections through improved hand hygiene. *Indian J Med Microbiol.* 2010; 28(2):100-106.
11. Nair SS, Hanumantappa R, Hiremath SG, Siraj MA, Raghunath P. Knowledge, Attitude,and Practice of Hand Hygiene among Medical and Nursing Students at a Tertiary Health Care Centre inRaichur, India. *ISRN Preventive Medicine* 2014,1-4.
12. Tyagi M, Hanson C, Schellenberg J, Chamarty S, Singh S. Hand hygiene in hospitals: an observational study in hospitals from two southern states of India. *BMC public health.* 2018 Dec;18(1):1-9.
13. Jamie AH (2020) Hand Washing Practices among Health Care Workers in Jugal Hospital, Harar, Ethiopia, 2020: In the Era of Corona Virus: Observational Study. *J Antivir Antiretrovir.*12:197.
14. Ango U, Kehinde J. Awosan K. Knowledge, attitude and practice of hand hygiene among healthcare providers in semi-urban communities of Sokoto state, Nigeria. *Int J Trop Dis Health.* 2017; 26(2):1-9.
15. Ekwere T, Okafor I. Hand hygiene knowledge and practices among health care providers in a tertiary hospital, Southwest Nigeria. *Int J Infect Control.* 2011; 9(4):1-10.
16. Amissah I, Salia S, Craymah J. A study to assess hand hygiene knowledge and practice among health care workers in a teaching hospital in Ghana. *Intl J Sci Res.* 2006; 5(8):301-307
17. Kingston LM, Slevin BL, O'Connell NH, Dunne CP. Attitudes and practices of Irish hospital based physicians towards hand hygiene and hand rubbing using alcohol based hand rub: A comparison between 2007 and 2015. *J Hosp Infect.* 2017; 97:17-25.
18. Jemal S. Knowledge and practices of hand washing among health professionals in Dubti referral hospital, Dubti, Afar, North-East Ethiopia. 2018; 1-7.

19. Gulilat K, Tiruneh G. Assessment of knowledge, attitude and practice of health care workers on infection prevention in health institution Bahirdar city administration. *Sci J Public Health*. 2(5): 384-393
20. Segun B, Emmanuel E, O Enembe O. A hand washing practice among health providers in a teaching hospital in southern Nigeria. *Int J Infect Control*. 2013:1-7.
21. Ariyaratne MHJD, Gunasekara TDCP, Weerasekara MM, et al. Knowledge, attitude and practices of hand hygiene among final year medical and nursing students at the University of Sri Jayewardenepura. *Sri Lankan Journal of Infectious Diseases*. 2013;3(1):15-25.
22. Dutta G, Singh TG, Kumar T. Knowledge and practice of hand hygiene among undergraduate students and junior doctors in the Regional Institute of Medical Sciences, Imphal. *J Family Med Prim Care* 2020;9:4741-6
23. Chakraborty T, Karmakar N, Nag K, Datta A, Saha PK, Biswas C. A cross-sectional study regarding knowledge, attitude and practice of hand washing among health care providers in a tertiary care hospital of Tripura. *IJMSci* 2018;5:3527-31.