International Journal of Health Sciences and Research
www.ijhsr.org ISSN: 2249-9571

Original Research Article

Hand Hygiene, Attitude and Barriers among Health Care Workers at a Tertiary Care Teaching Hospital, Uttarakhand

Rajesh Kumar[1], Puneet Kumar Gupta[2], Purnima Sharma[3], Ravneet Kaur[3], Reetu[3], Renu[3], Renu Verma[3], Richa Saini[3], Ritika[3], Sanjana[3], Shalu[3]

[1]Assistant Professor, Assistant Professor, College of Nursing, All India Institute of Medical Sciences (AIIMS), Rishikesh, Uttarakhand-249203
[2]Assistant Professor, Microbiology, AIIMS, Rishikesh, Uttarakhand-249203
[3]BSc (Hons.) Nursing Intern Students, AIIMS, Rishikesh, Uttarakhand-249203

Corresponding Author: Rajesh Kumar

ABSTRACT

Introduction: Health care associated infection (HCAI) is one of the most significant, and current phenomena for discussions in health care industry. Hand hygiene was thought to be a key factor in reducing hospital acquired infection during the initial development of healthcare system. The present study aimed to determine hand hygiene compliance, attitude and barriers among health care workers (HCWs).
Material & Methods: A cross sectional observational survey was conducted by recruiting 115 health care workers from different in-patient departments at All India Institute of Medical Sciences (AIIMS), Rishikesh, Uttarakhand. Convenience consecutive sampling technique was used to enroll HCWs. Modified WHO hand hygiene checklist, attitude scale and checklist for identification of barriers was used to ascertain compliance, attitude and barriers. Appropriate descriptive & inferential statistics was applied to compute the results.
Results: Results shows higher adherence (10%) to hand hygiene practices among faculty followed by senior residents (7.14%) and medical and nursing interns (6.71%). However, the partial adherence to hand hygiene practices was surprisingly high (63.04%) among HCWs. There was significant difference in attitude towards hand hygiene practices among medical and nursing professionals. Further, findings revealed that inconvenient placement of hand hygiene facility was prime reported (85.21%) barrier for poor adherence to hand hygiene practices followed by over burden of patient (80.87%), understaffing/overcrowding (81.73%) and hand hygiene is time consuming activity (80.86%) HCWs.
Conclusion & recommendation: The study concluded poor hand hygiene compliance among HCWs. Study findings recommend improvement in existing facilities for hand hygiene and make them readily accessible for HCWs at their respective departments to enable them to engage in good practices which will be beneficial for them and patients.

Key Words: hand hygiene, compliance, adherence, health care workers, barrier, attitude

INTRODUCTION

The provision of healthcare worldwide is always associated with a potential range of safety problems. Yet, despite advances in healthcare systems, patients remain vulnerable to unintentional harm in hospitals. Health care associated infection (HCAI) is the most frequent adverse event in health care delivery system worldwide. [1]

The overall prevalence of HCAI in developed countries varies from 5.1% to 11.6% and in developing countries it is around 15.6%. World Health Organization

(WHO, 2002) estimates these infections to occur among 7-12% of the hospitalized patients globally, with more than 1.4 million people suffering from infectious complications acquired in the hospital at any time. [2-3]

Health care associated infection prolong hospital stay, create long-term disability, increase resistance to antimicrobial, represent a massive additional financial burden for health system, generate high cost for patient and their families and cause unnecessary deaths. Improper hand hygiene is one of the most important contributing factors to health care associated infections. [1]

Hand hygiene is an important healthcare issue globally and is a single most cost-effective and practical measure to reduce the incidence of HCAI and the spread of antimicrobial resistance across all settings-from advanced health care systems to primary healthcare centres. [4] Adequate hand hygiene among hospital personal could prevent an estimated 15 to 30% of the HCAI. [1-2]

Despite the relative simplicity of this procedure, compliance to hand hygiene practices among health care providers is as low as 40%. [5] However, there are certain factors which predispose poor compliance to hand hygiene among health care workers. Some of these factors are present regardless of the resources available like prolonged and inappropriate use of invasive devices and antibiotics, high risk and sophisticated procedures, immuno-suppression and other severe underlying patient conditions, insufficient application of standard and isolation precautions. [6-7]

Despite this well-known fact, hand hygiene compliance among HCWs in general is unacceptably low especially in developing countries like India (15.6%). [8] Therefore, the present study was planned to assess the level of hand hygiene compliance, attitude, and barriers among HCWs at AIIMS Rishikesh, Uttarakhand.

MATERIALS & METHODS

A cross sectional observation was conducted among different kind of 115 HCWs working and undergoing training at All India Institute of Medical Sciences, Rishikesh, Uttarakhand. Convenience consecutive sampling technique was adopted to enrol subjects over a period of 2 months. Data was collected through a socio-demographic data sheet, Modified WHO Hand hygiene proforma, structured questionnaire and attitude scale. A group of trained nursing students observed hand hygiene practices in respective area and questioned information on attitude and barriers. The detail of instruments is as follows:

Part A- Socio-demographic Profile Sheet: It includes age, gender, religion, education level, year of working experience, type of educational institute education completed, exposure to in-service education/training on hand hygiene practices, course of intern students. Validity of tool was sought from experts in the field of nursing, microbiology, general surgery and medicine.

Part B – Hand Hygiene Observation Proforma: [9] This is comprehensive proforma based on WHO hand hygiene checklist and modified with the help of experts of Microbiology department of AIIMS Rishikesh. It consisted information about type of health care workers, number of hand hygiene opportunities faced in defined time, and hand hygiene practices (hand wash and hand rub) etc. Validity of tool was confirmed after submitting the tools to experts in the field of nursing, microbiology, general surgery and medicine.

Part C-Attitude Scale: This is self-develop 5 point Likert scale consisted of 11 items related to attitude towards hand hygiene practices. Each item is measured on 5 point rating scale; Strongly Agree (5) to Strongly Disagree (1). The reliability of the tool was confirmed by Cronbach's alpha and it came out 0.83 for the study. The attitude scale was found valid and reliable for the study.

Part D- Structured Questionnaire: It consisted of the factors hindering hand hygiene compliance among health care workers i.e. availability of sink, soap and water, supervision of infection control committee, lack of knowledge of guidelines/ protocols etc. Validity of tool was confirmed after submitting the tools to experts in the field of nursing, microbiology, general surgery and medicine.

Ethical consideration

The study was approved by Institutional Ethical Committee (ECR/736/ Inst/ UK/ 2015) and confidentiality of information and anonymity of subjects was assured during and after the data collection. The ethical approval wave-off need of consent for observation in order to get bias free findings on hand hygiene compliance. Data was analyzed using SPSS version 20 and analyzed by using descriptive and inferential statistics.

Method of Data Collection

Formal permission was obtained from concerned authority. Nine Intern nursing students were undergone a formal short training organised by department of Microbiology at All India Institute of Medical Sciences, Rishikesh (AIIMS) for consistent observation of hand hygiene opportunities and hand hygiene practice among health care workers as prescribed in WHO hand hygiene manual. Inter-observer reliability was confirmed between observers to assure the bias free findings. Furthermore, each two nursing students during their routine clinical posting observed different kind of health care workers in respective clinical areas for 30 minutes for five working days in morning shift.

RESULTS

Table 1 depicted socio-demographic and profession related information of health care workers. It revealed that 52.2% HCWs were females and 47.8% were male. In terms of religion, majority (82.6%) of HCWs belong to Hindu religion. In respect of profession, 37.4% were nursing officers followed by 30.4% were medical and nursing interns, 20.9% junior residents and only 7.8% faculty.

In terms of professional education, 60% subjects completed baccalaureate-nursing degree followed by 27% MBBS and 11.3% MBBS post-graduation in medical field. Around 38.26% subjects had working experience between 1-4 years.

In terms of asking about their basic qualification educational institute, 68.7% HCWs completed their basic education from government institute followed by 25.2% studied in private institute. 49.6% HCWs attended in-service education program on hand hygiene practices and out of 49.6% health care workers, 20% attended in-service education training before 3-year back.

Table-1 Socio-demographic Variables of HCWs (n=115)

Variables	n (%)
Age (in years)	25.66±3.61
Gender	
Female	60(52.2)
Male	55(47.8)
Religion	
Hindu	95(82.6)
Muslim	07(6.1)
Sikh	03(2.6)
Christian	10(8.7)
Profession	
Nursing Officers	43(37.4)
Interns(MBBS/Nursing)	35(30.4)
Senior Residents	24(20.9)
Faculty (Consultant & Surgeon)	09(7.8)
Junior Residents	04(3.5)
Educational Status	
B.Sc Nursing	70(61.7)
MBBS	31(27.0)
MBBS Post Graduation	13(11.3)
Year of Working Experience	
<1 Year	16(13.91)
1-4 Year	44(38.26)
>4 Year	20(17.39)
Not mentioned	35(30.43)
Type of Educational Institute	
Government	79(68.7)
Private	29(25.2)
Trust	07(6.1)
Attended In- Service Education	
Yes	57(49.6)
(Before 3 Year)	23(20.0)
Working Area	
General Ward	73(63.5)
Special Ward	27(23.5)
OT	08(7.0)
NICU	06(5.2)
Course	
B.Sc Nursing	70(60.9)
MBBS	45(39.1)

Hand Hygiene Compliance

Table 2 depicts the compliance rate among different category of HCWs. Finding revealed that faculty had major rate of compliance (10%) followed by senior residents (7.14%) and medical and nursing intern (6.71%). However, Junior residents reported poorest compliance among all types of health care workers. Further, findings suggested that the health care workers facing more opportunities in a given time show poor adherence to hand hygiene practices.

Table-2 Compliance Rate among Health Care Workers (n=115)

Health Care Workers	Total Opp.*	Complete n(%)	Incomplete n (%)	Range of opp.*
Physician/Consultant/Faculty	30	03(10.0)	17(56.67)	2-5
Senior residents	14	01(7.14)	08(57.14)	2-5
Junior residents	97	01(1.03)	59(60.82)	2-9
Staff nurses	197	04(2.03)	125(63.45)	2-11
Students	149	10(6.71)	98(65.78)	0-8
Total	487	19(3.90)	307(63.04)	

*- opportunities

Table 3 depict attitude of health care worker towards health hygiene practice. Findings revealed that majority of nursing health care workers had good attitudes. Further, findings revealed that nursing personals had significantly good attitude towards hand hygiene practices as compared to their counterparts. The percentage of correct responses of the two groups of students to the individual questions on hand hygiene attitude are given in Table 4.

Table 3. Comparison of Attitude to Education Status of Health Care Workers (n=115)

Attitude Item	Total (n=115) n (%)	Medical (n=45) n (%)	Nursing (n=70) n (%)	*p*-value
I adhere to correct hand hygiene practices at all times	90(78.2)	28(62.22)	62(88.57)	.001**
Sufficient knowledge about hand hygiene practices is necessary to improve correct hand hygiene practices	82(71.30)	24(53.33)	58(82.86)	.001**
Sometimes I have more important things to do then hand hygiene	74(51.2)	23(51.11)	51(56.66)	NS
Emergencies and other priorities make hygiene more difficult at times	90(78.26)	27(60.0)	63(90.0)	.001**
Wearing gloves reduce the need for hand hygiene	84(73.04)	22(48.89)	62(88.57)	.001**
I feel frustrated when others omit hand hygiene	73(63.47)	24(53.33)	49(70.0)	.01*
I am reluctant to ask others to engage in hand hygiene	73(63.47)	23(51.11)	50(71.43)	.01*
Newly qualified staff has not been properly instructed in hand hygiene in their training	77(66.69)	26(57.78)	51(72.85)	.01*
I feel guilty if I omit hand hygiene	87(75.65)	25(55.56)	62(88.57)	.001**
Adhering to hand hygiene practices is easy in the current setup	91(79.13)	27(60.0)	64(91.42)	.001**
Health care personnel should act as a role model for others	79(68.70)	28(62.22)	51(72.86)	.01*

Note: Significance calculated using independent t-test;* Significant @p<.05;** significant @p<.001; NS-not significant

Table 4. Comparison of factors among Medical & Nursing HCWs (n=115)

Factors	Total (n=115) n (%)	Medical (n=45) n (%)	Nursing (n=70) n (%)
Hand hygiene facility are not conveniently placed	97(84.34)	34(75.55)	64(91.43)
Overburden of patient care not allow hand hygiene	93(80.87)	31(68.89)	62(88.57)
Understaffing/overcrowding or insufficient time	94(81.73)	33(73.33)	61(87.14)
Hand hygiene takes too much time	93(80.86)	31(68.89)	62(88.57)
Not thinking about hand hygiene or forgetfulness	88(76.52)	29(64.44)	59(84.29)
Sore hands/abrasions on hands stop me hand hygiene	80(69.57)	30(66.67)	50(71.43)
Hand hygiene unnecessary when gloves are worn	85(73.91)	31(68.89)	54(77.14)
Belief of low risk of acquiring infection from patients	62(53.91)	28(62.22)	34(48.57)
Hand hygiene damage skin and cause irritation	89(77.39)	31(68.89)	58(82.85)
Hand hygiene between patient is unnecessary	92(80.0)	32(71.11)	60(85.71)
Hand hygiene is affect the clinical outcome	86(74.78)	32(71.11)	54(77.14)

Table 4 depicts factors hamper hand hygiene practices among heath care workers at AIIMS, Rishikesh. Finding revealed that not placing hand hygiene facility

conveniently is prime reported (85.21%) factors followed by over burden of patient were (80.87%), understaffing /overcrowding /insufficient time (81.73%) and hand hygiene is time consuming (80.86%) are another reported barrier for poor compliance to hand hygiene practice among health care health workers.

DISCUSSION

The present study was aimed to determine hand hygiene compliance; attitude and barriers related to hand hygiene practices among 115 health care workers at a tertiary care teaching hospital, Rishikesh, Uttarakhand. The study findings revealed that faculty shows higher adherence (10%) to hand hygiene practices followed by senior residents (7.14%) and medical and nursing interns (6.71%). Junior residents reported poorest (1.03%) adherence to hand hygiene practices among all types of health care workers. Partial adherence to hand hygiene practices was surprisingly high (63.04%) among HCWs.

The present study findings are in parallel to the study conducted by Abdella MN et al on 465 health care workers shows 16.5% complete adherence to hand hygiene practices. [8] However, in a study conducted by Kumar P et al revealed contradictory findings that there is higher level of complete adherence (76%) to hand hygiene practices among health care workers working at private sector and overall compliance of hand hygiene practices was 80.5%. [10] Similarly, a study conducted by Shanu SJ et al revealed that observed compliance rate was higher (67.08%) as compare to self-reported compliance (90%) rate among health care workers. [11] In a previous study conducted from Saudi Araba, sub-optimal compliance to hand hygiene practices was 70%, 18.8%, and 9.1% amongst medical students, nurses and senior medical staff respectively. [12] These variations between present and previous studies could be because of use of different methodology, settings, and use of instruments in the studies.

Further, 78.3% HCWs reported need to adhere to hand hygiene practices. 71.3% health care workers believed that complete knowledge related to hand hygiene practices is utmost important to carry out hand hygiene practices. However, 78.26% of health care workers felt that hand hygiene practices become difficult while dealing with emergencies and handling other priorities.

Similar findings reported in a study conducted by Nair SS et al which reported that 35.3% and 74.4% medical and nursing students assumed that they have good knowledge about hand hygiene practices respectively. [13] Similar result reported in an Indian study conducted on staff nurses and residents. [14] Further, it was stated that only 21.4% of medical students and 61.8% of nursing students said to adhere to follow correct hand hygiene practices at all times. Moreover, previous studies have reported that staff nurses neglect hand hygiene due to fear of frightened skin problems such as dermatitis. [15-16]

Further, in the present study 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. Similarly, it is also revealed by HCWs (81.73%) understaffing/ overcrowding or insufficient time, leads to poor adherence to hand hygiene practices.

Present study findings are in line with the 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. [17] Similarly, 35.7% of health care workers reported time constraint as a barrier to complete the hand hygiene practice. Likewise, 14.3% of health care workers feels heavy patient load or overburden 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. [18]

CONCLUSION & RECOMMENDATION

Present study revealed a very poor adherence to hand hygiene practices among health care workers at a tertiary care teaching hospital. However, study findings recommended a hand on training or periodic in-service education programme to sensitise HCWs. Findings also suggest to make it mandatory to undergone a training programme for newly joined HCWs to develop understanding about the importance of hand hygiene practices.

Limitations

The present study was modest attempt to put forward evidence-based findings on hand hygiene compliance and associated factors among HCWs. However, small sample size, non-probability sampling technique and inclusive selection of HCWs from in-patient departments may impede the generalization of the findings.

Ethical permission: Obtained
Conflict of interest: NIL
Financial disclosure: NIL

REFERENCES

1. CDC. Hand Hygiene in healthcare settings. Centres for Disease Control and Prevention; 2010. Available at: http://www.cdc.gov/handhygiene.
2. World Health Organization. WHO Global Strategy for Containment of Antimicrobial Resistance; 2001.
3. World Health Organization. Prevention of hospital acquired infections. A practical guide. Edited by Ducell, G, FabryJ, Nicoll L. 2002.
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. Mathur P. Hand hygiene: back to the basics of infection control. Indian J of Med Res. 2011;134(11):611–620.
6. Allegranzi B, Pittet D. Role of hand hygiene in healthcare-associated infection prevention. J Hosp Infect. 2009;73(4):305-15.
7. Alex AB. Hand washing practices amongst health workers in a teaching hospital. Am J Infect Dis. 2011;7(1):8-15
8. Abdella NM, Tefera MA, Eredie AE, et al. A hand hygiene compliance and associated among health care providers in Gondar university hospital, North West Ethiopia. BMC public health. 2014;14:96
9. World Health Organization. WHO Guidelines on Hand Hygiene in Health Care: First global safety challenge: clean care is safe care. Geneva: WHO; 2009. Available at: http://whqlibdoc.who.int/publications/2009/978924159 7906_eng.pdf [Accessed Jan 18, 2017].
10. Kumar P, Gupta KS, Kapil A, et al. A comparative study of hand hygiene practices of operation theaters in tertiary level hospitals in Delhi. International journal of research foundation and healthcare administration. 2014;2(2):87-93.
11. Shanu SJ. A study to assess the hand hygiene practice among the health care workers in CSICU, SCTIMST at Trivandrum, Unpublished thesis 2011.
12. Basurrah M, Madani T. Handwashing and gloving practice among health care workers in medical and surgical wards in a tertiary care centre in Riyadh, Saudi Arabia. Scand J Infect Dis. 2006; 38(8):620–4.
13. Nair SS, Hanumantappa R, Gurushantswamy S, et al .Knowledge, attitude and practices of hand hygiene among medical and nursing students at a tertiary health care centre in Raichur. ISRN Preventive Medicine.2014:1-4.
14. Maheswari V, Kaore NCM, Ramnani VK, et al. A study to assess knowledge and attitude regarding hand hygiene amongst residents and nursing staff in a tertiary health care setting of Bhopal City. J Clin Diagn Res. 2014;8(8):4-7.
15. Canham L. The first step in infection control is hand hygiene, The Dental Assistant. 2010:42-6.
16. Kampf G, Loffer H. hand disinfection in hospital-benefits and risks, Journal of German Society of dermatology. 2010; 8(12):978-83.
17. 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.

18. 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.

How to cite this article: 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.

****