



KNOWLEDGE AND PRACTICES OF HAND WASHING AMONG HEALTH WORKERS IN EMERGENCY DEPARTMENT OF A TERTIARY CARE HOSPITAL IN KOLKATA

Community Medicine

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ABSTRACT

Introduction: Nosocomial infections due to poor hand hygiene are a major cause of increasing morbidity, mortality and health care costs among hospitalized patients worldwide. The high prevalence of these infections, as high as 19%, in developing countries poses a challenge to health care providers. Hand hygiene is considered the single most cost-effective public health measure for preventing health care associated infection (HCAI). **Aims:** To assess the compliance, identify factors influencing compliance and to study the knowledge, attitude and perceptions associated with HH among health care workers (HCW). **Materials and method:** This was a single centre cross sectional study from tertiary care hospital in Kolkata, India from February 2021 – February – 2022 were included all healthcare workers who are directly involved in management of the patient (Doctors, Nursing staff, paramedic staff and group D staff) in this study. **Result:** Knowledge about proper and consistent hand washing prevents infections in health facilities was significantly high in doctor group [49(98.0%)], in nurse group [47(94.05%)] and in others group [43(86.0%)]. (P=0.0488). Knowledge about no need for hand washing for those who perform their activity with caution was significantly more in others group [13(26.0%)] and in nurse group [3(6.0%)]. (P<0.0001). Doctor had [48(96.0%)] always and [2(4.0%)] usually practice of hand washing about after contact with patients, most of the nurses had always [38(76.0%)], Usually [7(14.0%)], often [3(6.0%)] and sometimes 2(4.0%) practice of hand washing about after contact with patients and lower number of others had [5(10.0%)] often, [6(12.0%)] sometimes, [18(36.0%)] always and [18(36.0%)] Usually practice of hand washing about after contact with patients but this was statistically significant (P<0.0001). **Conclusion:** Majority of the study participants were knowledgeable. However, they had poor practice of hand washing

KEYWORDS

Knowledge, practice, health care workers and Hand hygiene.

INTRODUCTION

Infection caused due to hospital acquired microbes is an evolving problem worldwide, and horizontal transmission of bacterial organisms continues to cause a high nosocomial infection rate in health care settings. Nosocomial infections due to poor hand hygiene are a major cause of increasing morbidity, mortality and health care costs among hospitalized patients worldwide¹. The high prevalence of these infections, as high as 19%, in developing countries poses a challenge to health care providers. Hand hygiene is considered the single most cost-effective public health measure for preventing health care associated infection (HCAI)². Transmission of healthcare-associated pathogens generally occurs via the contaminated hands of healthcare workers often transmitting virulent and multi-drug resistant strains. Though preventable with a simple hand washing, health care workers are reluctant to adopt recommended practices to curb these infections. The World Health Organization (WHO) has issued guidelines for procedural hand washing in order to reduce the prevalence of hospital associated infections but lack of knowledge amongst health care workers is associated with poor compliance. An alarming revelation was that compliance was found to be worst before high risk procedures³.

Hand washing is the rubbing together of all surfaces and crevices of the hands using a soap or chemical and water. Hand washing should be performed after arriving at work, before leaving work, between client contacts, after removing gloves, when hands are visibly soiled, before eating, after excretion of body wastes (urination and defecation), after contact with body fluids, before and after performing invasive procedures, and after handling contaminated equipment. The exact duration of time required for hand washing depends on the circumstances. A washing time of 10 to 15 seconds is recommended to remove transient flora from the hands. High risk areas, such as nurseries, usually require about a 2-minute hand wash. Soiled hands usually require more time. Nosocomial infections due to poor hand hygiene are a major cause of increasing morbidity, mortality, and health care costs among hospitalized patients worldwide. The high prevalence of these infections, as high as 19%, in developing countries poses a challenge to health care providers⁴. Health care workers' hands are the most usual type of vehicle for transmission of health care associated infections. Pathogenic microorganisms can stay for 2-60 minutes on health care workers' hands⁵. Hand washing is the most simplest and effective measure to prevent infections. However, about 50% of health care associated infections occur due to hand of health care providers (HCPs)⁶. World Health Organization (WHO).

introduced "My five moments for hand washing" to minimize problems related to hand washing. These five moments that call for the use of hand washing include the moment before touching a patient, before performing aseptic and clean procedures, after being at risk of exposure to body fluids, after touching a patient, and after touching patient surroundings.

AIMS AND OBJECTIVES

Aims:

- To assess the compliance, identify factors influencing compliance and to study the knowledge, attitude and perceptions associated with HH among health care workers (HCW).

Objective:

- To evaluate knowledge of healthcare workers (HCWs) about hand hygiene and to assess practice of hand hygiene and identify obstacles among them in emergency department of a tertiary care hospital in Kolkata.

MATERIAL AND METHOD

This was a single centre cross sectional study from tertiary care hospital in Kolkata, India.

Duration of study: February 2021 – February – 2022

All Patients were presenting with acute urinary retention or pre-operative patients or drowsy patients or intubated patients and urinary incontinence.

Study group:

150 patients were taken in our study.

Inclusion criteria

- All healthcare workers who are directly involved in management of the patient (Doctors, Nursing staff, paramedic staff and group D staff)

Exclusion criteria

- All staffs who are not directly involved in patient handling.

RESULT AND DISCUSSION

This was a single centre cross sectional study from tertiary care hospital in Kolkata, India from February 2021 – February – 2022 were included all healthcare workers who are directly involved in

management of the patient (Doctors, Nursing stuff, paramedic stuff and group D stuff) in this study.

Ango UM et al⁷ (2017) examined that healthcare providers have been identified as the most common vehicle for transmission of hospital acquired infections (HAIs) from patient to patient and within the healthcare environment. Large proportions of the infections acquired in the hospital are attributed to cross contamination and transmission of microbes from hands of healthcare providers (HCPs) to patients. It was found that, Knowledge of hand washing about direct or indirect contacts are the most important routes for transmission of hospital-acquired infections was significantly more observed in doctor group [50(100.0%)], in nurse group [49(98.05%)] and in others group [31(62.0%)]. ($p<0.0001$).

Gedamu H et al⁸ (2021) examined that a significant way of avoiding nosocomial infections is good hand hygiene. Many health-related infections are thought to be transmitted by the hands of healthcare providers via direct contact. The study aimed to assess hand hygiene knowledge, attitude and practices of health care providers in selected hospitals in Aden. Good knowledge of hand hygiene was found in 55.9% of respondents. Health care providers in the two teaching Hospitals mostly have good knowledge and practice, and positive attitude towards hand washing but suboptimal practices especially with hand-drying.

Mandona E et al⁹ (2019) examined that hospital or Health facility acquired infections referred to as Nosocomial Infections are health care-associated infections that remain an important Provider/patient safety issue and represent a significant adverse outcome of the health care system. On other hand, there was no significant association between knowledge, practice of Infection Prevention among health care providers in rural health facilities of Chibombo, and age, sex, marital status, religion or duration of work for the respondents ($P>0.05$). There is need for the government to consistently provide monthly grant allocation to support in-service training, enforce IP guidelines, purchase of sterilizers, PPEs, increase supervision of IP activities to all rural health facilities in Chibombo district through their committees.

Present study showed that, Knowledge about proper and consistent hand washing prevents infections in health facilities was significantly high in doctor group [49(98.0%)], in nurse group [47(94.05%)] and in others group [43(86.0%)]. ($P=0.0488$).

Our study showed that, Knowledge about no need for hand washing for those who perform their activity with caution was significantly more in others group [13(26.0%)] and in nurse group [3(6.0%)]. ($P<0.0001$).

Dutta G et al¹⁰ (2020) found that maintenance of proper hand hygiene among treating doctors and nurses is one of the most important measures to curb health-care-associated infections. Hand hygiene can prevent the spread of germs including those that are resistant to antibiotics and are becoming difficult, if not impossible, to treat. Knowledge was significantly associated with the frequency of washing hands after patient contact or any laboratory procedure or after the removal of hand gloves ($P < 0.001$) and the frequency of following the six steps of hand washing ($P=0.001$).

We found that Knowledge about no need of hand washing if gloves are properly worn was significantly less in others group [39(78.0%)], in nurse group [39(78.0%)] and in doctor group [48(96.0%)]. ($P=0.0385$).

Jemal S et al (2018)¹¹ observed that Nosocomial infections due to poor hand hygiene are a major cause of increasing morbidity, mortality, and health care costs among hospitalized patients worldwide. Hand washing compliance among health professionals in general is unacceptably low especially in developing countries like Ethiopia. Institution-based cross-sectional study design was used to assess the knowledge and practice of hand washing among health professionals working in Dubti Referral Hospital. Majority of health professionals were knowledgeable. However, they had poor practice of hand washing.

From our study, we observed that Knowledge about health professionals should always wash their hands immediately when they arrive at health institutions was significantly reduced in others group

[22(44.0%)], in nurse group [25(50.05%)] and in doctor group [32(64.0%)]. ($P<0.0001$).

We examined that Knowledge about effective hand washing consists of wetting, soaping, applying friction, rinsing and drying adequately was lower in in others group [34(68.0%)], in doctor group [40(80.0%)] and in nurse group [41(82.0%)] but this was statistically significant ($P=0.0020$).

Bello S et al¹² (2013) examined that handwashing is the simplest and most cost-effective intervention to reduce transmission of nosocomial infections. In a cross-sectional descriptive survey, they investigated the practice, knowledge beliefs/attitude and determinants of handwashing among healthcare providers in a teaching hospital in southern Nigeria Majority (78.5%) of participants knew that hands should be washed for at least 15 seconds, for effective prevention of nosocomial infection.

It was found that Knowledge about Hands should be washed at least for 10-15 seconds was higher in doctor group [44(88.0%)], in nurse group [41(82.0%)] and in others group [33(66.0%)] but this was not statistically significant ($P=18.3941$).

Abaza AF et al¹³ (2010) examined that antiseptic agents or plain soap and water are mainly used for hand hygiene in Egypt. The impact of hand hygiene depends not only on the regularity and thoroughness of the procedures used but also on the type of hand-washing agent selected. Hand washing with nonantiseptic soap and water and all of the four used alcohol-based hand rubs showed significant reduction of bacterial counts on the examined hands.

Data of our study showed that Knowledge about Using disinfectants during hand washing decreases bacterial load on hands was significantly more observed in doctor group [44(88.0%)], in nurse group [42(84.0%)] and in others group [28(56.0%)]. ($P<0.0001$).

Abaza AF et al¹³ (2010) examined that antiseptic agents or plain soap and water are mainly used for hand hygiene in Egypt. To compare the efficacy of alcohol-based hand rubs versus traditional hand washing with soap and water in reducing hand contamination during routine patient care. Three hand rubs available in the Egyptian market (Brands A, B; alcohol-based liquid, and C; alcohol-based gel) were used and compared to a locally prepared hand-rubbing solution (D) and to hand washing with nonantiseptic soap and water (SW). Hand washing with nonantiseptic soap and water and all of the four used alcohol-based hand rubs showed significant reduction of bacterial counts on the examined hands. Alcohol-based hand rub is far more efficient than traditional hand washing, and more convenient and time saving. Locally prepared hand rub is comparable to ready-made ones.

In our study Knowledge about health professionals should wash their hands or use antiseptic hand rub before putting on or after removal of gloves was less observed in others group [33(66.0%)], in nurse group [42(84.0%)] and in doctor group [44(88.0%)] but this was statistically significant ($P=0.0022$).

Andezu S et al¹⁴ (2016) examined that the study has been set out to assess the knowledge, attitude and practice of hand washing among health workers in Arua regional referral hospital. The hand hygiene measures included; hand washing, personal protective gear, gloves and use of alcohol rub.

We found that Knowledge about alcohol has the ability to eradicate micro-organisms compared to water was significantly reduced in others group [34(68.0%)], in nurse group [42(84.0%)] and in doctor group [44(88.0%)] but this was statistically significant ($P=0.0022$).

Garba MB et al¹⁵ (2019) observed that Healthcare-associated infections (HAIs) affect 1.7 million patients at any time worldwide, causing important morbidity and mortality. Up to 40% of all HAIs are thought to be transmitted by the hands of healthcare workers (HCWs). Hand washing is the most effective way of preventing the spread of infectious diseases in healthcare settings. This study assessed knowledge and practice hand washing among HCWs in Ahmadu Bello University Teaching Hospital, a tertiary healthcare center in Zaria, Kaduna State, northwestern Nigeria.

Present study showed that Knowledge about the single most effective

mechanism to prevent spread of infection was significantly high in doctor group [44(88.0%)], in nurse group [42(84.0%)] and in others group [40(80.0%)]. ($P=0.0006$).

Masood S et al¹⁶ (2014) examined that hand washing can be regarded as one of the most effective and important hygiene promotion programmes for community as well as hospital based settings. Staff reported their practice of hand washing before touching patients as often (32.5%), sometimes (37.5%), seldom (20.8%) and never (9.2%). It was found that maximal doctors had always [48(96.0%)] and usually practice of hand washing about before contact with patients [2(4.0%)], in more nurses had Usually practice of hand washing about before contact with patients [25(50.0%)], always practice of hand washing about before contact with patients [15(30.0%)], often and sometimes practice of hand washing about before contact with patients [5(10.0%)] and high in others had Usually practice of hand washing about before contact with patients [18(36.0%)], always practice of hand washing about before contact with patients [17(34.0%)], often and sometimes practice of hand washing about before contact with patients [6(12.0%)] but this was statistically significant ($P<0.0001$).

Data of our study showed that only [50(100.0%)] doctors had always practice about before apply soap during hand washing. Lower number of nurses had [2(4.0%)] sometimes, [4(8.0%)] often, [9(18.0%)] Usually, [35(70.0%)] always practice about apply soap during hand washing and reduced of others had [4(8.0%)] often, [4(8.0%)] sometimes, [13(26.0%)] Usually, [27(54.0%)] always practice about apply soap during hand washing but this was statistically significant ($P<0.0001$).

We found that only [50(100.0%)] doctors had always practice about moisten hands under running water before applying soap. Most of nurses had [35(70.0%)] always, [9(18.0%)] Usually, [4(8.0%)] often, [2(4.0%)] sometimes practice about moisten hands under running water before applying soap. More of others had [27(54.0%)] always, [13(26.0%)] Usually, [4(8.0%)] often, [4(8.0%)] sometimes practice about moisten hands under running water before applying soap but this was also statistically significant ($P<0.0001$).

Abaza AF et al¹³ (2010) examined that antiseptic agents or plain soap and water are mainly used for hand hygiene in Egypt. The impact of hand hygiene depends not only on the regularity and thoroughness of the procedures used but also on the type of hand-washing agent selected. Alcohol-based hand rub is far more efficient than traditional hand washing, and more convenient and time saving.

Our study showed that maximum doctors had [25(50.0%)] always, [13(26.0%)] usually, [5(10.0%)] often, [5(10.0%)] sometimes practice about use alcohol-based hand rub for hand hygiene. In more observed others had [37(74.0%)] always, [7(14.0%)] Usually, [3(6.0%)] often, [3(6.0%)] sometimes practice about use alcohol-based hand rub for hand hygiene and most of nurses had [19(38.0%)] Usually, [17(34.0%)] always, [6(12.0%)] often, [6(12.0%)] sometimes practice about Use alcohol-based hand rub for hand hygiene. Which was statistically significant ($P=0.0278$).

It was found that maximal others had [40(80.0%)] always, [6(12.0%)] Usually, [2(4.0%)] often, [2(4.0%)] sometimes practice about dry hands after hand washing, higher number of doctor had [28(56.0%)] always, [12(24.0%)] usually, [4(8.0%)] often and sometimes practice about dry hands after hand washing, more of nurses had [20(40.0%)] Usually, [14(28.0%)] always, [7(14.0%)] often and sometimes practice about dry hands after hand washing but this was statistically significant ($P=0.0005$).

CONCLUSION

Our study showed that, Knowledge about no need for hand washing for those who perform their activity with caution was significantly more in others group and in nurse group.

In our study Knowledge about health professionals should wash their hands or use antiseptic hand rub before putting on or after removal of gloves was less observed in others group, in nurse group and in doctor group but this was statistically significant.

Our study showed that maximum doctors had always, usually, often, sometimes practice about use alcohol-based hand rub for hand hygiene. In more observed others had always, Usually, often,

sometimes practice about use alcohol-based hand rub for hand hygiene and most of nurses had Usually, always, often, sometimes practice about Use alcohol-based hand rub for hand hygiene. Which was statistically significant.

We conclude that majority of the study participants were knowledgeable. However, they had poor practice of hand washing.

Table: Association between Practice of hand washing Q6 (Apply soap during hand washing): Group

GROUP						
Practice of hand washing Q6	Doctor	Nurse	Others	TOTAL	Chi-square value	p-value
Always	50	35	27	112	31.3945	0.0001
Row %	44.6	31.3	24.1	100.0		
Col %	100.0	70.0	54.0	74.7		
Never	0	0	2	2	100.0	1.3
Row %	0.0	0.0	100.0	100.0		
Col %	0.0	0.0	4.0	1.3		
Often	0	4	4	8	50.0	5.3
Row %	0.0	50.0	50.0	100.0		
Col %	0.0	8.0	8.0	5.3		
Sometimes	0	2	4	6	33.3	4.0
Row %	0.0	33.3	66.7	100.0		
Col %	0.0	4.0	8.0	4.0		
Usually	0	9	13	22	40.9	14.7
Row %	0.0	40.9	59.1	100.0		
Col %	0.0	18.0	26.0	14.7		
TOTAL	50	50	50	150	33.3	100.0
Row %	33.3	33.3	33.3	100.0		
Col %	100.0	100.0	100.0	100.0		

Table: Association between Knowledge of hand washing- Q10 (Health professionals should wash their hands or use antiseptic hand rub before putting on or after removal of gloves): Group

GROUP						
Knowledge of hand washing- Q10	Doctor	Nurse	Others	TOTAL	Chi-square value	p-value
Don't Know	0	0	7	7	16.7311	0.0022
Row %	0.0	0.0	100.0	100.0		
Col %	0.0	0.0	14.0	4.7		
No	6	8	10	24	25.0	16.0
Row %	25.0	33.3	41.7	100.0		
Col %	12.0	16.0	20.0	16.0		
Yes	44	42	33	119	37.0	79.3
Row %	37.0	35.3	27.7	100.0		
Col %	88.0	84.0	66.0	79.3		
TOTAL	50	50	50	150	33.3	100.0
Row %	33.3	33.3	33.3	100.0		
Col %	100.0	100.0	100.0	100.0		

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