

HEALTH CARE ASSOCIATED INFECTIONS (HCAI) AND HAND HYGIENE: A STUDY OF KNOWLEDGE, ATTITUDE AND PRACTICE AMONG RESIDENT DOCTORS FROM A TERTIARY HOSPITALNamrata Vijay Kulkarni¹, Jayshree Dayanand Naik², Vikram Kumar Gupta³, Priya M. Prabhu⁴**HOW TO CITE THIS ARTICLE:**

Namrata Vijay Kulkarni, Jayshree Dayanand Naik, Vikram Kumar Gupta, Priya M. Prabhu. "Health Care Associated Infections (HCAI) and Hand Hygiene: A Study of Knowledge, Attitude and Practice among Resident Doctors from a Tertiary Hospital". Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 60, July 27; Page: 10509-10515, DOI: 10.14260/jemds/2015/1514

ABSTRACT: BACKGROUND: Health care associated infections HCAI are serious problem in health care services and the common cause of morbidity and mortality in the hospitalized patients. Resident doctors are among those health care workers [HCWs], who are the first care providers. Also, HCWs contribute greatly to the transmission of HCAI. **OBJECTIVE:** To assess the awareness of HCAI and knowledge, attitude and practice of hand hygiene among resident doctors in a tertiary care hospital. **MATERIAL AND METHODS:** A cross sectional study was conducted among resident doctors from tertiary care hospital and data was collected using a pretested questionnaire. **RESULTS:** The study had 90 participants. There was a higher level (90%) of awareness regarding Centre for disease control (CDC) hand-washing guidelines. About 51% wore gloves, when at direct contact with the patients. The average compliance of the three levels of residents with hand hygiene measures at different times of attending patients is: 59.33% before starting work while, 68% after removing gloves. All participants claimed to change gloves while going to another patient. All of them believed that HCWs are responsible for transmitting HCAI and 93% said that HCAI are preventable. About 58% of resident doctors were aware of the provision of alcohol based rubs in the wards. Busy schedule was the commonest reason for non-compliance with the hand hygiene practice. **CONCLUSION:** There is need to promote and monitor hand hygiene measures by implementing various strategies like re-enforcement of the knowledge of importance of hand hygiene and easy accessibility to hand washing agents.

KEYWORDS: compliance, Centre for Disease Control (CDC), hand hygiene, health care associated infections (HCAI).

INTRODUCTION: WHO defines health care associated infections as "an infection occurring in a patient during the process of care in a hospital or other health-care facility which was not present or incubating at the time of admission. These include infections acquired in the hospital, but appearing after discharge and also the occupational infections among staff of the facility."¹ HCAs are serious problem in health care services and hospitals, and the common cause of morbidity and mortality in hospitalized patients.

The prevalence of health care-associated infection varies between 5.7% and 19.1% in low and middle income countries.² Implementing standard precautions, particularly best hand hygiene practices at the bedside have been one of the key recommendations for HCAI surveillance and control by the WHO.³ Only 23 developing countries {(23/147) i.e., 15.6%} reported a functioning HCAI national surveillance system in 2010.⁴

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WHO recommends hand hygiene at the following five instances: before the patient contact, before an aseptic task, after body fluid exposure risk, after the patient contact and after contact with the patient surroundings.⁵ Several effective evidence-based interventions have demonstrated the role of hand hygiene in reducing the occurrence of HCAI.⁶ and Centre for disease control (CDC) has developed the guidelines aimed at preventing the transmission of pathogen within hospitals.⁷ Various pathogens are transmitted to, and acquired from patients by the health care workers. Residents in tertiary care hospitals are among the health care workers who are the first care providers.

Many nosocomial infections are caused by transfer of the pathogens by HCWs who have not washed their hands between patients or HCWs who do not practice control measure such as use of hand disinfection and gloves.⁸ Moreover little attention is paid to investigating knowledge, attitude and behaviour of HCW regarding hospital acquired infection control policies within settings. HCWs have stated multiple reasons for noncompliance such as dryness of skin due to use of disinfectants, busy schedule and understaffing.⁸ The need for appropriate measures required for reducing the incidence of HCAI is well documented in the literature.

A study by Pittet and co-workers elucidated a sustained increase in hand hygiene with concomitant remarkable reduction in hospital acquired infections by effective launching of a hospital-wide hygiene campaign with emphasis on alcoholic hand rub.⁹

The objectives of the study were to assess the level of knowledge, attitude and behaviour of the residents regarding HCAI in tertiary care hospitals and to identify the determinants associated with them.

METHODS: A cross sectional study was conducted in a tertiary care hospital in Mumbai, during the period August 2012 to October 2012 among the first, second and third year resident doctors. A self-administered questionnaire with questions based on demographic characteristics, risk factors of transmitting HCAI from/to patient, for assessing knowledge and awareness about the guidelines of HCAI, source of information, reasons for noncompliance to hand washing was administered. The duration of the study was 2 months. Those participants who were willing to participate were enrolled after taking written informed consent.

Statistical analysis was done using percentages in Microsoft Excel 2010.

RESULTS: A total of 90 questionnaires were analysed using appropriate statistical methods.

A total of 90 residents - clinical (72), paraclinical (16) and non-clinical (2) participated in the study. Their mean age was 26 years.

Students agreed that the commonly transmitted HCAI from/to patients are Hepatitis B, Hepatitis C, Human Immunodeficiency Virus and Tuberculosis. Students said that the main sources of information regarding HCAI were educational courses besides mass media, physicians and scientific journals were also the sources.

Basic Characteristics	1 st year	2 nd year	3 rd year
Number	31	40	19
Age in years (mean \pm 2SD)	26.6yrs \pm 0.23	26.7yrs \pm 0.24	27yrs \pm 0.16
Gender	M=21,F=10	M=28,F=12	M=12,F=7
No. of patients provided care in a day	69	52	70
Mean total working hours per week	104	103	102

Table 1: Population profile of participants

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Fig. 1: Participants who were aware of CDC hand washing guidelines for more information.

Fig. 2: Participants who said there is self-need.

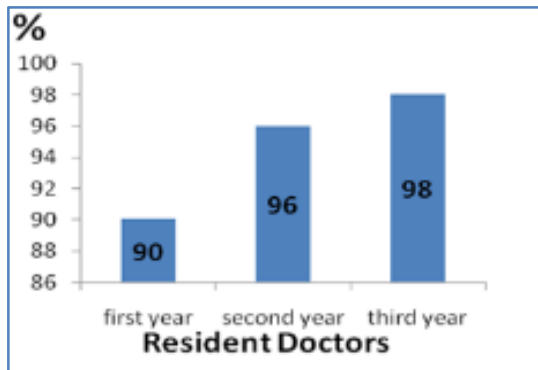


Fig. 1

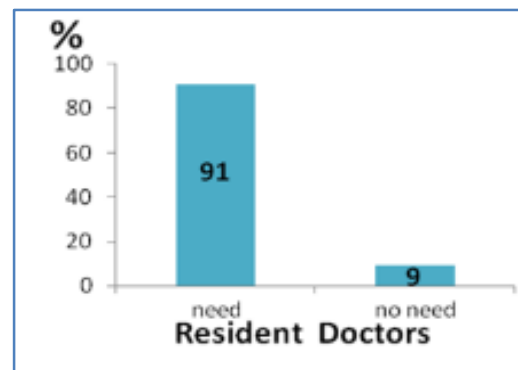


Fig. 2

Fig. 3: Participants who said hand hygiene is measure to reduce HCAI.

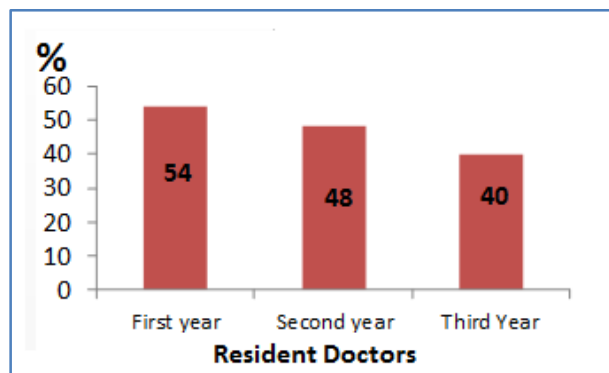


Fig. 3

Fig. 4: Participants who gave busy schedule as reason for non-compliance to hand washing.

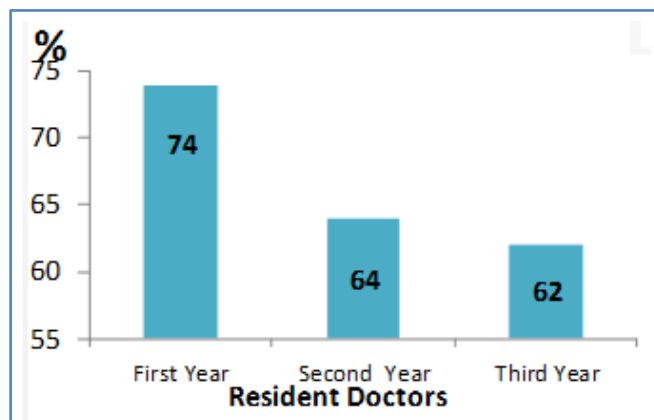


Fig. 4

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Fig. 5: Resident doctors following hand- hygiene measures before starting work.

Fig. 6: Percentage of participants wearing gloves when at direct contact with patients.

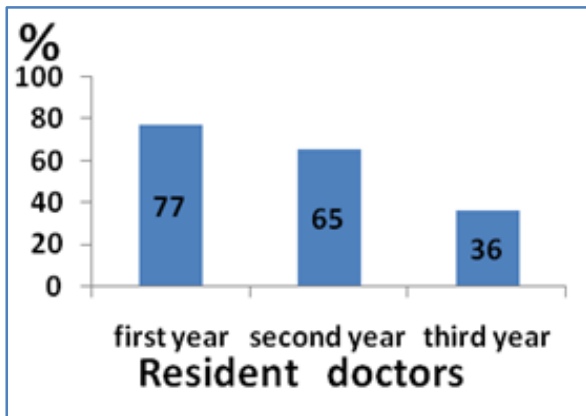


Fig. 5

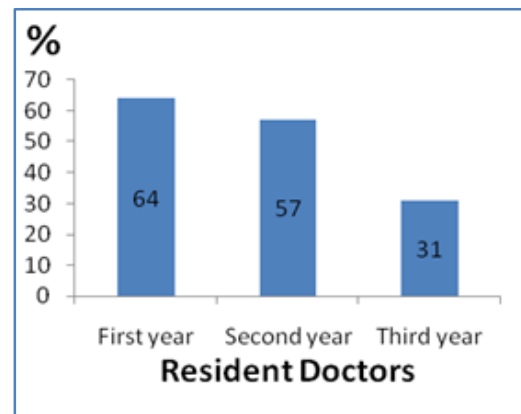


Fig. 6

Fig. 7: Percentage of participants following hand hygiene measures after removing gloves and before wearing gloves.

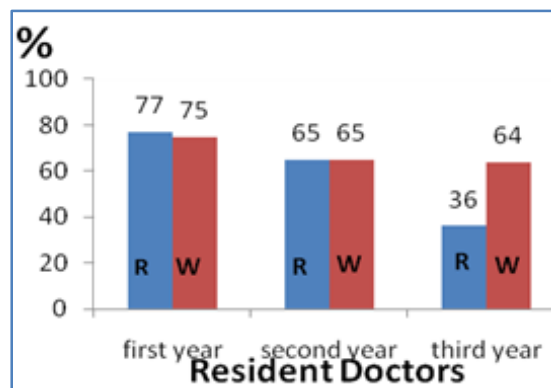


Fig. 7

All the resident doctors (100%), irrespective of faculty felt there is high perceived risk for HCAs in healthcare facility and said that they changed gloves while going to another patient.

All (100%) resident doctors said that healthcare workers are responsible for transmitting nosocomial pathogens while 93% agreed that HCAI are preventable.

About 80% of 1st year, 62% of 2nd year, 52% of 3rd year resident doctors said that they were oriented about HCAs and hand hygiene.

About 58% of resident doctors said that alcohol based rubs are provided in wards and 63% of the participants were aware of the hospital infection control committee in their hospital.

DISCUSSION: In the present study, a questionnaire was utilized to collect information from a sample of medical students from a tertiary care hospital regarding their knowledge, attitudes and behaviors about HCAI and the hand hygiene.

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In present study all medical students were included. Response rate was 23%. In a study by Emine Alp, Ahmet Ozturk, Muhammed Guven, et.al. in developing countries 41% did not respond.¹⁰ In the present study, participants' knowledge concerning awareness about hand hygiene, CDC guidelines and HCAI was high [Average 95%] and also regarding infections transmitted and acquired to and from the patients. About 65% resident doctors on an average said that they were oriented about HCAs and hand hygiene. The majority of respondents in a study implemented in south-west Nigeria (83.50%) had good knowledge of hand hygiene.¹¹ In the present study around less than 60% [average 47.33%] participants agreed that hand hygiene is a measure to control HCAI. In study by Emine Alpa, Ahmet Ozturkb, Muhammed Guvenc.et.al, 98% acknowledged hand hygiene to be a preventive measure of HCAI.¹⁰ The mean knowledge regarding hand hygiene as an effective strategy for preventing HCAI was 86.8% in the study group.¹²

In the present study 100% doctors said that they changed gloves while going to another patient. About 77%, 65% and 36% of first, second and third year resident doctors respectively followed the hand hygiene measures before starting work while 64%, 57% and 31% of them respectively wore gloves when at direct contact with patients. About 77%, 65% and 36% of first, second and third year resident doctors respectively followed hand hygiene measures before wearing gloves while this was 75%, 65% and 64% respectively after removing gloves. In a study by J. Randle, A. Arthur, N. Vaughn there was varied compliance ($P < 0.001$) observed in different cadres of staff with varied hand hygiene during different five moments of hand hygiene practice as follows: 100% compliance before an aseptic task; 68% before patient contact, 93% after the body fluid exposure; 80% after patient contact; and 50% after contact with the surroundings.¹³ In a study to evaluate the role of hand hygiene in healthcare-associated infection prevention, the HCWs' compliance with hand hygiene is high when hands are visibly dirty or sticky.¹⁴

In this present study around 67% of the students identified busy schedule as a reason for noncompliance with hand hygiene. Busy work schedule in between patient care was identified to curb the hand washing practices, while a study in Northern Nigeria demonstrated non-availability of equipments to be the most commonly quoted reason for non-compliance with hand hygiene.^{11,15}

In the present study, about 100% resident doctors perceived that healthcare workers are responsible for transmitting nosocomial pathogens. In the Nigerian study, almost all (98.8%) of the respondents observed that contaminated hands can serve as a vehicle for the transmission of infection from one patient to another.¹¹

About 58% of resident doctors in the present study said that alcohol based rubs are provided in wards. Alcohol-based hand rub was reported to be available at the point of care by 95.0% (132/139) of the HCWs in a study done in Italy.¹⁶

In the present study, 63% of the participants were aware of the hospital infection control committee in their hospital. A study in a Nigeria illustrated that the awareness of respondents on the availability of infection control unit and policy on hand washing adopted by the institution was 74.7% and 69.5% respectively.¹¹

CONCLUSIONS: There is a satisfactory knowledge of hand hygiene and HCAs among the resident doctors. However, busy schedule (mean 67%) was the commonest reason for non-compliance. Also, hand hygiene practices were followed mainly by junior resident doctors compared to their senior counterparts in spite of greater awareness among the latter, which needs to be changed.

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RECOMMENDATIONS: Orientation programmes in form of CME and workshop for HCAs, implementing strategies for re-enforcement of knowledge of importance of hand hygiene, strict implementation of preventive measures of HCAI improved by increased availability of and easy accessibility to the hand washing agents, adoption of methods to promote and monitor improved hand hygiene practices that should be accessible and acceptable to all, improved reporting and surveillance of HCAs and providing improved laboratory facilities for early detection may help reduce the burden of HCAI.

WEAKNESS/LIMITATIONS: The present study was a cross-sectional study, hence causality cannot be proved. The number of participants enrolled is small, hence the results cannot be generalized. No funding sources.

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