

**KNOWLEDGE, ATTITUDE AND PRACTICES TOWARDS HAND HYGIENE AMONG NURSING STAFF WORKING IN A TERTIARY CARE SETTING IN NORTH INDIA: A DESCRIPTIVE CROSS-SECTIONAL STUDY****Dr. Lata Goyal<sup>1\*</sup>, Dr. Ashok Kumar<sup>2</sup> and Dr. Tarun Goyal<sup>3</sup>**<sup>1</sup>M.D.S., Senior Resident, Department of Dentistry, All India Institute of Medical Sciences, Rishikesh, Uttarakhand, India.<sup>2</sup>Medical Superintendent, All India Institute of Medical Sciences, Rishikesh, Uttarakhand, India.<sup>3</sup>M.S., Associate Professor, Department of Orthopaedics, All India Institute of Medical Sciences, Rishikesh, Uttarakhand, India.**\*Corresponding Author: Dr. Lata Goyal**

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**ABSTRACT**

**Background:** This study was designed to evaluate current knowledge, behavior and practices regarding hand hygiene among nursing staff. Findings of this study will help in identification of deficits in hand hygiene practices of nursing staff and possible causes for such lacunae. **Methods:** This was a descriptive cross-sectional study, undertaken on nursing staff working in surgical wards at All India Institute of Medical Sciences, Rishikesh, Uttarakhand. A total of 100 participants were included in the study. Three different self-administered questionnaires were used, one each for knowledge, attitude and practices. **Results:** Knowledge on Hand Hygiene was moderate in 60 % of the participants (60 out of 100). 16 % participants had good knowledge and 24% had poor knowledge of hand hygiene. Attitude towards hand hygiene was moderate in 44% of the participants (44 out of 100). Only 36 % of the participants had good attitude towards hand hygiene practices and 20% had poor attitude. Practice of hand hygiene was moderate in 64% of the participants (64 out of 100). Only 32% of the participants had good practices regarding hand hygiene and 4% had poor practices. **Conclusion:** Thus, the staff appear to be receptive towards hand hygiene and are motivated to learn. Current knowledge of hand hygiene is inadequate among most of them. Training programs by the infection control team should be pivotal in bridging this gap.

**KEYWORDS:** Hand hygiene; health care worker, Infection, hand washing; motivation, learning.**INTRODUCTION**

Healthcare-acquired infections (HAIs) is a growing concern among hospitalized patients. Transmission from the contaminated hands of the health care provider is the most important source of HAIs. Hand hygiene stands at the center stage of hospital infection-control policies, and a good hand hygiene policy can significantly reduce the risk of cross-transmission of microorganisms.<sup>[1]</sup>

Healthcare associated infections leads to an unacceptably high level of morbidity, mortality and healthcare expenditure.<sup>[2]</sup> In developing countries, its prevalence is found to be as high as 19%.<sup>[3]</sup> Like most other developing countries, emphasis on prevention of HAIs in India is suboptimal.<sup>[4]</sup> Compliance of hand hygiene protocols by health care workers (HCW) is poor and some important barriers include disproportionate health-personal and patient ratio, infrastructural deficits, lack of structured training and monitoring, legislative leniency and apathy of people towards preventive practices.<sup>[5,6]</sup> Although hand hygiene is a simple procedure, yet compliance with hand hygiene among health care

providers has been found to be very low.<sup>[7-9]</sup> Even among the leading public and private hospitals in India, structured training programs on hand hygiene are lacking. Though preventable with a simple hand washing, health care workers are reluctant to adopt recommended practices to curb these infections.<sup>[10]</sup>

Nurses comprises of major portion of health care workers.<sup>[11]</sup> On average they spend more time with the patients than any other HCWs their compliance with hand hygiene practices are pivotal for prevention of HAIs. This study was designed to evaluate current knowledge, behavior and practices regarding hand hygiene among nursing staff. Findings of this study will help in identification of deficits in hand hygiene practices of nursing staff and possible causes for such lacunae. This can guide in planning need-based programs for training and appraisal.

**MATERIAL AND METHODS**

This was a descriptive cross-sectional study, undertaken at All India Institute of Medical Sciences, Rishikesh,

Uttarakhand, which is a tertiary-care referral hospital run by the central government in North India. Study was carried out in 2015-2016. It was carried out on nursing staff working in surgical wards. Participants were explained about the descriptive nature of the study and those willing to fill the anonymous questionnaire were included in the study. 100 participants were included and verbal consent was obtained.

**Inclusion criteria:** Nursing staff of either gender or all ages, who were available and willing to participate during data collection period were included.

#### Data Collection

Basic demographic information retrieved was age, gender, years in nursing service and any prior structured training in hand hygiene.

Three different self-administered questionnaires were used, one each for knowledge, attitude and practices. Their level of knowledge was assessed based on Hand Hygiene Knowledge Questionnaires <sup>[11]</sup> designed by WHO and revised August 2009 [Table 1]. It contains 25 questions of multiple choice or binomial responses. 1 point was given for each correct response so that maximum score for knowledge was 25. A score of more than 75% was considered good, 50–74% moderate, and less than 50% was taken as poor.

Practice and Attitude were assessed by separate questionnaires [Table 2,3]. These were self-structured questionnaires consisting of 10 and 6 questions, respectively. Respondents were given option to select on a 1 to 5 point Likert scale, between strongly agree and strongly disagree. First two responses were taken as positive (strongly agree). A score of 0 was given for negative attitudes and 1 point was given for each positive attitude and good practice so that maximum score for attitude is 10 and for practice it is 6. A score of more than 75% was considered good, 50–75% moderate, and less than 50% was taken as poor. These scales have been used in previous studies for evaluation of practices and attitudes towards hand hygiene in health care setting.<sup>[12-14]</sup> Data was analyzed using SPSS version 16 software. Descriptive statistics such as frequencies and percentages were used for data analysis and interpretation. Relation between the scores of these patients on these questionnaires and gender and duration of service (less than or more than 3 years) was seen using student t test.

## RESULTS

**Table 1: Knowledge of nursing staff on hand hygiene practices [11] (Hand Hygiene Knowledge Questionnaire).**

S NO	Question and preferred response	No of participants with correct response N=100
K1	Which of the following is the main route of transmission of potentially harmful germs between patients? (health care workers hands when not clean)	70
K2	What is the most frequent source of germs responsible for health care associated infections? (germs already present on or within the patient)	58

Mean age of the participants was 25.2 years (range 23 to 32 years). There were 64 males and 36 females. Sixty-two percent of nursing staff had not received any prior formal training on hand hygiene practices. Mean number of years in service was 3.4 years (range 1.5 to 10 years). Majority of them (94 %, 94 out of 100) had been in nursing services for less than 5 years. Data was analyzed in terms of number of correct responses to individual question in a questionnaire by all participants [Tables 1,2,3] and sum of correct responses in a questionnaire by each individual.

#### Knowledge about hand Hygiene

Knowledge on Hand Hygiene was moderate in 60 % of the participants (60 out of 100). 16 % participants had good knowledge and 24 % had poor knowledge of hand hygiene. Seventy percent of the participants agreed that unclean hands of health care worker is the main route of transmission of potentially harmful germs between patients. Only 58 % participants agreed that germs already present on or within the patient is most frequent source of health care associated infections. Responses of participants to other questions was summarized in [Table 1].

#### Attitude towards hand hygiene

Attitude towards hand hygiene was moderate in 44 % of the participants (44 out of 100). Only 36 % of the participants had good attitude towards hand hygiene practices and 20 % had poor attitude. Ninety-six percent of the staff believed that, they adhered to hand hygiene practice all times and 94% believed that they had sufficient knowledge of the hand hygiene practices. Responses of participants to other questions is summarized in [Table 2].

#### Practices of Hand Hygiene

Practice of hand hygiene was moderate in 64% of the participants. Only 32% of the participants had good practices regarding hand hygiene and 4% had poor practices. Ninety-six percent participants agreed that hand hygiene is essential part of their lives. Responses of participants to other questions is summarized in [Table 3].

Summary of result of knowledge, attitude and practices of staff on hand hygiene practices are given in [Table 4]. There were no statistically significant differences between scores of the participants on these questionnaires and gender of the participants or duration of service.

<b>Which of the following hand hygiene actions prevents transmission of germs to the patient?</b>		
<b>K3</b>	Before touching a patient (Yes)	82
<b>K4</b>	Immediately after risk of body fluid exposure (Yes)	80
<b>K5</b>	After exposure to immediate surroundings of a patient (No)	20
<b>K6</b>	Immediately before a clean/aseptic procedure (Yes)	76
<b>Which of the following hand hygiene actions prevents transmission of germs to the health care worker?</b>		
<b>K7</b>	After touching a patient (Yes)	86
<b>K8</b>	Immediately after a risk of body fluid exposure (Yes)	80
<b>K9</b>	Immediately before a clean/aseptic procedure (No)	18
<b>K10</b>	After exposure to the immediate surroundings of a patient (Yes)	56
<b>Which of the following statements on alcohol-based hand rub and hand washing with soap and water is true?</b>		
<b>K11</b>	Hand rubbing is more rapid for hand cleansing than hand washing (Yes)	74
<b>K12</b>	Hand rubbing causes skin dryness more than hand washing (No)	30
<b>K13</b>	Hand rubbing is more effective against germs than hand washing (No)	44
<b>K14</b>	Hand washing and hand rubbing are recommended to be performed in sequence (No)	22
<b>K15</b>	What is the minimal time needed for alcohol-based hand rub to kill most germs on your hands? 20 sec	22
<b>Which type of hand hygiene method is required in the following situations?</b>		
<b>K16</b>	Before palpation of the abdomen (rubbing)	70
<b>K17</b>	Before giving an injection (rubbing)	36
<b>K18</b>	After emptying a bed pan (washing)	78
<b>K19</b>	After removing examination gloves (rubbing/washing)	76
<b>K20</b>	After making a patient's bed (rubbing)	18
<b>K21</b>	After visible exposure to blood (washing)	62
<b>Which of the following should be avoided, as associated with increased likelihood of colonization of hands with harmful germs?</b>		
<b>K22</b>	Wearing jewellery (Yes)	94
<b>K23</b>	Damaged skin (Yes)	78
<b>K24</b>	Artificial fingernails (Yes)	78
<b>K25</b>	Regular use of a hand cream (No)	46

Table 2: Attitude of nursing staff on hand hygiene practices.

S No	Questions	No of participants with correct response N=100
A1	At all times I adhere to hand hygiene practices	96
A2	I know everything about hand hygiene	94
A3	Practically it's not possible to adhere to correct hand hygiene at all times	72
A4	Workload makes hand hygiene difficult at times	22
A5	Wearing gloves reduces the need for hand hygiene	62
A6	I feel frustrated when others omit hand hygiene	66
A7	I am not bothered, others are practicing hand hygiene or not	42
A8	Old and experienced staff is better in practicing hand hygiene	68
A9	I feel guilty if I omit hand hygiene	76
A10	Hand hygiene is easy to perform	86

Table 3: Practices of nursing staff on hand hygiene practices.

S No	Question	No of participants with correct response N = 100
P1	Sometimes I forget to practice hand hygiene	66
P2	Hand hygiene is an essential part of my role	96
P3	I wash my hands before I start the work	42
P4	I wash my hands before I start the patient	92
P5	Reminder boards are helpful in adhering do hand hygiene	72
P6	It find hand hygiene courses are necessary to practice hand hygiene effectively	46

**Table 4: Summary of result of knowledge, attitude and practices of staff on hand hygiene practices.**

	Good	Moderate	Poor
<b>Knowledge</b>	16	60	24
<b>Attitudes</b>	36	44	20
<b>Practices</b>	64	32	4

## DISCUSSION

Hands are the main route of microbe transmission during health care. Therefore, hand hygiene is the most important measure to avoid transmission of harmful germs and prevent health care related infections. Knowledge of hand hygiene and adherence to good practices can play significant role in reducing health care related infections. Hand hygiene can contribute to shorter hospital stay, reduction in patient morbidity and health care costs.<sup>[2]</sup>

This study has shown that knowledge of hand hygiene among the nursing staff was good in only 16%. Despite this 94% of the staff believed that they have an adequate knowledge of hand hygiene. Thirty-eight percent of the staff had even received hand hygiene training in the past. This identifies severe gaps between the perceived knowledge and actual knowledge of the hand hygiene practices. It is important that the health care workers identify gaps in their knowledge of hand hygiene so that they are more receptive towards training programs. Such programs should also be made a part of mandatory induction programs. Specific lacunae in knowledge have also been identified which is summarized in [Table 1]. A positive finding is that 96% of the participants agreed that hand hygiene practices is an important part of their role. Thus, they understand the need but they have to be made aware of the gaps in the knowledge. Majority of the staff were also positive in their attitude that hand hygiene practices were easily possible in their present work environment. Emergencies and competing priorities were important reasons why they could not follow it most of the times.

Though an integral part of routine activities, protocol based hand hygiene seems to be forgotten in daily work. Sixty-six percent of the participants agreed that they missed out on hand hygiene because they simply forgot to do it. Thus, it is essential that frequent reminders in the form of posters and charts should be made available in the working area to improve adherence to hand hygiene practices. Seventy-two percent of the staff agreed that infection prevention notice boards reminded them to do hand hygiene.

Our results are comparable with other studies. Sharma S *et al* conducted a cross-sectional study in 42 bedded Medical intensive care units of a tertiary care hospital.<sup>[15]</sup> The overall compliance was 43.2% (394/911 opportunities). Compliance was inversely related to activity index. Compliance for high, medium and low risk of cross-transmission was 38.8% (67/170), 43.8% (175/401) and 44.7% (152/340), respectively. He

concluded that compliance of the study group is affected by the activity index (number of opportunities they come across per hour) and professional status.

Ariyaratne *et al* studied knowledge, attitudes and practices of hand hygiene among medical and nursing students in a teaching hospital in Sri Lanka.<sup>[13]</sup> They found that knowledge of hand hygiene was moderate in 77% of the participants. They also emphasized upon need for training programs to address the gaps in hand hygiene practices. The only similar study from India was the one by Nair *et al*<sup>[14]</sup> they found that 72.5 % of the participants had only moderate knowledge of hand hygiene practices. Only 47.5 % had good attitude and 10% had good practices in hand hygiene.

Thus, the staff appear to be receptive towards hand hygiene and are motivated to learn. Current knowledge of hand hygiene is inadequate among most of them. Training programs by the infection control team should be pivotal in bridging this gap and are best instituted as soon as the staff is recruited because busy schedules may be a deterrent to successful training programs.

## CONCLUSION

Present study highlights the need of repeated training sessions regarding hand hygiene practices among the nursing staff to provide the current knowledge in the area with a behavioral change in attitudes and practices leading to reduction of hospital acquired infections.

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