

Assessment of Knowledge, Attitude and Practice of Hand Hygiene among Nursing and Medical Students in a Tertiary Care Hospital in Puducherry, India

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ABSTRACT

Introduction: Health Care Associated Infections (HCAI) are a major problem for patient safety and its prevention must be a first priority for institutions. Hand hygiene is the most effective means to reduce the hospital acquired infection. This study was undertaken to assess the knowledge, attitude and practice of hand hygiene among medical and nursing students in our institution.

Material and Methods: A self-administered questionnaire based cross sectional study was done among the nursing staff and medical students at our institution. Based on their responses, a scoring system was devised and their knowledge, attitude and practice were graded as good (>75%), moderate (50-74%) and poor (<50%).

Results: Of the 140 participants were involved in the study, we found that majority (medical-85%, nursing-76%) had moderate knowledge on hand hygiene. But the overall attitude of the respondents towards hand hygiene was not satisfactory (good attitude - medical- 9%, nursing-14%) and only few (medical-3%, nursing-5%) showed good hand hygiene practices.

Conclusion: This study reveals the wide gaps in the knowledge, attitude and practice of hand hygiene among the nursing staff and medical students and hence the need for conducting regular training.

Keywords: Hand hygiene, Knowledge, Attitude, Practice

INTRODUCTION

Health care associated infections (HAI) are the major cause of mortality and morbidity among the hospitalised patients contributing 7-10% of the hospital admissions.¹ Health care workers contribute to the transmission of these infections through contaminated hands. The concept of hand hygiene and antiseptics was introduced by Ignel Semmelweis who demonstrated that cleansing heavily contaminated hands with an antiseptic agent between patient contacts may reduce health-care-associated transmission of contagious diseases more effectively than handwashing with plain soap and water.²

Various studies have shown that effective hand hygiene can lower the prevalence of hospital acquired infections. But the compliance to it among health care providers, despite the relative simplicity of this procedure, is as low as 40%.³⁻⁵ Various factors contribute to this lack of compliance like lack of knowledge among the personnel regarding the importance of hand hygiene in preventing disease transmission, incorrect technique or understaffing. In order to overcome these factors, Centers for Disease Control and Prevention's (CDC) Healthcare Infection Control Practices Advisory Committee (HICPAC) published comprehensive Guideline for Hand Hygiene in Health-Care Settings in 2002. This study was

undertaken with the objective of assessing the knowledge, attitude and practice of hand hygiene among health care workers in our hospital and to determine the various factors involved in poor hand hygiene practices.

MATERIAL AND METHODS

The present study was conducted at Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry, South India. This is a 150 bedded teaching hospital and multispeciality centre. The present questionnaire based cross sectional study was undertaken during January 2014 after getting ethical clearance from the Institutional Ethical Review Committee. About 140 participants, which included 74 nurses and 66 medical students were enrolled in the study. The participants were briefed about the study and their verbal consent obtained.

A self administered questionnaire based on CDC Hand hygiene guidelines was used. It consisted of 5 parts; demographic information, assessment of knowledge, attitudes and practices. Knowledge was assessed using 8 questions which included multiple choice and "yes" or "no" questions. Attitudes were measured using 10 statements, where the respondents were asked if they agree or disagree to it. Practice was assessed in a similar way using 8 questions. A scoring system was used where 1 point was given for each correct response to knowledge, positive attitudes and good practices. 0 was given for incorrect knowledge, negative attitudes and poor practices. A score of more than 75% was considered good, 50-74% moderate and less than 50% poor.

STATISTICAL ANALYSIS

The results obtained were statistically analysed using Chi square test with the help SPSS 16 software, to assess the various parameters of hand hygiene.

RESULTS

A total of 140 (74 nurses and 66 medical students) participants were enrolled in the study. The nursing group included

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a mixed population of trainees and trained nurses posted at various departments and the medical group mainly included interns. Nearly 54 participants had received a formal training in hand washing technique, 40(of 74, 54.1%) nurses and 14(of 66, 21.2%) medical students (Table 1).

Knowledge on hand hygiene

The overall knowledge on hand hygiene among the participants was moderate (medical 64%,nursing 63.1%). On analysing the results based on the scoring system, only few participants (13.6%) scored good, while most (80%) scored moderate, few (6.4%) scored poor. Comparing the two groups, nurses had better knowledge on hand hygiene than medical students (P value 0.001, significant). The respons-

es of the participants to the individual questions in given in table 2

Attitude to hand hygiene

The response of the participants to attitude based questions revealed that their attitude towards hand hygiene was not satisfactory. But nurses showed positive attitude towards hand hygiene when compared to the medical students (table 3). The response of the participants to attitude based questions is given in table 3.

Practice of hand hygiene

On analysis of the hand hygiene practice among the participants, most of them exhibited poor hand hygiene practice (medical -73%, nursing - 57%) and only few showed good hand hygiene practice (medical -3%, nursing -5%). On comparing, nurses showed better hand hygiene practice than medical students

DISCUSSION

Hand hygiene is the most important tool in preventing the transmission of nosocomial infections as the hands of HCWs are the most common mode of transmission of pathogens to patients. Factors that contribute to poor adherence to hand hygiene include poor access to hand-washing facilities (sinks), the time required to perform standard hand wash-

Study population (n= 140)	Number	Percentage
Occupation		
Nurses	74	52.9%
Doctors	66	47.1%
Gender		
Male	34	24.3%
Female	106	75.7%
Formal training on hand hygiene		
Nurses	40	54.1%
Doctors	14	21.2%

Table-1: Distribution of the study population

S. No	Knowledge based questions	Medical		Nursing		P value
		No.	%	No.	%	
	Route of cross transmission of pathogens among patients in hospital	66	100	74	100	-
	Source of organisms for nosocomial infections	62	93.9	70	94.6	0.9
	Hand hygiene actions which prevent transmission of organisms to patients					
	Before touching a patient	57	86.4	20	33.8	0.00
	Immediately after body fluid exposure	47	71.2	65	83.8	0.14
	After exposure to immediate surroundings of the patient	20	30.3	16	21.6	0.21
4.	Hand hygiene actions which prevent transmission of organisms to health care workers					
	After touching a patient	60	90.9	70	94.6	0.4
	Immediately after body fluid exposure	57	86.4	65	87.8	0.0
	Before a clean / aseptic procedure	27	40.9	43	58.1	0.04
	After exposure to immediate surroundings of the patient	47	71.2	59	79.7	0.24
5.	True statement on alcohol based hand rub and hand washing with soap and water					
	a. Hand rubbing is more rapid for hand cleansing than handwashing	53	80.3	39	41.9	0.001*
	b. Hand rubbing causes skin dryness more than hand washing	15	22.7	28	37.8	0.053
	c. Hand rubbing is more effective against germs than hand washing	49	74.2	40	54.1	0.013
	d. Hand washing and hand rubbing are to be performed in sequence	15	22.7	24	32.4	0.201
6.	Minimal time needed for alcohol based handrubs	10	15.2	17	23	0.242
7.	Type of hand hygiene method in various situations					
	a. before palpation of abdomen	54	81.8	58	78.4	0.612
	b. before giving injections	50	75.8	61	82.4	0.331
	c. after emptying bed pan	17	25.8	58	78.4	0.000
	d. after removing examination gloves	42	63.6	55	74.3	0.171
	e. after making patients bed	25	37.9	34	45.9	0.335
	f. after visibe exposure to blood	53	80.3	50	67.6	0.088
8.	Actions to be avoided during hand hygiene					
	a. wearing jewellery	42	83.6	60	81.1	0.021
	b. artificial finger nails	58	63.6	52	70.3	0.011
	c. regular use of hand creams	57	87.9	36	48.6	0.000*
	d. presence of damaged skin	17	87.4	57	77	0.000*
	Average		64%		63.1%	

*significant P value <0.001

Table-2: Assessment of Knowledge among Medical and Nursing students

ing, irritant contact dermatitis associated with frequent exposure to soap and water, high workloads, knowledge deficits among HCWs, and the failure of administrative leaders to make hand hygiene an institutional priority.⁶

In our study analysis of the responses showed that health care workers had moderate knowledge on hand hygiene, similar to findings in other studies.⁷ Though this was a positive finding, major gaps in the knowledge were identified which should be addressed during the future training sessions. For instance the participants were not aware that hand hygiene is to be practiced before patient contact and after contact with patient surroundings. Nursing group exhibited more of such gaps in knowledge than the medical students. Another finding in our study was that most of the participants didn't know the minimal time required for alcohol based hand rubs to kill the germs (medical-89.7%, nursing- 77%, table 2.2). But overall analysis showed that medical students had better knowledge on hand hygiene than nursing students.

The attitude of the participants towards hand hygiene was overall poor. Nearly 85% of the medical students agreed that they don't adhere to correct hand hygiene practice all the time, in spite of the knowledge of this group on hand hygiene being good. The participants also agreed to various reasons for not adhering to hand hygiene like forgetfulness, emergency cases. Such poor attitude was seen more among the medical students than nurses. This is similar to the finding in a study done by Sasidharan et al where nursing stu-

dents showed better attitudes (52.1%) than medical students (12.9%).⁸ Both the groups agreed that they missed out hand hygiene sometimes because they had more important works to attend to, which showed that hand hygiene was not in their priority. Nearly 36.4% of medical students and 63.5% of the nurses had the misconception that wearing gloves obviates the need for practicing hand hygiene. Most (79%) of the nurses and few medical students (43.9%) in our study felt that following hand hygiene was difficult in the current set up. This could be due to the lack of facilities in our institution and could be overcome by setting up bedside handrubs, maintaining the patient to sink ratio etc.

In our study only few medical students (51.5%) felt that they had sufficient knowledge on hand hygiene compared to nurses (93%) similar to other studies.^{7,8} This could be due to the fact that unlike medical students, the nursing students are taught on hand hygiene during the early part of their curriculum. This explains the need to conduct training sessions to medical students and emphasize the importance of hand hygiene atleast during their internship. The participants also felt that presence of infection control notice boards in the workplace will have a positive influence on adherence to hand hygiene. Nearly 18.1% of the medical students and 54% of the nurses were not satisfied with facilities for hand hygiene. Such practical problems like inadequate supply of hand rub solutions, difficult access to wash basins, are to be considered as this could be one of the reasons for poor

S. No	Statement	Medical Students n=66	Nursing students n=74	P value
1	I adhere to correct hand hygiene practices at all times	10(15%)	64(86.4%)	0.000*
2	Sometimes I have more things to do than hand hygiene	59(89.4%)	69(93.2%)	0.417
3	Sometimes I miss out hand hygiene simply because I forget it	45(68.1%)	38(52%)	0.043
4	Emergencies and other priorities make hygiene more difficult at times	64(97%)	59(95%)	0.002
5	Wearing gloves reduce the need for hand hygiene	24(36.4%)	47(63.5%)	0.001*
6	I feel frustrated when others omit hand hygiene	19(28.8%)	43(58.1%)	0.000*
7	I am reluctant to ask others to engage in hand hygiene	14(21.2%)	24(32.4%)	0.136
8	Newly qualified staff has not been properly instructed in hand hygiene in their training	26(39.4%)	54(73%)	0.000*
9	I feel guilty I omit hand hygiene	21(31.8%)	55(74.3%)	0.000*
10	Adhering to hand hygiene practices is easy in the current setup	29(43.9%)	58(79%)	0.000*
	Average	47.1%	70.7%	

* significant, p value <0.001

Table-3: Comparison of responses to Attitude based questions among medical and nursing students

S.No	Statement	Medical students n=66	Nursing students n=74	P value
1	I have sufficient knowledge about hand hygiene	34(51.5%)	68(93%)	0.000*
2	Hand hygiene is no negotiable part of my role	39(59.1%)	32(44%)	0.061
3	There are adverts or newsletters about hand hygiene in my workplace	42(63.6%)	59(79.7%)	0.034
4	The frequency of hand hygiene required makes it difficult for me to carry it out as often as necessary	61(92%)	56(77%)	0.008
5	Facilities are adequate for hand hygiene in my area of work	12(18.2%)	40(54.1%)	0.000*
6	Infection prevention team will have a positive influence on my hand hygiene	61(92%)	65(89%)	0.367
7	Infection prevention notice boards will remind me to do hand hygiene	61(92%)	31(42%)	0.000*
8	It is difficult for me to attend hand hygiene courses due to time pressure	62(94%)	60(82%)	0.023
	Average	56.5%	70.1%	

*significant P value <0.001

Table-4: Comparison of hand hygiene practices among medical and nursing students

compliance of health care workers to hand hygiene practices. Hence the institutional support is necessary for overcoming these practical difficulties to combat the substandard hand hygiene practices. A majority of the participants (table3) felt that presence of infection control team would have a positive influence on their hand hygiene practice. Infection control team in a hospital focuses on many areas while controlling nosocomial infection one such key arena being hand hygiene practice in the hospital setup.

In our study we identified various gaps in the knowledge of the health care workers. Though the overall knowledge of the participants was satisfactory, there was a wide gap between the it and practice of hand hygiene. Hence it is essential to conduct training sessions for medical students and nurses addressing these gaps in knowledge and on the correct hand hygiene procedures. On the other hand, it is also important to improve the current training programmes targeting hand hygiene practices in medical and nursing students. Previous studies have shown that self reported compliance of hand hygiene is higher than the actual compliance during the working shift. However, having regular hand hygiene campaigns, displaying posters and encouraging peers to remind colleagues of hand hygiene has been shown to improve the compliance of HCWs significantly.⁹ Our findings are in agreement with previous observational studies which found that nurses had better hand hygiene practices than doctors.^{10,11}

CONCLUSION

Our study shows wide gaps in the knowledge and practice of hand hygiene among the medical students and nurses. Hence it is important to conduct regular training programs on hand hygiene for medical students and nurses with continuous monitoring and performance feedback to encourage them to follow correct hand hygiene practice.

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