

KAP study of hand hygiene among medical and nursing students in a tertiary teaching hospital

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Abstract

Introduction: Effective hand hygiene is essential for reducing iatrogenic infections. However, compliance of healthcare workers to hand hygiene guidelines are reportedly poor. The objective of the study to identify gaps in knowledge, attitudes and practices of medical and nursing students in the faculty.

Material and Methods: A self-administered questionnaire based cross sectional study was done to assess the knowledge, attitudes and of practices of hand hygiene in final year medical and nursing students of the J.N. Medical College, Aligarh Muslim University, Aligarh.

Results: A total of 130 students participated in the study out of which majority of both the nursing and medical students had moderate knowledge. Attitude was good among half of the nursing and about one-third of the medical students. About 66% of nursing students and 40% of medical students showed good practices. Overall satisfaction with facilities available for hand hygiene levels was poor among nursing and medical students.

Discussion: Hand hygiene is recognized as the most effective intervention for prevention against hospital acquired infections, leading to shorter hospital stay, reduction in patient morbidity and decreased health care costs. But, at the same time, the adherence to proper hand hygiene by the health workers has been reported to be poor in many studies.

Conclusions: The knowledge was adequate and attitude was positive and constructive. However in practice 100% compliance was not there. Improvement of the facilities for hand hygiene and training programmes are recommended.

Keywords: Hand Washing, Students, KAP, Teaching Hospital

Introduction

Hand hygiene practices of health care workers has been shown to be an effective measure in preventing hospital acquired infections. It has been recognized as the leading measure to prevent cross-transmission of microorganisms and to

reduce the incidence of health care associated infections^(1, 2).

The importance of hand hygiene was recognized as early as 1840s, by Dr. Oliver Wendell Holmes to prevent childbed fever and in the late 1840's, by Dr. Ignaz Semmelweis to reduce maternal mortality in a Vienna hospital, however, adherence to

hand hygiene practices still remains low (40% or below) in most of the health care institutions^(3, 4). Improper hand hygiene by healthcare workers (HCWs) is responsible for about 40% of nosocomial infections⁽⁵⁾. The spread of infections in developing countries remains a serious problem, especially in high-risk settings such as health care facilities due to lack of awareness in health care workers.

Poor compliance is associated with lack of awareness among personnel (6). The other factors which augment the problem are attitudes, both personal and organizational, towards hand washing and logistical barriers⁽⁷⁾.

The purpose of our study was to assess the knowledge, attitudes and practices of medical and nursing students in J.N. Medical College and hospital. A.M.U, Aligarh.

Materials and methods

The present study is a cross sectional study conducted among the medical and nursing students of the Jawahar Lal Nehru Medical College, Aligarh Muslim University, Aligarh. The students starting their third semester were enrolled in the study, as the clinical postings of both nursing and medical students start from third semester onwards and practice of hand hygiene could be assessed among those students.

The investigator of the study visited groups of students and explained the nature of the study. Verbal consent was obtained from those who volunteered to participate. Ethical clearance for the study was obtained from the Institutional Ethical Review Committee. A pre-tested, self administered questionnaire was used for the study. The questionnaire consisted of 5 parts – particulars of the students, assessment of knowledge, attitudes, practices and satisfaction with availability of facilities. Knowledge was assessed using 20 questions which included multiple choice and “yes” or “no” questions. Attitudes were measured using 8 questions

where the respondents were given the option to select on a 1 to 5 point scale between strongly agree and strongly disagree. Practices and facilities were assessed in a similar way using 6 and 8 questions respectively.

A scoring system was used where 1 point was given for each correct response to knowledge, positive attitudes, good practices and satisfaction with facilities. 0 was given for incorrect knowledge, negative attitudes, poor practices and dissatisfaction with facilities. A score of more than 75% was considered good, 50-74% moderate and less than 50% poor. Similar methodology has been used by other researchers⁽⁸⁾.

In this study descriptive statistics has been shown by use of percentages for each of the correct responses given. Data analysis was done using Microsoft EXCEL 2007 software.

Results

There were a total of 130 students who participated in the study (88 medical and 42 nursing students). When considering the total study group, only 36.2% (47 out of 130), claimed that they were satisfied with the availability of courses on hand hygiene. Among the two groups higher percentage of the nursing students, 47.6% (20 out of 42) said that they were satisfied with the availability of courses and training programmes on hand hygiene as compared to only 30.7% (27 out of 88) of the medical students.

Knowledge on hand hygiene

Overall knowledge on hand hygiene was found to be moderate in 80% (71 out of 88) of the medical students and 76.2% (32 out of 42) of the nursing students. Only 7% of both the medical and nursing students had good knowledge on hand hygiene (figure 1). The percentages of correct responses to the individual questions on hand hygiene knowledge of the two groups of students are given in Table 1.

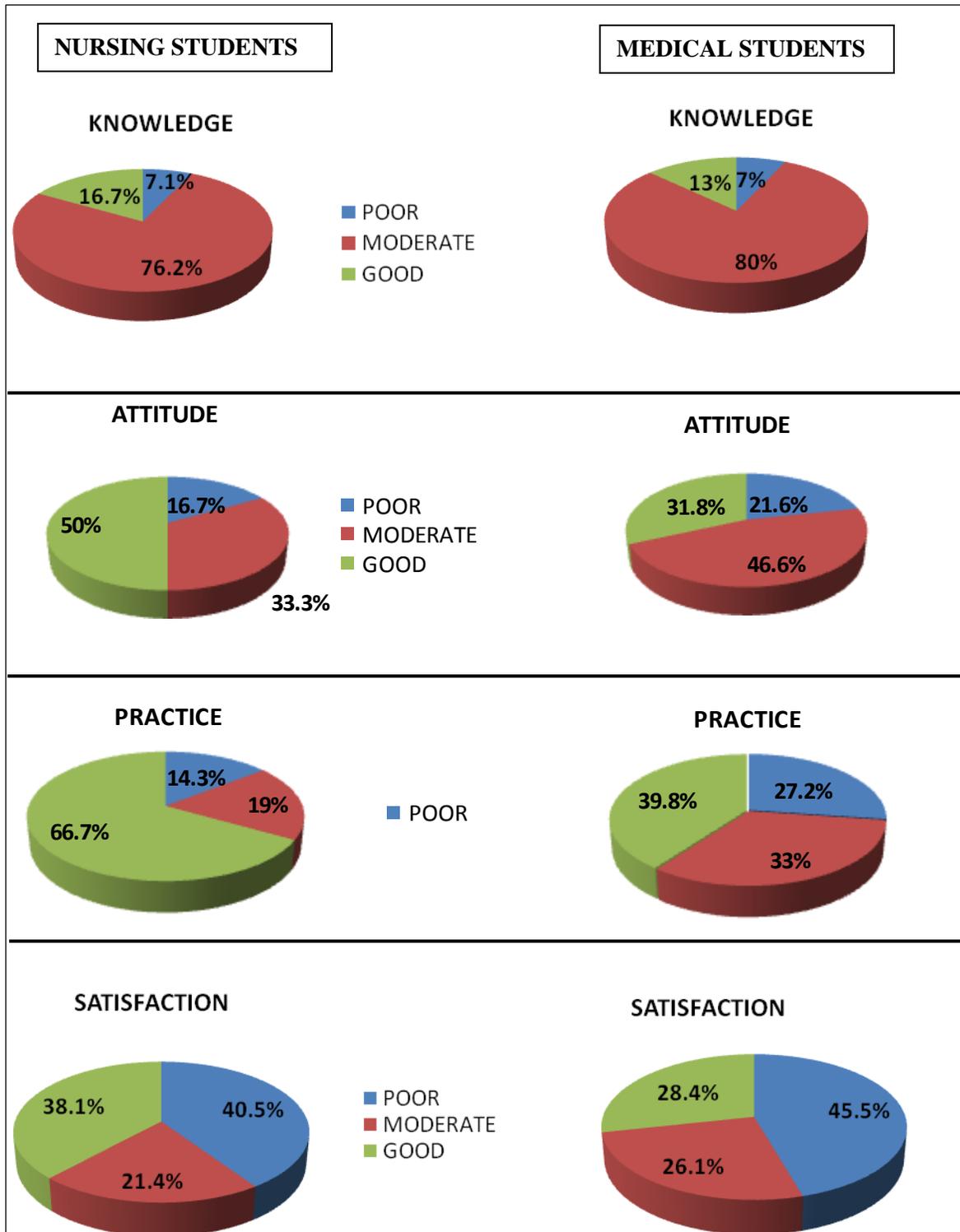


Fig. 1: Knowledge, Attitudes, Practice and satisfaction levels of hand hygiene among nursing and medical students of JNMCH, Aligarh.

Attitude on hand hygiene

In half of the nursing students the score of attitudes towards hand hygiene was found to be good and it was moderate among another one-third (33.3%) of the nursing students. On the other hand, 46.6% of medical students had moderate scores and only 31.8% of the medical students showed good attitudes scores. The percentages of correct responses of the two groups of students to the individual questions on

hand hygiene knowledge are given in Table 2.

Practices of Hand Hygiene

When assessed for hand hygiene practices, it was found that practices were good among 66.7% (59 out of 88) of the nursing students but only 39.8% (17 out of 42) among medical students (Figure 1). The percentages of correct responses of the two groups of students to the individual questions on hand hygiene practices are given in Table 3.

Table 1: Knowledge on hand hygiene among medical and nursing students.

	RESPONSES	Medical students (n=88)		Nursing students (n=42)		Total (n=130)
		N	%	N	%	N (%)
K1	Which is the main route of transmission of potentially harmful germs between patients (Health care workers hands when not clean)	47	53.4	31	73.8	78 (60.0)
K2	What is the most frequent source of germs responsible for health care associated infections? (Germs already present on or within the patient)	16	18.2	2	4.8	18 (13.8)
When should Hand- washing be done to prevent transmission of germs to the patient?						
K3	Before touching a patient (yes)	87	98.9	40	95.2	127 (97.7)
K4	Immediately after risk of body fluid exposure (yes)	83	94.3	39	92.9	122 (93.8)
K5	After exposure to immediate surroundings of a patient (no)	24	27.3	8	19	32 (24.6)
K6	Immediately before a clean/aseptic procedure (yes)	81	92	41	97.6	122(93.8)
Which of the following hand hygiene actions prevents transmission of germs to the health care worker?						
K7	After touching a patient (yes)	74	84.1	39	92.9	113(86.9)
K8	Immediately after a risk of body fluid exposure (yes)	77	87.5	37	88.1	114(87.7)
K9	Immediately before a clean/aseptic procedure (no)	15	17	9	21.4	24(18.5)

K10	After exposure to the immediate surroundings of a patient (yes)	66	75	33	78.6	99(76.2)
Which of the following statements on alcohol-based hand rub and hand washing with soap and water are true ?						
K11	Hand rubbing is more rapid for hand cleansing than hand washing (true)	52	59.1	32	96.2	84(64.6)
K12	Hand rubbing causes skin dryness more than hand washing (false)	34	38.6	6	14.3	40(30.8)
K13	Hand rubbing is more effective against germs than hand washing (false)	58	65.9	20	47.6	78(60.0)
K14	Hand washing and hand rubbing are recommended to be performed in sequence (false)	30	34.1	3	7.1	33(25.4)
K15	What is the minimal time needed for alcohol based hand rub to kill most germs on your hands? (20 seconds)	39	44.3	17	40.5	56(43.1)
K16	How many steps are there in Correct hand washing technique? (7 steps)	45	51.1	19	45.2	64(49.2)
Which of the following should be avoided, as associated with increased likelihood of colonization of hands with harmful germs?						
K17	Wearing jewellery (yes)	69	78.4	37	88.1	106(81.5)
K18	Damaged skin (yes)	81	92	37	88.1	118(90.8)
K19	Long fingernails (yes)	82	93.2	39	92.9	121(93.1)
K20	Regular use of a hand cream (no)	59	67	30	71.4	89(68.5)

Table 2: Attitude on hand hygiene among medical and nursing students.

		Medical students (n=88)		Nursing students (n=42)		Total (n=130)
		N	%	N	%	N (%)
A1	I adhere to correct hand hygiene practices at all times	24	27.3	26	61.9	50 (38.7)
A2	I have sufficient knowledge about hand hygiene	78	88.6	41	97.6	119 (91.5)

A3	Sometimes I have more important things to do than hand hygiene	44	50.0	12	28.6	56 (43.1)
A4	Emergencies and other priorities make hygiene more difficult at times	35	39.8	9	21.4	44 (33.8)
A5	Wearing gloves reduce the need for hand washing	40	45.5	16	38.1	56 (43.1)
A6	I am reluctant to ask others to engage in hand washing	40	45.5	22	52.4	62(47.7)
A7	I feel guilty if I omit hand washing	72	81.8	34	82.9	106(81.5)
A8	Adhering to hand washing practices is easy in the current setup	61	69.3	33	78.6	94(72.3)

Table 3: Practices of hand hygiene among medical and nursing students.

		Medical students (n=88)		Nursing students (n=42)		Total (n=130)
		N	%	N	%	N(%)
P1	Sometimes I miss out hand hygiene simply because I forget it	33	37.5	12	28.6	45(34.6)
P2	Hand hygiene is an essential part of my role	80	90.9	39	92.9	119(91.5)
P3	The frequency of hand hygiene required makes it difficult for me to carry it out as often as necessary	49	55.7	20	47.6	69(53.1)
P4	My Seniors have a positive influence on my hand hygiene	56	63.6	34	81	90(69.2)
P5	My friends and peers have a positive influence on my hand hygiene	60	69.8	36	85.7	96(73.8)
P6	It is difficult for me to attend hand hygiene courses/workshop due to time pressure	35	39.8	26	61.9	61(46.9)

Satisfaction regarding facilities available for hand hygiene

Overall satisfaction with facilities available for hand hygiene levels was poor among 40.5% of nursing and 45.5% of medical students (Figure 1). Only 28.4% (25 out of

88) of medical and 38.1% (16 out of 42) of nursing students reported it to be good. Percentages of responses of the two groups of students to the questions regarding satisfaction with facilities are given in Table 4.

Table 4. Satisfaction with facilities for hand hygiene among medical and nursing students.

	Responses	Medical students (n=88)		Nursing students (n=42)		Total (n=130)
		N	%	N	%	N (%)
F1	Are facilities for hand washing/ hand rub available in your work area/faculty? (yes)	70	79.5	36	85.7	106 (81.5)
F2	Are you satisfied with the facilities available for hand hygiene in your faculty? (yes)	41	46.6	25	59.5	66 (50.7)
Satisfaction with the availability of						
F3	Soap/antiseptic and water for hand washing	48	54.5	26	61.9	74 (56.9)
F4	Alcohol rub	32	36.4	15	35.7	47 (36.2)
F5	Paper/clothes for drying hands	34	38.6	17	40.5	51 (39.2)
F6	Availability of gloves	51	58	30	71.4	81(62.3)
F7	Number of sinks with running water	60	68.2	32	76.2	92(70.8)
F8	Training programmes on hand Hygiene conducted by the hospital	27	30.7	20	47.6	47(36.2)

Discussion

Hand hygiene is recognized as the most effective intervention for prevention against hospital acquired infections, leading to shorter hospital stay, reduction in patient morbidity and decreased health care costs⁽⁹⁾. But, at the same time, the adherence to proper hand hygiene by the health workers has been reported to be poor in many studies^(10, 11). It has also been observed that the compliance to hand hygiene increases with regular training activities pertaining thereto⁽¹²⁾. Instilling correct knowledge and attitude towards hand hygiene among the medical and nursing students can go a long way in ensuring adherence to good practices among the future health care workers.

In the present study, knowledge about hand hygiene was found to be moderate in

majority of both nursing and medical students. Similarly, another study done among nursing and medical students also found moderate knowledge in the majority, with nursing students having better attitudes towards hand hygiene than medical students⁽⁸⁾. Some other researchers have also reported knowledge to be moderate among students⁽¹³⁾. On the other hand, in a study from South West Nigeria majority of respondents (83.0%) had good knowledge of hand hygiene, which could have been due to greater number of training activities been provided to the students in Nigeria than in our study⁽¹⁴⁾. It was found that only 36% of the students were satisfied with the training programs conducted by the hospital in our study.

While assessing the gaps in knowledge on hand hygiene, 53.4% of the medical students and 73.8% of the nursing students correctly knew about the main route of transmission of potentially harmful germs between patients. But surprisingly, only 18.2% of the medical students and 4.8% of the nursing students had correct knowledge of the most frequent source of germs responsible for health care associated infections. Although more than 90% and 75% of students were aware of the hand hygiene actions to prevent transmission of germs to the patients and to the health care worker, respectively, only 18.5% knew specifically that washing hands immediately before a clean/aseptic procedure doesn't have much role in preventing transmission of infections to health care workers. Importantly, only about half of medical students and 45.2% of nursing students knew the steps of hand washing correctly. It is important to address these gaps in knowledge during training sessions to foster better hand hygiene practices.

Alcohol-based hand rubs are also effective for proper hand hygiene and are more rapid for hand cleansing than hand washing⁽¹⁵⁾ but only 64.6% of subjects knew this correctly. Minimal time needed for alcohol based hand rub to kill most germs was correctly known to 44.3% of the medical and 40% of the nursing students. The fact that hand rub is not more effective than hand washing was correctly known to 65.9% of medical students and less than half (47.6%) of nursing students. Unfortunately, only 7.1% of nursing students knew that hand washing and hand rub are not required to be carried out in sequence. About 34% of medical students had this knowledge. Inadequate availability of hand rub in most of the hospitals in developing countries⁽¹⁵⁾ is a common problem, which is also found in our study (only 36% of students were satisfied with availability of hand rub), and may be the cause of inadequate knowledge about the same. Interestingly, making the hand rub

solutions available at the bedside of patient has been shown to increase compliance to hand hygiene⁽¹⁶⁾.

Knowledge on hand hygiene has been shown to be a predictor of good hand hygiene practices⁽¹⁵⁾. Although knowledge was moderate among more than two-third of both medical and nursing students, only 66.7% of nursing students and about 40% of medical students had good practices. This shows that practices are much influenced by attitude, which was found to be better among nursing students (good in 50%) than among the medical students (good in 31.8%).

Motivation by peers and seniors plays an important role in adherence to good practices⁽¹⁵⁾. This fact is also reflected in our study where 81% of nursing students and 63.6% of medical students have admitted to have positive influence by their seniors. About 70% of medical students and 85% of nursing students reported to have positive influence on hand hygiene by their peers also.

In our study, 61.9% of nursing students reported to adhere to correct hand hygiene practices at all times as compared to 27.3% of medical students, although more than 70% of both nursing and medical students were of the opinion that, adhering to hand washing practices is easy in the current setup. Although majority of the students (85.7% of nursing and 80% of medical) reported availability of facilities for hand hygiene in their work area but only 60% of nursing and 46.6% of medical students were satisfied with those facilities. Lesser satisfaction with the facilities for hand hygiene may be another reason for poorer level of good practices among the medical students than the nursing students found in our study. It also points towards the need for providing better facilities to ensure good practices of hand hygiene among the students and health care workers.

Hand hygiene practices have been shown to be neglected at the time of emergencies⁽¹⁷⁾.

About 40% of medical students and 21% of nursing students felt that emergencies and other priorities make hygiene more difficult at times. They are more likely to adhere to good practices especially at time of emergencies if facilities for hand hygiene are adequate and within easy reach. It is good to know that more than 80% of both medical and nursing students in this study felt guilty on omitting hand hygiene.

The findings of our study are similar to those of a study done in Sri Lanka, where nursing students had significantly better attitudes (52%) compared to medical students (16%)⁽⁸⁾. Likewise same results were also observed in a study to assess knowledge and attitude regarding hand hygiene amongst residents and nursing staff in a tertiary health care setting of Bhopal City, where the attitude of nursing staff was better as compared to residents but these results were not found to be statistically significant⁽¹⁸⁾. The results of our study are also supported by the study done in Raichur in which nursing students had significantly ($p<0.05$) better attitudes (52.1%) as compared to medical students (12.9%)⁽¹³⁾.

As a response to assess the practices of hand washing, more than 90% of the students considered hand hygiene to be an essential part of their role but at the same time, about 35% also admitted to miss out hand hygiene simply because of forgetfulness. Nursing students found it more difficult than medical students (62% and 40%, respectively) to attend hand hygiene courses/workshop due to time pressure. Incorporating the hand hygiene practices more elaborately and objectively into the curriculum itself rather than going for separate courses/workshops may help in removing this bottleneck.

Other studies have also reported that nursing students had better practices than medical students and the difference was found to be statistically significant^(8,16,18). Being a doctor rather than a nurse has been implicated to be a risk factor for poor hand hygiene practices⁽¹⁵⁾. The training and

behavior change communications for hand hygiene need to be emphasized more among the medical students.

Majority of both medical and nursing students had moderate knowledge on hand hygiene. Attitude and practices on hand hygiene was found to be better among nursing students than the medical students. The study highlights the need for improving the existing hand hygiene training programs/curriculum to address the gaps in knowledge, attitude and practices. Satisfaction with the existing facilities for hand hygiene was poor among both the medical and nursing students. Improvement of the facilities for hand hygiene is a pre-requisite to ensure good hygiene practices. More frequent and adequate training programs can go a long way in addressing the gaps in knowledge and improving adherence to good practices. Seniors and peers can be role models to students for good practices. Synergistic efforts of seniors and hospital administration can improve good hygiene practices among the students who are future cadres of health care providers.

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