A Comparative Study Regarding Knowledge of Hand Hygiene amongst Medical and Nursing Students in a Tertiary Care Hospital of West Bengal

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ABSTRACT

BACKGROUND

Unfortunately, infections acquired during receiving health care contribute significantly in morbidity and mortality worldwide and hands are the principal mode of germ transmission in all health care facilities. Therefore, hand hygiene is the most useful intervention to curb the spread of harmful germs and avert health care-associated infections (HCAIs). But, health care providers very poorly comply with standard practices of hand hygiene. There is a paucity of studies which looks at the knowledge of standard hand hygiene precautions among medical and nursing students in eastern India. This study was conducted to assess and compare level of knowledge amongst medical and nursing students and to identify gaps in their knowledge.

METHODS

This cross sectional study was performed by selecting 95 Second Professional MBBS students and 31 first year B.Sc. Nursing students with verbal consent and their level of knowledge was assessed with WHO hand hygiene questionnaire and analysed using percentages.

RESULTS

Out of total 27 questions asked, only 13 questions were answered correctly by more than 50% students of both groups but only 7 and 5 questions were correctly responded by more than 75% nursing and medical students respectively. Nursing students were significantly more aware in response to 5 questions whereas medical students outperformed their counterpart in only 3 questions. This study revealed that definitely there was a gap in the knowledge regarding hand hygiene amongst medical and nursing students but still comparatively nursing students were more knowledgeable in this field.

CONCLUSIONS

Repeated hand hygiene training sessions with monitoring and immediate performance feedback to generate awareness amongst students and to provide the current knowledge regarding prevention of HCAIs are the need of the hour.

KEY WORDS

Hand Hygiene, Rubbing, Washing, Nursing Student, Medical Student

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BACKGROUND

Health care-associated infections (HCAI) due to poor hand hygiene cause significant increase in morbidity, mortality among hospitalized patients and has a significant economic impact on patients and health-care systems globally.[1] Although the procedure of hand hygiene is relatively simple to follow, compliance with it is significantly low (40%).[2-4]

Fruitful and sustainable strategies are need of the hour for solution of this problem of poor compliance. "My five moments for hand hygiene" as advocated by World Health Organization is certainly one of such evidence based strategy to combat the problem. Moments like before touching a patient, before performing aseptic and clean procedures, immediately after a risk of body fluid exposure, after touching a patient, and after touching patient surroundings are included in these five moments. This strategy is truly a game changer in understanding, tutoring, monitoring, and reporting hand hygiene among healthcare workers (HCWs).[4]

In Asia there are few studies unveiling this issue, although the prevalence of HCAIs is significant here,[5-8] particularly medical and nursing student's knowledge of hand hygiene is rarely compared. Students hardly abide by the standard techniques of hand hygiene posing a threat to spread of deadly infections.[9-10] In this scenario, the present study was undertaken to compare and to identify lacunae in the knowledge among medical students and nursing students of our hospital regarding hand hygiene practices to enhance good practices in future.

METHODS

This cross sectional study was undertaken in a tertiary care hospital, Burdwan Medical College, Burdwan, West Bengal, India in the month of May 2018 and purposive sampling method was used to select a total of 95 Second Professional MBBS students (4th Semester) and 31 B.Sc. Nursing students (first year). After taking written informed consent they were interviewed with pre-validated WHO questionnaire (Hand Hygiene Knowledge Questionnaires for HCWs) to assess their understanding and practice of hand hygiene and the data were analyzed using percentages.

Statistical Analysis

Data was entered in MS Excel and analyzed by Microsoft EXCEL 2010 software version. Statistical tests like proportions and chi-square test were used. P- Value less than 0.05 was considered significant.

RESULTS

In this present study, we observed that 38.95% medical students and 23.81% nursing students received training in hand washing and 49.47% medical students and 33.33% nursing students were using alcohol-based hand rub routinely and there was no significant difference between these two groups.

	Question (Answers)	Medical Student n (%)	Nursing Student n (%)	P Value
1	Did you receive formal training in hand hygiene in the last three years?	37 (38.95%)	10 (23.81%)	NS
2	Do you routinely use alcohol based hand rub for hand hygiene?	47 (49.47%)	14 (33.33%)	NS
3	Which of the following is the main route of cross transmission of potentially harmful germs between patients in a health care facility (Health care workers hands when not clean)	42 (44.21%)	36 (85.71%)	<0.001
4	What is the most frequent source of germs responsible for health care associated infections? (Germs already present on or within the patient)	24 (25.26%)	18 (42.86%)	<0.045
5	Which of the following hand hygiene action prevents transmission of germs to the patient?			
5A	Before touching a patient(yes)	72 (75.79%)	32 (76.19%)	NS
5B	Immediately after risk of body fluid exposure (no)	23 (24.21%)	10 (23.81%)	NS
5C	After exposure to the immediate surroundings of a patient (no)	42 (44.21%)	12 (28.57%)	NS
5D	Immediately before a clean/ aseptic procedure(yes)	72 (75.79%)	36 (85.71%)	NS
6	Which of the following hand hygiene action prevents transmission of germs to the health care worker?			
6A	After touching a patient (yes)	66 (69.47%)	38 (90.48%)	<0.01
6B	Immediately after a risk of body fluid exposure(yes)	58 (61.05%)	38 (90.48%)	<0.001
6C	Immediately before a clean/aseptic procedure (no)	24 (25.26%)	16 (38.1%)	NS
6D	After exposure to the immediate surroundings of a patient (yes)	57 (60%)	24 (57.14%)	NS
7	Which of the following statements on alcohol based hand rub and hand washing with soap and water are true?			
7A	Hand rubbing is more rapid for hand cleansing than hand washing (true)	60 (63.16%)	30 (71.43%)	NS
7B	Hand rubbing causes skin dryness more than hand washing (false)	17 (17.89%)	8 (19.05%)	NS
7C	Hand rubbing is more effective against germs than hand washing (true)	32 (33.68%)	18 (42.86%)	NS
7D	Han washing and hand rubbing are recommended to be performed in sequence (false)	31 (32.63%)	10 (23.81%)	NS
8	What is the minimal time needed for alcohol-based hand rub to kill most germs on your hands?(20 seconds)	40 (42.11%)	12 (28.57%)	NS
9	Which type of hand hygiene method is required in the following situation?			
9A	Before palpation of the abdomen (rubbing)	46 (48.42%)	14 (33.33%)	NS
9B	Before giving an injection (rubbing)	37 (38.95%)	16 (38.1%)	NS
9C	After emptying a bed pan (washing)	65 (68.42%)	24 (57.14%)	NS
9D	After removing examination gloves (rubbing)	26 (27.37%)	10 (23.81%)	NS
	After removing examination gloves (washing)	59 (62.11%)	28 (66.67%)	NS
	After removing examination gloves (both)	1(1.05%)	0	NS
9E	After making a patient's bed (rubbing)	17 (17.89%)	10 (23.81%)	NS
9F	After visible exposure to blood (washing)	72 (75.79%)	14 (33.33%)	<0.001
10	Which of the following should be avoided, as associated with increased likely hood of colonisation of hands with harmful germs?			
10A	Wearing jewellery (yes)	51 (53.68%)	38 (90.48%)	<0.001
10B	Damaged skin (yes)	90 (94.74%)	30 (71.43%)	<0.001
10C	Artificial finger nails (yes)	79 (83.16%)	36 (85.71%)	NS
10D	Regular us of hand cream (no)	71 (74.74%)	24 (57.14%)	<0.045

Figure 1. Comparison of Knowledge about Hand Hygiene Practice in Medical (N=95) and Nursing (N=42) Students Based on WHO Questionnaire

However, nursing students (85.71%) have better knowledge than medical students (44.21%) regarding the principal mode of transmission of deadly germs between patients in a hospital. Furthermore, borderline difference was noticed regarding most frequent source of germs causing HCAIs among medical students (25.26%) and nursing students (42.86%). (figure -1)

Regarding knowledge of hand hygiene actions which impedes spread of infections to the HCWs, nursing students were more aware than medical students, but both the groups have similar knowledge about correct timing for observing hand hygiene actions. (Figure -1)

Moreover, there were no significant difference regarding knowledge of hand rubbing and hand washing and minimal time required for alcohol-based hand rub (ABHR) to kill microorganisms between these two groups. (Figure -1)

Medical students (75.79%) were significantly more aware than nursing students (33.33%) regarding the correct method needed to be used after visible exposure to blood. Apart from this, knowledge regarding proper procedure required in other scenarios like before palpation of the abdomen, before injecting someone, after voiding a bed pan, after removing examination gloves and after preparing a patients bed was comparable in both groups. (Figure -1)

Knowledge regarding use of jewellery causing increased colonization was significantly better amongst nursing students (90.48%) in comparison with medical students (53.68%). But medical students (94.74%) were well versed than nursing students (71.43%) that damaged skin could increase likelihood of colonisation with harmful germs. However, awareness about impact of artificial nails in hand colonisation with germs was equal in both groups. Although, a marginally significant difference of knowledge was noticed regarding role of regular use of hand cream (in colonisation) in favour of medical students (74.74%) as compared to nursing students (57.14%).(figure -1)

DISCUSSION

In this study, we observed that only 38.95% medical students and 23.81% nursing students had asserted to receive proper training in hand hygiene which is an area to be further improved. In the study by Nair et al, 79% students said they had training in hand hygiene and Kamble et al found 85.4% students are formally trained in hand hygiene. However, Glad Mohesh et al reported only 26.3% medical students had formal training in hand hygiene practices which closely matches with our result.[10-12]

Moreover, in this study we noticed that only 49.47% medical students and 33.33% nursing students regularly use alcohol-based hand-rub for hand hygiene which mimics findings of the study by Kamble et al (58.1%).[12]

This study revealed that nursing students had more proficiency in hand hygiene than their counterparts. Only 44.21% medical students were aware regarding the principal vehicle of spread of dreadful microorganisms between patients whereas as high as 85.71% nursing students knew about it. Our observations are somewhat akin to other studies reporting 72-75% of respondents perceived that dirty hands of HCWs were the principal route of spreading of germs.[13,14]

We have found only 25.26 % of medical students and 42.86% of nursing students were aware about the most consistent source of organisms accountable for nosocomial infections were those present on or within the patient, with nursing students having marginally better cognizance in this issue. However, on the contrary, Maheswari et al reported 45% of residents & 27% of nurses were aware of it signifying better performance by residents in this field.[14]

Appreciation of ideal timing for executing hand hygiene actions that avert spread of organisms to the HCW was found to be better among nursing students but both the groups have similar awareness regarding timing of hand hygiene actions for prevention of transmission of germs to the patient. Whereas Maheswari et al observed that, both the groups performed almost equally in either of the above mentioned conditions.[14]

WHO prefers ABHR for hand hygiene due to its principal benefit of quick onset of action and broad spectrum of microbicidal activity. In this study, there were no significant difference regarding knowledge of ABHR and hand washing with soap and water and minimal time required for ABHR to eliminate organisms between these two groups. Maheswari et al reported that only some of the residents and nurses (35% and 25% respectively) knew the minimum time required for productive hand hygiene as per WHO guidelines whereas our figures for medical and nursing students were 42.11% and 28.57% respectively.[14] Moreover, our observations were comparable to the Egyptian study wherein 23.2% of respondents showed improper hand hygiene due to both short contact time and inappropriate drying after hand washing.[15]

Medical students (75.79%) were significantly more aware than nursing students (33.33%) about method of hand hygiene to be followed after visible exposure to blood. However, both groups had responded poorly about the ideal type of hand hygiene method needed before palpation of abdomen (44%), before injecting someone (39%), and after preparing a patients bed (20%). Comparable data were obtained in Srilankan study (31%, 26% & 25%) and Maheswari in Bhopal (33%, 27% & 21%).[13,14]

In our study, both the groups knew the best method of hand hygiene needed after emptying a bed pan (68.42% and 57.14%) respectively which closely mimics the figures of the study by Maheswari et al (68.8% and 80%). Moreover, 22.5%, 38.6% and 70.4% of the nurses in Egyptian study did hand washing after removing gloves, after patients contact and after body fluid contact. [15] In the study by Feather et al, they demonstrated that the hand hygiene practices of 187 students during final MBBS examination in UK and observed that only 8.5% of candidates washed their hands after patient contact, although the figure increased to 18.3% when hand hygiene signs were demonstrated.[16]

Regarding knowledge of items required to be avoided due to risk of increased colonization, we observed that knowledge regarding use of jewellery was significantly better amongst nursing students (90.48%) in comparison with medical students (53.68%). This result simulates observations obtained in the study by Maheswary et al (96.3% and 77.5%).[14] But medical students (94.74%) were well aware than nursing students (71.43%) that damaged skin could increase likelihood of colonisation with harmful germs. Although, Maheswary et al did not find any significant

difference between residents and staff nurses (93.8% and 92.5%) in this aspect.[14] However, both the groups were equally versed about impact of artificial nails in hand colonisation with germs which was also seen in Bhopal study.[14] Furthermore, a marginally weighty difference of awareness was observed regarding role of regular use of hand cream (in colonisation) in favour of medical students (74.74%) as compared to nursing students (57.14%). But, contrary to our finding, Maheswary et al noticed there was no significant difference among the study groups.[14]

In a nutshell, we may opine that the general perception regarding the type of hand hygiene method required in various clinical situations was substandard and hence this study recognized lacunae in their knowledge and areas needed for further development.

CONCLUSIONS

From the overall observation, it is obvious that well organised tutoring sessions regarding hand hygiene practices among the medical and nursing students are absolutely necessary and it is also important to educate them with the recent concepts in the field of various infection prevention and control measures. Moreover, regular hand hygiene training sessions with close observation and performance feedback to persuade HCWs to go along with standard hand hygiene practices are the need of the hour.

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