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Original Research Article

Cross-sectional study to assess knowledge and practice of hand hygiene among 1st year Bachelor of Naturopathy and Yogic Science students

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ABSTRACT

Background: Hand hygiene is recognized as the leading measure to prevent health care associated infections. WHO has introduced evidence-based guideline on hand hygiene practice among healthcare professionals. But, knowledge and practice of hand hygiene remains poor among students. Therefore, the present study was planned to study knowledge and practice of hand hygiene among Bachelor of Naturopathy and Yogic Science (BNYS) students.
Methods: A cross-sectional study was conducted among 79 first year BNYS students. Knowledge of students was assessed using WHO hand hygiene questionnaire; practices were evaluated by using another self-structured questionnaire. Descriptive statistics was used to calculate percentages for knowledge and practice of hand hygiene among study subjects.
Results: 35 (44%) of the students had moderate level of knowledge and 25 (32%) students had poor knowledge of hand hygiene. 73 (92%) students had correct knowledge that hand hygiene action before touching a patient prevented transmission of germs to the patient. Only 11 (14%) had knowledge that artificial nails should be avoided. Only 19 (24%) students were aware that hand rubbing was required before palpation of abdomen. Only 34 (43%) students adhered to hand hygiene practices regularly.
Conclusions: Hand hygiene is an important tool for prevention of hospital acquired infections. The overall knowledge and practice of hand hygiene was not good among study subjects and a few numbers of students had attended formal training about hand hygiene. These findings indicate that the BNYS students require increased emphasis on hand hygiene education and training in their curriculum.

Keywords: Hand hygiene, Knowledge, Practice, BNYS students

INTRODUCTION

Healthcare-associated infections (HCAIs) are of major concern when it comes to patient safety.[1] The practice of hand hygiene by health care workers is considered as an important and effective means of preventing health care associated infections. The procedure of hand hygiene is very simple and cost effective. The various studies have demonstrated that hand hygiene reduces health care associated infection rates, but adherence to hand hygiene guidelines remains uniformly low among health care workers.[2-5]

According to world health organization (WHO), the prevalence of these nosocomial infections is as high as 19%, in developing countries.[6] Therefore, WHO has introduced an evidence based concept and guidelines on hand hygiene in healthcare to improve understanding, training, monitoring, and reporting of hand hygiene among healthcare workers.[1] This concept and guidelines has been extensively used in the training of professional

health workers but is rarely exploited in the undergraduate curriculum.

Several studies have reported that the knowledge, attitude, and practice of hand hygiene by the undergraduate healthcare students is poor.[7-10] The most of the studies had mainly focused on the comparison between medical and nursing students.[7-9] There is a need to explore the concept of hand hygiene among the other healthcare undergraduate students like Bachelor of Naturopathy and Yogic Science (BNYS), Bachelor of Ayurveda, Medicine and Surgery (BAMS) or dental students. With this background, the present study was undertaken to assess the hand hygiene knowledge and practices among the BNYS students of maharishi Aurobindo Subharti College and Hospital of Naturopathy and Yogic Sciences, Meerut.

METHODS

A cross sectional study was conducted among first year BNYS students of Maharishi Aurobindo Subharti College and Hospital of Naturopathy and Yogic Sciences, Meerut during October to November 2019. The permission from institutional ethical committee was taken before conducting the study. All first-year students were conveniently selected for the study. The students, who were present and gave consent, were included in the study whereas the students, who were absent and did not give consent, were excluded from the study. The first year BNYS batch consisted of 80 students. However, out of 80 students, 79 students gave consent for inclusion in the study.

To assess knowledge of hand hygiene among study subjects, we used WHO's hand hygiene questionnaire for healthcare workers.[11] The questionnaire comprised of 25 questions; each correct answer was given one point, and an incorrect answer was given zero. The answers to these questions were yes or no options. The maximum score obtainable for knowledge was 25. The scores were calculated and expressed in percentage. An overall score of more than 75% was considered good, 50-74% moderate, and below 50% was considered as poor. The practice of hand hygiene was assessed by pretested self-designed questionnaire. The data regarding knowledge and practice of hand hygiene was analyzed using SPSS version 17.0 software. Descriptive statistics was used to calculate percentages for knowledge and practice of study subjects.

RESULTS

In the present study, out of 79 students, 34 (43%) students were male whereas 45(57%) were females. Majority of students (76%) were Hindu followed by Christians (16%), Muslim (5%) and Sikh (2%). On the basis of Kuppuswamy socioeconomic classification, 33 (42%) students belonged to lower middle class, 24 (30%) belonged to upper middle, 16 (20%) belonged to upper lower and 6 (8%) students belonged to lower socioeconomic classification.

Table 1: Hand hygiene knowledge in BNYS students on each question.

Knowledge statements (correct responses)	N	%
Which of the following is the main route of the transmission of potentially harmful germs between the patients (healthcare workers hands when not clean)	24	30
What is the most frequent source of germs responsible for healthcare associated infections? (germs already present on or within the patient)	22	28
Hand hygiene actions that prevent the transmission of germs to the patient?		
Before touching a patient (yes)	73	92
Immediately, after the risk of body fluid exposure (yes)	44	56
After exposure to immediate surroundings of the patient (no)	30	38
Immediately, before the clean/aseptic procedure (yes)	59	79
Which of the following hand hygiene actions prevents the transmission of germs to the healthcare worker?		
After touching a patient (yes)	47	59
Immediately, after the risk of body fluid exposure (yes)	56	71
Immediately, before the clean/aseptic procedure (no)	16	20
After exposure to the immediate surroundings of the patient (yes)	60	76
Which of the following statements on alcohol-based hand rub and hand washing with soap and water are true?		
Hand rubbing is more rapid for hand cleansing than hand washing (true)	43	54
Hand rubbing causes skin dryness more than hand washing (false)	54	64
Hand rubbing is more effective against germs than hand washing (false)	64	81
Hand washing and hand rubbing are recommended to be performed in sequence (false)	11	14
What is the minimal time needed for alcohol-based hand rub to kill most germs on your hands	45	57

Continued.

Knowledge statements (correct responses)	N	%
Which type of hand hygiene method is required in the following situations?		
Before palpation of the abdomen (rubbing)	19	24
Before giving an injection (rubbing)	40	51
After emptying a bed pan (washing)	44	56
After removing the examination gloves (rubbing/washing)	68	86
After making the patients bed (rubbing)	23	29
After visible the exposure to blood (washing)	51	65
Which of the following should be avoided, as associated with increased likelihood of colonization of hands with harmful germs?		
Wearing jewellery (yes)	39	49
Damaged skin (yes)	70	89
Artificial fingernails (yes)	11	14
Regular use of the hand cream (no)	46	58

73 (92%) students had correct knowledge that hand hygiene action before touching a patient prevents transmission of germs to the patient. 70 (89%) students pointed correctly that damaged skin should be avoided as it was associated with risk of colonization of hands with harmful germs. 64 (81%) students had knowledge that hand rubbing was not more effective against germs than hand washing. On the other hand, only 11 (14%) had knowledge that artificial nails should be avoided. Only 19 (24%) students were aware that hand rubbing was required before palpation of abdomen. 22 (28%) students were aware that germs already present or within the patients were the most frequent germs responsible for healthcare associated infections (Table 1).

Table 2: Overall level of hand hygiene knowledge in BNYS students.

Level of knowledge	N	%
Good	19	24
Moderate	35	44
Poor	25	32

Table 3 Practice of hand hygiene among BNYS students.

Practice of hand hygiene	N	%
Attended formal training in last 3 years	12	15
Adhere to hand hygiene practice all the time	34	43
Use alcohol-based hand rub routinely	44	56

The overall level of knowledge was good in only 19 (24%) students whereas majority (44%) of the students had moderate level of knowledge (Table 2). The practice of hand hygiene in BNYS students was not good in most of the student (Table 3). Only 44 (56%) students used alcohol-based hand rub regularly. Only 12 (15%) students had attended formal training in last three years.

DISCUSSION

Effective hand hygiene is deemed to be the most important factor in controlling the spread of infections.[12] Hand washing should become an educational priority. international health agencies such as the WHO and centers for disease control and prevention had made efforts to improve hand hygiene. They have come up with evidence-based concepts and guidelines on hand hygiene in healthcare settings.[1,13]

In background of this, the present study evaluated the knowledge regarding hand hygiene in BNYS students. The overall scores of hand hygiene were low. The study also identified the gaps in the knowledge of hand hygiene of students for future training sessions.

Overall knowledge and practice of hand hygiene

The overall level of knowledge in BNYS students was good in only 19 (24%) students whereas 60 (79%) of the students had moderate or poor level of knowledge. Thakkar et al observed that Overall, only 7.5% of the medical, dental and nursing students had good knowledge regarding hand hygiene while majority (69.1%) had moderate knowledge.[14] Ariyaratne et al showed that medical and nursing students had moderate knowledge (77%) but attitude, practice of hand hygiene was poor among them.[9] Similarly, studies conducted by Mahmood, Chacko et al had showed moderate knowledge in majority (around 70%) of nursing students. However, no study had been conducted about knowledge and practice of hand hygiene in BNYS students.[15-16]

44 (56 %) respondents routinely used alcohol-based hand rub in this study. Maheshwari et al reported similar findings among staff nurses in a tertiary care hospital in Bhopal.[17] In the present study, only 12 (15%) students had attended formal training in last 3 years. However, Nair et al, Kanich et al, Mahmood et al had already showed the importance of the training programs targeting hand hygiene practices among medical and nursing students.[7.15.18] Therefore, we recommend that hand

hygiene training sessions should also be conducted for BNYS students so that hand hygiene practices among them can be improved.

Knowledge regarding individual questions

In the present study, only 30.0% correctly opined that the unclean hands of health care worker were the main route of cross-transmission of potentially harmful germs between patients in a health care facility whereas Nair et al reported that majority (75%) students had knowledge that unclean hands of health care worker were the main route of cross-transmission of potentially harmful germs between patients.[7] In present study, 19 (24%) thought hand rubbing was required before palpation of the abdomen in contrast Maheshwari et al reported one third of respondents thought rubbing was required before palpation of abdomen.[17] It might be due to the fact that medical and nursing curriculum had more emphasis on hand hygiene practices than BNYS curriculum.

70 (89%) students correctly pointed out that touching damaged skin should be avoided as it was associated with increased likelihood of colonisation of hands with harmful germs. Similar findings had been reported by the other studies.[7,9] Only 11 students (14%) pointed that artificial fingernails were associated with increased likelihood of colonisation of hands with harmful germs. In contrast, in the study by Shinde et al, higher percentage of respondents thought artificial fingernails were associated with increased likelihood of colonization of hands with harmful germs.[19]

Limitation of the study

This study was conducted in first year students of a single institute. It was a cross-sectional survey conducted with a limited sample size. A self-reporting questionnaire was used for assessment, and thus, bias like recall bias and self-observation bias could not be completely ruled out. Further multicentric studies with large sample size and qualitative assessments are required to identify the potential gaps in hand hygiene among the BNYS students

CONCLUSION

Hand hygiene is an important tool for prevention of hospital acquired infections. The overall knowledge and practice of hand hygiene was not good among study subjects and few numbers of students had attended formal training about hand hygiene in last three years. These findings indicate that the undergraduate BNYS students require increased emphasis on hand hygiene.

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