



Unique Journal of Medical and Dental Sciences

Available online: www.ujconline.net

Research Article

KNOWLEDGE, ATTITUDE AND PRACTICE OF HAND HYGIENE AMONG MEDICAL STUDENTS-A QUESTIONNAIRE BASED SURVEY

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Received: 16-06-2014; Revised: 14-07-2014; Accepted: 12-08-2014

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ABSTRACT

Priority on patient safety in hospitals by the government and accreditation agencies is on the rise. With World Health Organization (WHO) reporting an increase in health care associated infections, there is a need to assess the knowledge and practice of the upcoming generation of doctors in this issue of safe health care delivery.

Aim: To study the knowledge, attitude and practice of hand hygiene among the future health care providers (medical students).

Method: Four hundred and forty students were randomly selected from each year of MBBS course and surveyed with a pretested structured questionnaire. Collected data was analyzed for statistical significance through Chi-square test using Epi info 7 ($p < 0.05$).

Results: Ninety six students reported that they are aware of hand hygiene practices, but 3/4th of them said that they had no formal training on the same. 50% of them accepted that, hand hygiene practices before and after handling a patient will prevent health care associated infections. Although 94% agreed, 6% disagreed hand hygiene as an important preventive measure for cross infections. 95% of them washed their hands before and after their food intake. 70% of them used soap and water whereas only 6.36% used alcohol based agents. 1/4th of the students didn't have a habit of washing their hands after handling a patient. Girls differed from boys in their opinions on hand hygiene ($p < 0.001$), they practiced hand hygiene better than boys ($p < 0.02$). **Conclusion:** Lesser differences existed between students in the knowledge and attitude of hand hygiene practices, but in practice there was a difference. As the year of study advances, due to increasing knowledge and better attitude towards social responsibility, there is an increase in the practice of hand hygiene.

Keywords: Hand Hygiene, Cross Infections, Patient Safety.

INTRODUCTION

For generations, hand washing with soap and water has been considered a measure of personal hygiene¹. Hand hygiene is a general term that applies to either hand washing, antiseptic hand wash, antiseptic hand rub, or surgical hand antisepsis². WHO reports an overall estimate of about 1.4 million patients in developed and developing countries affected anytime by health care associated infections³. In the wake of the growing burden of health care associated infections, the increasing severity of illness and complexity of treatment, superimposed by multi-drug resistant pathogenic infections, health care practitioners are reversing back to the basics of infection preventions by simple measures like hand hygiene. This is because enough scientific evidence supports the observation that if properly implemented, hand hygiene alone can significantly reduce the risk of cross-transmission of infection in healthcare facilities⁴. In India, hand hygiene is

practiced as a custom and taught at school and community levels to reduce the burden of diseases, but there is a paucity of information on activities to promote hand hygiene in health care facilities⁵. As the "patient safety" is increasingly being prioritized by the government and private accreditation agencies, along with the increasing health seeking behaviour of the people in this developing country. Here in this study we are have assessed the knowledge, attitude and practices of hand hygiene among young medical undergraduates who are going to be the health care providers in the near future.

METHODS

Approval from the Institutional Ethics Committee {Human Studies} was obtained before starting this study.

Type of study: Descriptive cross sectional study,

Study area: Medical College campus

Study population: Students studying MBBS in I, II, III, and IV year in medical college.

Study period: 2 months

Sample size: Sample size of 385 was calculated assuming a prevalence of 50% for knowledge, attitudes and practices of hand hygiene and personal protective measures, 95% confidence interval and a sample error of 5% was pronounced. This was adjusted for 15% non-response rate; bringing the total sample size to 440.

Sampling method: Simple random sampling method. From each batch 110 students were randomly selected after assigning number to them by lot system.

Selection criteria: Students who volunteered themselves for the study were included, once they fit into the following,

Inclusion criteria:

1. Students who were in I, II, III, IV MBBS
2. Volunteers only
3. Students who are from our medical college campus only.

Exclusion criteria

1. Interns
2. Non-volunteers
3. Allied health students

Data collection procedures:

Randomly selected subjects were asked to report to the Research Lab, Department of Physiology at a particular time of a day (10.00 am -12.00pm). After a brief introduction about the scope of our study, general demographic data of them was collected. Complete procedures involved in the study was explained to them and the assurance of confidentiality of the data collected was given. Written Informed consent was obtained. Pre-structured questionnaire was used. Explanations were given if the subjects could not understand the items.

Instrument used: Structured questionnaire on, knowledge, attitude and practice of hand hygiene was used.

Quality control: Questionnaire was pretested for the quality. Principal investigator had made herself available for clarifications on the doubts raised by the subjects.

Confidentiality: All subject's identity were coded and stored safely. Subjects were assured of the confidence handling of their responses.

Analysis/Statistical tools : Data collected were tabulated and compiled in MS Excel. Data collected were grouped into, 1. data of the entire samples, 2. on the year of study 3. Gender difference. Statistical analysis was done using EPI Info ver.7.0 for statistical significance using Chi square test for trend, for a set value of $p < 0.05$.

RESULTS

Out of total 440 students, 175 were males and 265 were females. Mean age of the students was 19.8 ± 1.4 years and ranged between 17 to 25 years. Girls outnumbered boys in volunteering for this study (60.2%, 39.8%).

Table 1 explains the knowledge that the students possessed about the hand hygiene and the cross infections sources. 95.6% of the total subjects were aware of the existence of hand hygiene practice. Nearly 3/4th of the subjects reported that they have not received any formal training on hand hygiene in the campus. 48.63% of the total agreed that health care workers hands when not clean will become the main route of cross transmission of potentially harmful germs between patients in a health care facility. Very less, 4.77% had an opinion to

consider sharing non-invasive objects like sphygmomanometer, Stethoscope as the route of cross infection. 43.40% of them had said that the environment surrounding the hospital as the most frequent source of germs responsible for health care associated infections. Almost 50% of the respondents agreed that handhygiene actions before touching a patient will definitely prevent transmission of germs to them. 50% of the subjects reported that handhygiene practice after touching a patient will prevent transmission of germs to a health care worker.

Table 2 explains the attitude of the subjects towards the handhygiene. Majority of the students (94%) agreed that handhygiene as an important practice to prevent cross infections although 6% of them rejected this. One in ten rejected to accept that hand hygiene practices alone will prevent an individual from getting infection. 9 out of 10 accepted to educate their kith and kin to practice handhygiene. Half of the total reported that they didn't feel anything new and they felt it to be just a routine of hand washing. Although nearly 10 percent do this practice only when they are in the midst of their friends and 2% never cared for the practice of handhygiene.

Table 3 explains the different practices of hand hygiene prevailing among our study subjects. 95% of them washed their hands before and after their food intake. 70% of the total subjects were using soap and water whereas only 6.36% were using alcohol based agents. 1/4th of the total don't have the habit of washing their hands after handling each and every patient which denotes a setback in the practices of these budding health care givers which need to be addressed at the earliest to inculcate and make them follow the handhygiene practice. Nearly 50% of them use their hands to wipe the dust around them which is again showing their lack of knowledge on the possibilities of getting infection from the environment. 52% of the students don't use glove while handling patients, herein a small amount of students from the 1 & 2 years who do not have access to the patients in their curriculum would have responded this way which need not be neglected only on the basis of the percentage appearing. 90% of them used handkerchief to wipe out sweat and sneeze and 2% of them never even owned a handkerchief which should be addressed by educating them the importance of handhygiene and personal hygiene as such. A greater percentage of them never used common soaps in canteen and toilets. Table 4 explains the gender differences among the subjects in knowledge, attitude and practice of handhygiene. Chi square test revealed that there is no significant difference among males and females in having the awareness about handhygiene. There was a significant difference in the opinion given by the males and females on if hand hygiene practices prevent an individual from getting infections ($p < 0.001$). Girls practiced handhygiene significantly greater than boys ($p < 0.02$). Girls preferred to use handkerchiefs to wipe sweat and sneeze than boys ($p < 0.005$).

DISCUSSIONS

This study examined the knowledge, attitude and practices of hand hygiene procedure among the students of a medical

college who are going to be the health care givers in near future. Obtained results fulfilled our objectives in ways that we were able to understand the existing practices and the differences --- between the girls and boys and also across the year of study. Girls outnumbered boys in the practice of handhygiene similar to that found in other studies⁶. Hand washing causes a significant reduction in the carriage of potential pathogens on the hands⁷. The importance of correct hygiene behavior development at the early years of medical education will help them understand the importance of handhygiene as suggested by other authors⁸.

Very less students were not aware of the handhygiene practices which can be achieved to 100% just by conducting awareness programs every year by the Infection control committee in the medical college campus. If there is no curriculum set with hand hygiene concepts and skills, students might end up by developing faulty hand hygiene practices⁸. An existing lacunae in the medical curriculum with no special trainings, lectures on handhygiene practices is exposed, which again can be rectified through organizing special training classes or lectures. "Inclusion of regular theoretical education and practical demonstrations on hand hygiene from early on in the curriculum to prime the medical students to these basic health precautions before they take on clinical posts" will change the scenario as suggested by Mathur et al⁹.

Generally in all the three domains fourth year students were better than the previous 3 year of students which showed that when they advance in their medical schooling year, the knowledge they gain from different sources like the teachers, books, and thereby their adherence to such hand hygiene practices remains high. It is stressed from different authors for the handhygiene topic to be made as an educational priority¹⁰ and suggest that compliance be followed strictly as the menace of newly arising multi drug resistant microbes is high

CONCLUSION

Hand hygiene is an important practice to prevent transmission of infections. Awareness about handhygiene among the students is better. Attitude towards teaching hand hygiene practices for their kith and kin showed there social responsibility. Less male female differences existed in the knowledge and attitude of handhygiene except in the practice of it. As year advances in their medical schooling they bend towards greater knowledge, better attitude and good practice of handhygiene. Improved understanding of the emerging trend of multidrug resistant microbes and guidelines on hand

hygiene practices would definitely play a major role in preventing disease transmission when these students join the group of health care givers.

ACKNOWLEDGEMENTS

Authors thank Dr. K. N. Maruthy, Professor & Head, Narayana Medical College, Nellore for the technical support he has rendered to complete this study successfully.

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Table1: Knowledge of hand hygiene among medical college students (n=440).

Parameter	Frequency (Percent)
Aware of the hand hygiene practice	
Yes	421(95.68)
No	19(4.31)
Have you received any formal training in hand hygiene in the campus	
Yes	116(26.36)
No	324(73.63)
Main route of cross transmission of potentially harmful germs between patients in a health care facility	
Health care workers hands when not clean	214(48.63)

Air circulation in the hospital	63(14.31)
Patients exposure to colonized surfaces	142(32.27)
Sharing non-invasive objects	21(4.77)
Most frequent source of germs responsible for health care associated infections	
Hospitals water system	47(10.68)
Hospital air	91(20.68)
Germs already present on or within the patient	111(25.22)
Hospital environment	191(43.40)
Actions of handhygiene that prevents transmission of germs to the patients	
Before touching a patient	208(47.27)
Immediately after a risk of body fluid exposure	78(17.72)
After exposure to the immediate surroundings of a patient	77(17.5)
Immediately before a clean/aseptic procedure	77(17.5)
Actions of handhygiene that prevents transmission of germs to the health care worker,	
After touching a patient	217(49.31)
Immediately after a risk of body fluid exposure	101(22.95)
Immediately before a clean/aseptic procedure	64(14.54)
After exposure to the immediate surroundings of a patient	58(13.18)

Table 2: Attitude towards hand hygiene among medical college students (n=440).

Parameter	Frequency (Percent)
Handhygiene forms an important practice to prevent cross infections	
Yes	413(93.86)
No	27(6.13)
Handhygiene practices prevents an individual from getting infections	
Yes	407(92.5)
No	33(7.5)
Will educate their friends/kith/kin to practice handhygiene	
Yes	406(92.27)
No	34(7.72)
Feeling experienced whenever a handhygiene procedure is done,	
Habitual-feel it to be a routine	237(53.86)
Done only amidst the presence of friends/people	50(11.36)
Feel secure and safe from any infections	141(32.04)
Don't care for any hand hygiene	12(2.72)

Table 3: Practice of hand hygiene among medical college students (n=440)

Parameter	Frequency (Percent)
Habit of washing hands before and after food intake	
Yes	418(95)
No	22(5)
Choice of agent for handhygiene	
Water	77(17.5)
Soap & Water	311(70.68)
Alcohol	28(6.36)
Other antimicrobial and antifungal agents	24(5.45)
Own a separate soap for washing hands after toilet	
Yes	386(87.72)
No	54(12.27)
Habit of handwash after handling each and every patient?	
Yes	325(73.86)
No	115(26.13)
Own a separate hand towel	
Yes	319(72.5)
No	121(27.5)
Use glove while handling patients	

Yes	210(47.72)
No	230(52.27)
Use hands as an aid to wipe the dust around you	
Yes	194(44.09)
No	246(55.90)
Use handkerchief to wipe sweat and sneeze	
Yes	395(89.77)
No	45(10.22)
Frequency in changing handkerchief in a week	
Everyday	274(62.27)
Every alternate day	97(22.04)
Once in 3 days	37(8.40)
Once in a week	20(4.54)
I do not have one	12(2.72)
Use common soaps in canteen and common toilets	
Yes	152(34.54)
No	288(65.45)

Table 4: Gender differences among medical college students in knowledge, attitude and practice of handhygiene (males=175, females =265)(n=440).

Parameter	Frequency(percent)		Crude OR	CI	P value
	Males	Females			
Aware of the handhygiene practice					
Yes	168(96.0)	253(95.5)	1.13	0.43-2.95	1.00
No	7(4.0)	12(4.5)			
Most frequent source of germs responsible for health care					
Hospitals water system	22(12.6)	25(9.4)	1		0.78
Hospital air	30(17.1)	61(23.0)	0.56	0.27-1.14	
Germs present in the patient	49(28.0)	62(23.4)	0.89	0.45-1.78	
Hospital environment	74(42.3)	117(44.2)	0.71	0.37-1.36	
Handhygiene practices prevents an individual from getting infections					
Yes	153(87.4)	254(95.9)	0.30	0.14-0.63	0.001
No	22(12.6)	11(04.1)			
Habit of washing hands before and after food intake					
Yes	161(92.0)	257(97.0)	0.35	0.14-0.87	0.02
No	12(08.0)	8(03.0)			
Own a separate hand towel					
Yes	120(68.6)	199(75.1)	0.72	0.47-1.1	0.15
No	55(31.4)	66(24.9)			
Use handkerchief to wipe sweat and sneeze					
Yes	148(84.6)	247(93.2)	0.39	0.21-0.75	0.005
No	27(15.4)	18(6.8)			

Source of support: Nil, Conflict of interest: None Declared