Original article

Study on the compliance of hand decontamination practices among the health care workers at two Combined Military Hospitals.

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Abstract

To assess the compliance of hand decontamination practices among the health care workers of Combined Military Hospital BNS Patenga and CMH Tangail. Study was descriptive type of cross sectional study and conducted from November 2016 to September 2017 at BNS Patengaand November 2017 to September 2018 at CMH Savar with a sample size of 384 using a semi structured pretested questionnaire; method of data collection was face to face interview and FGD. In this study ratio of male: female was 1:3.2. More than one third (39.6%) of the respondents were upto SSC followed by Diploma / Graduate (25.5%). Among the respondents 67.7% were married with a ratio of married: unmarried was 1:2.07; 93,2% were muslim and rest were Hindu. Mean age were 32.40 years ± 7.366 SD, mean length of service was 11.51 years ± 7.155 SD. There was significant association between sex of the respondents and compliance of hand decontamination (p<,05), designation and compliance of handwashing (p<,05), education and hand decontamination (p<,05); 59.1% accepted own unclean hand as one of the source of infection while 35.7% respondents mentioned patient's hand a source. The source of information were teachers/ doctors -77.3%, hospital authority 16.7%, from colleagues 4.4%) and 1.6% from other sources. Majority of the respondents (82.6%) knew correct time for decontamination of hand (20 sec, P < 0.05). According to place of work decontaminate their hands properly as follows- Adult ward 5.7%, Paediatric ward 3.9, OT- 15.6%, OPD 6.3%, and only 13%. The failure of healthcare workers to decontaminate their hands reflects fundamentals of attitudes, beliefs, and behavior. Elementary hygiene practice should be taught and followed explicitly in medical institutes.

Key words: Health care workers, decontamination

Introduction

Hands are the highways to the transmission and spread of bacteria, pathogens, and viruses that cause diseases, food-borne illness, and infections resulting from hospital treatment (nosocomial). The link between poor hand hygiene of health care workers (HCWs) and the spread of infection in hospitals has been known and widely promulgated for the past 150 years, and a causal link between good hand hygiene and reduced risk of nosocomial infection has been demonstrated.[1] The concept of decontaminate hands with an antiseptic agent probably emerged in the early 19th century. As early as 1822, a French pharmacist demonstrated that solutions containing chlorides of lime or soda could eradicate the foul odors associated with human corpses and that such solutions could be used as disinfectants and antiseptics.[2]

In a paper published in 1825, this pharmacist stated that physicians and other persons attending patients with contagious diseases would benefit from moistening their hands with a liquid chloride solution.[3] Healthcare-associated pathogens are most often transmitted from patient to patient on the hands of healthcare workers. Decontamination of hands before and after patient contact is one of the most important measures for preventing the spread of microorganisms in healthcare settings.[2]

"Many personnel don't realize when they have germs on their hands".[4] Healthcare workers can get 100s to 1000s of bacteria on their hands by doing simple tasks like Pulling patients up in bed [5], Taking a blood pressure or pulse, touching a patient's hands, rolling patients over in bed, Touching the patient's gown or bed sheets, Touching equipment like bedside rails, over bed tables, IV pumps.

Material and methods

The study was a descriptive type of cross sectional one with a sample size of 384 to assess the hand decontamination practices among the health care workers of Combined Military Hospital Dhaka from The study period was from November 2016 to September 2017 at BNS Patengaand November 2017 to September 2018 at CMH Savar. Male and female HCWs were the respondents, the sample was collected by non-probability type of purposive sampling technique and data was collected by face to face interview using a pre-tested semi structured type of questionnaire and FGD. For Focus Group Discussions

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10 participants were selected as focus group both male and female amongst nusrse and Medical Assistants on voluntary basis. After cleaning and adjustment, the data was analyzed by using software SPSS version 18. For analyzing data some descriptive statistics was used. In order to find out association between dependent variable with of independent variables, chi square tests were done. Data was presented in the form of appropriate tables, graphs and charts.

Results

Study was descriptive type and conducted at CMH Dhaka from February 2011 to June 2011 and respondents were 384(n=384) heath care professionals. The study reveals that out of 384 respondents 259(67.7%) were married and 125(32.3%) were unmarried, so the ratio between married: unmarried was 1:2.07. This figure reveals that out of 384 respondents 358(93, 2%) were muslim and 26(6.8%) were hindu in religion, so the ratio between muslim and hindu was 1:13.7. The study also reveals that according to place of work respondents were from ICU-72(18.8%), Adult ward-70(18.2%), Paediatric Ward-49(12.8%), OT-77(20.1%), OPD- 66(17.2%), Labour Ward- 50(13%). The Mean age of respondents were 32.40 years, mean length of service was 11.51 years. Median age 32 years and median length of service 11 years. SD of age was 7.366 and SD of length of service was 7.155.

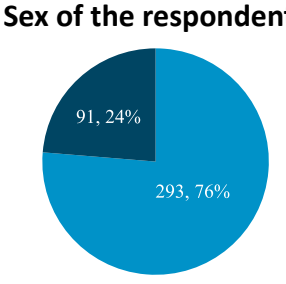

Figure 1: Figure showing distribution of respondents by sex

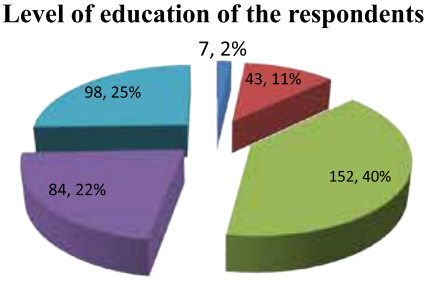

Figure 2: Figure showing distribution of respondents educational status

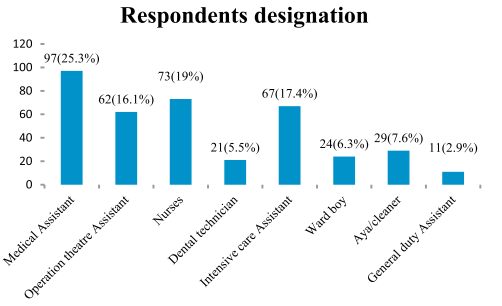

Figure 3: Figure showing distribution of respondents designation

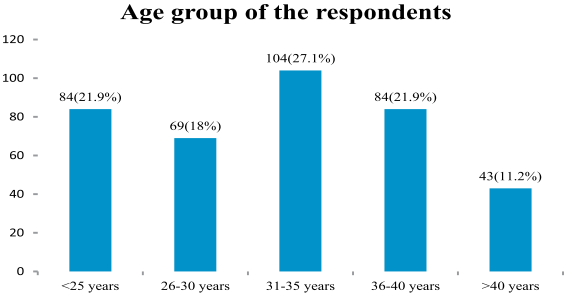

Figure 7: Figure showing distribution of respondents as per age group

Table No : Distribution of respondents according to source of information

Source of knowledge		
	Frequency	**Percent**
From teacher/ doctors	297	77.3
From hospital authority	64	16.7
From colleagues	17	4.4
Others	6	1.6
Total	**384**	**100.0**

Knowledge about requirement of time		
	Frequency	**Percent**
20 sec	317	82.6
10 sec	33	8.6
don't know	34	8.9
Total	**384**	**100.0**

Table 8. Distribution of respondents by compliance of hand decontamination and availability of selected decontamination materials.

Variables	Compliance of hand decontamination		Total	P value
	Yes (123) **(31.8%)**	No (267) **(68.2%)**	**n= 390 (100%)**	
Availability of soap				
Yes	121(31.5%)	236(61.5%)	357(93%)	**.001**
No	1(.3%)	26(6.8%)	27(7%)	
Total	**122(31.8%)**	**262(68.2%)**	**384(100%)**	
Availability of alcohol mixed subsatnce				
Yes	58(15.1%)	81(21.1%)	139(36.2%)	
No	64(16.7%)	181(47.1%)	245(63.8%)	**.001**
Total	**122(31.8%)**	**262(68.2%)**	**384(100%)**	
Availability of water				
Yes	122(31.8%)	262(68.2%)	384(100%)	-
No	0	0	0	-
Total	**122(31.8%)**	**262(68.2%)**	**384(100%)**	
Availability of facilities				
Yes	122(31.8%)	261(68%)	383(99.7%)	**.682**
No	0	1(.3%)	1(.3%)	
Total	**122(31.8%)**	**262(68.2%)**	**384(100%)**	
Distance of available facilities				
within 10 metres	70(18.2%)	104(27.1%)	174(45.3%)	
11-20 meters	52(13.5%)	119(31%)	171(44.5%)	**.001**
More then 20 metres	0	39(10.2%)	39(10.2%)	
Total	**122(31.8%)**	**262(68.2%)**	**384(100%)**	

Table 7. Distribution of respondents by compliance of hand decontamination and selected other compliance related factors

Variables	Compliance of hand decontamination		Total	P value
	Yes(122) **(31.8%)**	No(262) **(68.2%)**	**n= 384 (100%)**	
Cause of not following decontamination practices				
Because of lack of knowledge	4(1.4%)	1(.4%)	5(1.8%)	
Because of time constraints	6(2.2%)	121(43.8%)	127(46%)	
Because of lack of facilities	0	10(3.6%)	10(3.6%)	
Because of irritation or dryness of hands	4(1.4%)	0	4(1.4%)	**.002**
facilities are inconveniently located	0	24(8.7%)	24(8.7%)	
Beliefs that use of gloves obviates the use of hand hygiene	0	106(38.4%)	106(38.4%)	
Total	**122(31.8%)**	**262(68.2%)**	**384(100%)**	
Number of times practices hands decontamination				
Not a single time	1(.3%)	7(1.8%)	8(2.1%)	
1-3 times	26(6.8%)	72(18.8%)	98(25.5%)	
4-6 times	80(20.8%)	163(42.4%)	243(63.3%)	**.191**
More than 11 times	15(3.9%)	20(5.2%)	35(9.1%)	
Total	**122(31.8%)**	**262(68.2%)**	**384(100%)**	
Hand wash practice before taking meal				
Yes	122(31.8%)	259(67.4%)	381(99.2%)	**.316**
No	0	3(.8%)	3(.8%)	
Total	**122(31.8%)**	**262(68.2%)**	**384(100%)**	
Availability of facilities				
Yes	122(31.8%)	261(68%)	383(99.7%)	
No	0	1(.3%)	9(.3%)	**.682**
Total	**122(31.8%)**	**262(68.2%)**	**384(100%)**	
Distance from facilities				
within 10 metres	70(18.2%)	104(27.1%)	174(45.3%)	
11-20 meters	52(13.5%)	119(31%)	171(44.5%)	**.001**
More then 20 metres	0	39(10.2%)	39(10.2%)	
Total	**122(31.8%)**	**262(68.2%)**	**384(100%)**	

Table 3. Distribution of respondents by compliance of hand decontamination and selected socio demographic factors

Variables	Compliance of hand Decontamination		Total	P value
	Yes(122) **(31.8%)**	No(262) **(68.2%)**	**n= 384(100%)**	
Sex				
Male	106(27.6%)	187(48.7%)	293(76.3%)	**.001**
Female	16(4.2%)	75(19.5%)	91(23.7%)	
Total	**122(31.8%)**	**262(68.2%)**	**384(100%)**	
Designation				
Medical assistant	33(8.6%)	64(16.7%)	97(25.3%)	**.002**
Operation theatre assistant	54(14.1%)	8(2.1%)	62(16.1%)	
Nurse	16(4.2%)	57(14.8%)	73(19.0%)	
Dental technician	17(4.4%)	4(1%)	21(5.5%)	
Intensive care assistant	2(.5%)	65(16.9%)	67(17.4%)	
Ward boy	0(0%)	24(6.3%)	24(6.3%)	
Aya/ cleaner	0(0%)	29(7.6%)	29(7.6%)	
General duty assisstant	0(0%)	11(2.9%)	11(2.9%)	
Total	**122(31.8%)**	**262(68.2%)**	**384(100%)**	
Education				
Illiterate	0(0%)	7(1.8%)	7(1.8%)	**.011**
upto class 8	0(0%)	43(11.2%)	43(11.2%)	
upto SSC	51(13.3%)	101(26.3%)	152(39.6%)	
HSC	47(12.2%)	37(9.6%)	84(21.9%)	
Diploma/ graduate/ Masters	24(6.3%)	74(19.3%)	98(25.5%)	
Total	**122(31.8%)**	**262(68.2%)**	**384(100%)**	
Work Place				
ICU	0(0%)	72(18.8%)	72(18.8%)	**.005**
Adult ward	22(5.7%)	48(12.5%)	70(18.2%)	
Paediatric ward	15(3.9%)	34(8.9%)	49(12.8%)	
OT	60(15.6%)	17(4.4%)	77(20.1%)	
OPD	24(6.3%)	42(10.9%)	66(17.2%)	
Labor ward	1(.3%)	49(12.8%)	50(13%)	
Total	**122(31.8%)**	**262(68.2%)**	**384(100%)**	

Focus Group Discussions

The Focus Group Discussion took place at CMH Dhaka in observation and interviewing methods, contributing to subsequent modifications of the interview guide/ questionnaire used. A total of 10 health workers including nurses, Medical assistants working in CMH Dhaka; Participants joined the study on a voluntary basis. An important strength of this Focus Group Discussion is its participatory design which has served to engage hospital-based health workers from all levels of service in problem solving activities and processes. This study was iterative and dynamic, rather than linear and static. Thus, to formulate policy for CMH representing stakeholders who are inclined to take it upon themselves to raise the standards of quality of health care as they develop a stronger knowledge base of infection prevention and the necessary skills to implement agreed procedures is a logical outcome of the study.

Discussion

Hand decontamination is a simple and effective means of preventing the spread of infection abound. There was significant association. (p<,05) between sex of the respondents and compliance of hand decontamination, compliance is more amongst male HCWs. No other study findings were found on this variable to compare with these findings.

It was also evident that respondents who were educated had compliance level of hand decontamination had significant association (p<,05). The relationship between designation and compliance of hand decontamination was found to be significantly associated (p<.05). No other study findings were found on this variable to compare with these findings. Significant association was found between work place and compliance on hand decontamination (p<.05). Compliance level at operation theatre was highest which is expected, low at adult wards, OPD, and pediatric ward but lowest in ICU and labor wards which is alarming. No other study findings were found on this variable to compare with these findings.

Age distribution was even - difference between mean and median is very narrow. SD of age was 7.366 and SD of length of service was 7.155. This SD was due to inclusions of some extreme age persons. Minimum age of respondents was 20 and maximum was 58. Minimum service length was 1 and maximum was 30 years. No other study findings were found on this variable to compare with these findings. There was significant association between knowledge about need of hand decontamination of the respondents and compliance of hand decontamination (p<,05). It shows that majority of respondents have adequate knowledge on requirement of hand decontamination. No other study findings were found on this variable to compare with these findings. The relationship between knowledge about wash materials soap and water, alcohol mixed substance, water and

compliance of hand decontamination was found to be significantly associated (p<,05). So knowledge levels on materials have direct influence on compliance. No other study findings were found on this variable to compare with these findings.

The respondents replied that they have learnt about hand decontamination and hospital infection from teachers/ doctors- 77.3%, from hospital authority 16.7%, from collegues 4.4% and 1.6% from other sources. There was significant association between source of knowledge of hand decontamination of the respondents and compliance of hand decontamination (p<.05). It is evident that during training or courses teachers gave proper guidance about hand decontamination, on the other hand hospital authority also tries to motivate for proper compliance. No other study findings were found on this variable to compare with these findings.

Majority of the respondents 82.6% opined correctly that time required to decontaminate hand was 20 Sec, 8.6% replied 10 second is enough and 8.9% respondents told they donot have any knowledge about the time required to decontaminate hand. $P < 0.05$. So, association between knowledge related to requirement of time for decontamination and compliance of hand decontamination is significant. Majority of respondents have proper knowledge about time required for decontamination. No other study findings were found on this variable to compare with these findings.

Hand washing compliance of health care workers in the Intensive Care Unit of CMH Dhaka is poor compared to other places of the hospital. Compliance was lower among nurses than other health care personnel, Patients in intensive care units are at greater risk of nosocomial infection than those elsewhere in hospitals since they are already critically ill, are subject to multiple hand contacts from a wide variety of staff have indwelling invasive therapeutic and monitoring devices, and often receive broad-spectrum antimicrobial therapy. $P<0.05$. So, association between cause of not following decontamination and compliance of hand decontamination is significant.

About number of times of decontamination during each shift of duty which comprises of 8 hours long, 63.3% told they wash 4-6 times, 25.5% respondents wash 1-3 times, 9.1% more than 11 times and 2.1% don't decontaminate even a single times in a shift of duty. There was no significant association between number of times practices hands decontamination and compliance of hand decontamination (p> .05).

In a study[6] by Pittet D, Mourouga P, Perneger TV, Members of the Infection Control Program. Compliance with handwashing in a teaching hospital it was found that noncompliance level is lowest amongst nurses, In another observational studies conducted in hospitals, HCWs washed their hands an average of five times per shift to as many as 30 times per shift [7-9] certain nurses washed their hands ≤100 times per shift.[10]

In our study compliance found much lower amongst intensive care assistants because of wrong conception about use of gloves which caused deviation in the result. The highest adherence rate (59%) was observed in pediatrics wards, where the average intensity of patient care was lower than in other hospital areas (an average of eight opportunities per patient-hour).[11-13]

In our case highest compliance rate was found in OT(20.1%) and then OPD(17.2%), labor ward (13%), paediatric ward(12.8%).

During FGD it was revealed that perceived lack of time, lack of motivation and negligence are major causes of non-compliance. Participants suggested that regular and sufficient supplies of protective materials including cleaning agents, liquid soap, facilitative supervision and follow-up, campaign on keeping hands safe, ingredients of success in implementing prevention of hospital acquired infection, motivation and development of consciousness amongst patients and attendants, provision of alcohol-based hand rub at point of patient care, giving incentives to staff and leaders, involvement of patients, attendants and visitors in the hand hygiene aspect of their care, promotion of collateral material to market the campaign and maintain the interest of target groups in the campaign messages in talking walls — staff posters, hand hygiene technique poster, patient/visitor targeted posters, patient/visitor brochures, stickers, T-shirts with campaign logo and balloons with campaign logo can accelerate the effect of campaign.

Conclusion and Recommendations

The failure of healthcare workers to decontaminate their hands reflects fundamentals of attitudes, beliefs, and behaviour, and there are no simple solutions. Attempts should be made to improve hand washing compliance through education, and indeed elementary hygiene practice should be taught explicitly in medical institutes.

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