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To Evaluate the Hand Hygiene Practices among Health-Care Workers Visiting Intensive Care Unit of a Tertiary Care Hospital: An Observational Study

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Abstract: ***Introduction: Hands are the main pathways of germ transmission during health care. Hand hygiene is therefore the most important measure to avoid the transmission of harmful germs and prevent health care-associated infections. Methods: We observed 120 heath care workers in medical icu of a tertiary care hospital for compliance of hand hygiene technique, majority were postgraduates. Physicians, nurses and interns were also included. We initially observed for compliance of hand hygiene and conducted a seminar on hand hygiene technique with video and live demonstration following they were reassessed again for compliance of hand hygiene technique. Results: Our initial results showed 60.8% of compliance which increased to 68.3% after educational program. The effective hand washing was found in 57.5% of participants initially and in 65.8% after seminar. 65% participants used hand rub initially which increased to 70% in second assessment. On individual assessment showed that compliance among physicians was 82% in the first part increased to 89% after conducting seminar, among postgraduates before it was 55% and after educational program it was 67%, among interns it remained same (20%) before as well as after seminar. Among nurses the compliance was 75% initially and increased to 81 % after conducting educational program on hand hygiene technique. Conclusion: Hence to conclude there is need for more such educational programs to achieve better compliance for hand wash hygiene which eventually prevent health care associated infections.***

Keywords:

1. Introduction

Thousands of people die every day around the world from infections acquired while receiving health care.Hands are the main pathways of germ transmission during health care. Hand hygiene is therefore the most important measure to avoid the transmission of harmful germs and prevent health care-associated infections.

Hand hygiene is defined as any action of hygienic hand antisepsis in order to reduce transient microbial flora. Generally performed either by hand rubbing with an alcohol-based formulation or hand washing with plain or antimicrobial soap and water.

Hand hygiene should be maintained by any health care worker, caregiver or a person involved in direct or indirect patient care.

2. Aims and Objectives

The aim of this study is to evaluate the compliance of hand-hygiene among health-care professionals visiting the ICU in the Yenepoya medical college Hospital. Through this study we assessed the knowledge among health care workers regarding hand hygiene technique through questionnaire which is prepared by WHO and the compliance of Hand Hygiene Technique among them. We conducted a seminar on the importance and the techniques of hand hygiene with live demonstration and practice following which we reassessed the compliance among the health care workers.

3. Materials and Methods

Health care professionals visiting the ICU of Yenepoya Medical College participated in this study. They were

a) Physicians,
b) Postgraduates,
c) Interns,
d) Nursing staff

All of them were given a questionnaire prepared by WHO, which helped us to assess the knowledge regarding hand hygiene technique. WHO permission has been obtained for usage of Hand Hygiene Knowledge questionnaire for health care workers and usage of Observation form. Written and informed consent was obtained from all the participants of this study

Then the above mentioned health care workers who enter the medical ICU were observed by a single person for a period of 1 week. They were observed for following components

- Hand wash done or not
- If done; then is it with i. Soap and water, ii. Water only, iii. Hand rub, iv. Glove used without hand wash
- If done; then is it done effectively or not? The effectiveness was assessed by observer as per WHO guidelines
- If done; at which moment is it done? Five moments of hand washing were taken into consideration in this study and are 1. Before touching the patient, 2.Before clean/aseptic procedure, 3. After body fluid exposure risk, 4. After touching patient, 5. After touching patient's surroundings

The health care workers were observed for 1 week duration

Then there was a seminar on hand hygiene technique and WHO guidelines for all the health care workers to educate them regarding the methodology of hand hygiene technique. It was a 30 minutes seminar (power point presentation) on hand washing technique along with video demonstration followed by real demonstration.

Following which again they were observed for 1 week duration by the same observer in all the above mentioned aspects of hand wash technique. Health-care professionals hand hygiene practices were compared with the WHO effective hand hygiene guidelines.

4. Results

The data obtained has been tabulated below. Part 1 is the observations made following questionnaire and consent and Part 2 of the data was after conducting the education program including videos, live demonstration and practice.

Table 1: Comparison of observations

		Part 1		Part 2	
		No. of persons	%	No. of persons	%
Distribution of Health Care Workers	Physicians	28	23		
	Post Graduates	40	33		
	Interns	20	17		
	Nurses	32	27		
	Total	120	100		
Gender Distribution	Male	79	66		
	Female	41	34		
	Total	120	100		
Hand Wash Done	Yes	73	60.8	82	68.3
	No	47	39.2	38	31.7
	Total	120	100	120	100
Effective Hand Wash Technique Used	Yes	42	57.5	54	65.8
	No	31	42.5	28	34.2
	Total	73	100	82	100
Method Used	Water only	0	0	0	0
	Soap & Water	5	7	5	6
	Hand Rub	48	65	57	70
	Glove	20	28	20	24
	Total	73	100	82	100
Physicians	Observed	28	100	28	100
	Done	23	55	25	89
	Not Done	5	45	3	11
Post Graduates	Observed	40	100	40	100
	Done	22	55	27	67
	Not Done	18	45	13	33
Interns	Observed	20	100	20	100
	Done	4	20	4	20
	Not Done	16	80	16	80
Nurses	Observed	32	100	32	100
	Done	24	75	26	81
	Not Done	8	25	6	19

Our initial results showed that 73 out of 120 have washed their hands with compliance of 60.8%, 47 participants (39.2%) did not wash their hands. Among the people who washed their hands, only 42 people (57.5%) washed effectively and 31 participants (42.5%) did not. 48 participants (65%) washed with hand rub and 20 (28%) used glove and 5 people (7%) used soap and water.

On individual assessment we found that 23 physicians out of 28 washed hands with compliance of 82% and 10 before touching a patient and 20 after touching a patient. After patient surrounding 14, after body fluid exposure risk 11 and before aseptic procedure were 6.

Among 40 postgraduates 22 washed their hands with compliance of 55% and 6 were before touching a patient and 17 were after touching a patient. After patient surrounding were 6, after body fluid exposure risk were 7 and before aseptic procedure were 9 participants.

Among 20 interns 4 participants washed their hands with compliance of 20%, before patient 2, after patient 4, after patient surrounding 2, after body fluid exposure risk 2 and before aseptic procedure were 2 participants.

Among 32 nurses 24 washed their hands with compliance of 75%, before patient were 14, after patient were 9, after patient surrounding were 10, after body fluid exposure risk were 12, before aseptic procedure 21

After education program to all the health care workers, reassessment was done and it showed minimal increase in the total number of people who washed their hands i.e. 82 (68.3%), effective hand washing was done by 54 participants (65.8%). 57 participants used hand rub (70%).

Table 2: Comparison of moments of hand washing observed

	PART 1				PART 2			
Moments observed	Physicians	PGs	Interns	Nurses	Physiscians	PGs	Interns	Nurses
Before touching patient	10	6	2	14	18	18	3	16
After touching patient	20	17	4	9	20	22	4	12
After patient surrounding	14	6	2	10	16	16	2	14
After body fluid exposure	11	7	2	12	11	12	2	12
Before aseptic procedure	6	9	2	21	6	14	2	21
No. of participants Observed	23	22	4	24	25	27	4	26

5. Discussion

Our study was an observational study, which was done in Yenepoya medical college, 4 categories of health care workers were observed, viz: Physicians, Postgraduates, Interns and Nurses. Informed and written consent was obtained from all the participants, after ethical committee clearance health care workers were observed by a single person for their compliance of hand hygiene technique.

In our study 120 participants were selected, among them 79 were males and 41 were females, majority were postgraduates. Initially they were given a hand hygiene questionnaire for assessment of knowledge about hand hygiene technique. They were observed for compliance of

hand hygiene technique inside the medical ICU and they were also observed for effectiveness of hand washing and moments of hand washing. After which there was a powerpoint seminar presentation for all the health care workers on WHO technique of hand wash hygiene along with video demonstration and followed by live demonstration. Again they were assessed regarding hand hygiene compliance.

Basurrah MM and Madani TA (1) studied the handwashing and gloving practices among the consultants, residents, nurses, interns and medical students attending the medical and surgical wards of a 1250 ward hospital in Riyadh and observed that only 6.7% of the study population washed hands before patient contact and 23.7% of them washed hands after patient contact. Adherence to hand washing was 70% among medical students, 69.2% among interns, 18.8% among nurses, 12.5% among residents and 9.1% among consultants.

Novoa AM and colleagues in 2005 (2) evaluated the hand hygiene adherence in a tertiary hospital. 1254 opportunities of hand hygiene were observed in 247 health-care workers. Compliance varied according to the hospital area, 69% in the ICU and compliance after patient contact was twice as that before patient contact.

Randle J and colleagues (3) observed hand hygiene compliance among health-care workers, patients and visitors over a period of 24 hours using 'five moments of hand hygiene' observationtool. A total of 823 hand hygiene opportunities were monitored. Compliance was 47% among doctors, 75% among nurses, 78% among allied health professionals. The compliance among patients and visitors was 56% and 57% respectively. Hand hygiene compliance varied depending on which of the five moments of hygiene health-care workers had undertaken with compliance rates of 100% before an aseptic task, 93% after body fluid exposure, 68% before patient contact, 80% after patient contact and 50% after contact with patient's surroundings. Lower levels of compliance were observed during early shifts.

Creedon SA (4) studied healthcare workers' hand decontamination practices. It was observed that the hand hygiene compliance was 53% among healthcare workers, which improved to 83% after implementation of multifaceted interventional behavioral hand hygiene program.

Patarakul K and colleagues (5) conducted a survey of hand-hygiene compliance and attitudes of health-care workers and visitors in the intensive care units of King Chulalongkorn Memorial Hospital. It was observed that the overall hand-hygiene compliance was less than 50%.

On individual assessment, compliance among physicians was 89%, among post graduates was 67%, among interns was 20% and among nurses 81%. However interns did not show any improvement in the number of hand washes or the hand washing techniques.

There was an improvement of 7.5 % in the no. of participants washing hands and 8.3% in the percentage of effective hand washes. To conclude we observed that there was minimal increase in the number of participants compliance for hand wash technique after education program hence such programs should be conducted at regular intervals for better compliance results therefore reducing the transmission of harmful germs and prevent healthcare associated infections.

Strength of our study was we included major category of health care workers and limitations of our study was that we did not include visitors and class 4 workers who come in contact with patient.

6. Conclusion

Hands are the main pathway of transmission of germs, thousands of people die every day around the world from infections acquired while receiving health care. Our study was a descriptive study 120 health care workers participated, viz: physicians, postgraduates, nurses and interns. They were observed by a single person in medical ICU and compliance was noted and after which educational program on hand hygiene technique was conducted to all the health care workers and they were reassessed. There was no satisfactory compliance among health care workers and there was a minimal increase in compliance for hand hygiene technique among health care workers indicating that requirement of more such educational programs which will potentially helpful in reducing health care associated infections.Hence heath care workers need more such educational programs conducted at regular intervals for better compliance of hand hygiene technique which reduces the transmission of health care associated infections.

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