
Research Article

A cross-sectional study regarding Knowledge, Attitude and Practice of hand washing among health care providers in a Tertiary Care Hospital of Tripura.

Dr. Tamal Chakraborty¹, Dr. Nabarun Karmakar², Dr. Kaushik Nag³, Dr. Anjan Datta⁴, Prabir Kumar Saha⁵, Chinmoy Biswas⁶

¹ASSISTANT PROFESSOR, Department of Community Medicine, & RMO (Residential Medical Officer), Tripura Medical College & Dr. BRAM Teaching Hospital, Hapania, P.O. – ONGC, Agartala, Tripura -799014, INDIA.

²ASSISTANT PROFESSOR, Department of Community Medicine, Tripura Medical College & Dr. BRAM Teaching Hospital, Hapania, P.O. – ONGC, Agartala, Tripura -799014, INDIA.

³ASSISTANT PROFESSOR, Department of Community Medicine, Tripura Medical College & Dr. BRAM Teaching Hospital, Hapania, P.O. – ONGC, Agartala, Tripura -799014, INDIA.

⁴ASSISTANT PROFESSOR, Department of Community Medicine, Tripura Medical College & Dr. BRAM Teaching Hospital, Hapania, P.O. – ONGC, Agartala, Tripura -799014, INDIA.

⁵ PROFESSOR, Department of ENT, & Medical Superintendent cum Vice-Principal, Tripura Medical College & Dr. BRAM Teaching Hospital, Hapania, P.O. – ONGC, Agartala, Tripura -799014, INDIA.

⁶PROFESSOR & Principal, Tripura Medical College & Dr. BRAM Teaching Hospital, Hapania, P.O. – ONGC, Agartala, Tripura -799014, INDIA.

Corresponding Author: Dr. Nabarun Karmakar

ASSISTANT PROFESSOR, Department of Community Medicine, Tripura Medical College & Dr. BRAM Teaching Hospital, Hapania, P.O. – ONGC, Agartala, Tripura -799014, INDIA.

Abstract: Introduction:- Infection prevention and control is an integral component of health care delivery in any setting to reduce risks for morbidity and mortality in patients and care givers at all levels. The practice of hand hygiene by health care workers, through the use of either soap and water or an alcohol-based hand sanitizer, is widely considered to be the most important and effective means of preventing health care – associated infections.

Objective: To assess knowledge, attitude and practices of health care providers regarding hand washing.

Materials and methods:-An institutional based cross sectional study was carried out in outdoor patient, indoor ward among 193 health care providers (doctors, nursing staffs, OT assistants, laboratory technicians, ward boys and ward girls) in a Tertiary Care Hospital of Tripura from September – October 2017. A pre-tested questionnaire was used as study tool to collect information on knowledge, attitude and practices about hand washing.

Result:- Majority (73.6%) of the populations was among 18-25 years age group with a female predominance (70.5% females) and most of them were Hindu (94.5%). Most of them (97.5%) know about the importance of hand washing. Around (48.3%) wash hand with soap followed by liquid hand wash (44%) that showed (91%) washed hands with soap and water.

Conclusion:-The current study revealed the knowledge, attitude and absence of sufficient practice of hand washing among health care providers. Future studies in this context are recommended to further determine the factors responsible for these lacunae. Also there is a need to educate the health care workers about hand washing practices and to periodically train them about the six steps of hand washing.

Key words:- Cross Infection, Hand Hygiene, Laboratory Personnel, Nursing Staff, Tertiary Care Centers.

INTRODUCTION:

The practice of hand hygiene by health care workers, through the use of either soap and water or an alcohol-based hand sanitizer, is widely considered to be the most important and effective means of preventing health care-associated

infections. Although numerous studies have demonstrated that hand hygiene reduces health care-associated infection rates, adherence to hand hygiene guidelines remains uniformly low among health care workers¹. According to WHO, the prevalence of these nosocomial infections, is as high as 19%,

in developing countries posing a challenge to health care providers². Infection prevention and control is an integral component of health care delivery in any setting to reduce risks for morbidity and mortality in patients and care givers at all levels. Basic principles of infection prevention are simple and include personal hygiene and standard universal safety precaution³. Hand washing is a process for the removal of soil and transient microorganisms from the hands using soap and water. Hand antiseptics is a process for the removal or destruction of resident and transient microorganisms on the hands using an antiseptic agent, either by rubbing hands with alcohol-based hand rub or hand washing with an antiseptic soap. Hand antiseptics has also been referred to as antiseptic hand wash, antiseptic hand-rubbing, hand decontamination and hand disinfection. Adherence to hand hygiene recommendations is the single most important practice for preventing the transmission of microorganisms in health care, and directly contributes to patient safety. A report suggested that the incidence of hospital-acquired infection in the United Kingdom could potentially be reduced by 15% if hand hygiene recommendations were followed⁴. In critical care areas such as the intensive care unit, an alcohol hand rub should be available at the bedside of each patient to facilitate compliance with hand hygiene recommendations. Hand hygiene education must be a mandatory component of all clinical courses and induction programs. Finally, audit of compliance with hand hygiene guidelines should be a component of the overall infection control program in each institution and the results fed back to relevant individuals in the institution⁵. The current study aims at accessing the knowledge, attitude and practices of hand washing among health care providers in a tertiary care hospital setting. This can significantly reduce not only morbidity and mortality of susceptible patients but also can reduce the chances of contracting the nosocomial infection.

MATERIALS AND METHODOLOGY:

An institutional based cross sectional study was carried out among health care personnel (doctors, nursing staffs, Operation Theater assistants, Laboratory technicians, Ward boys and Ward girls) of Tripura Medical College & DR. BRAM Teaching Hospital, Hapania. This was done for a period of two months during the month of September to October 2017 among 193 health care personnel.

Sample size: A total sample size of 178 was calculated by using the formula of $N = \frac{4pq}{l^2}$ (N = minimum required sample size, p = prevalence, q = 1 - p, l = relative precision) where p = 90%⁶ and taking l as 5% of p (prevalence) and finally 193 participants were included in the study taking 10% as non-response rate.

Sample Random sampling technique was used to include study participants from all section of health care providers of Tripura Medical College & DR. BRAM Teaching Hospital, Hapania.

A predesigned, pretested, semi structured questionnaire was used to collect the required information. A well explained

written informed consent, translated into local language (Bengali, for those who don't understand English) was taken from the participants before commencement of the study. Health care providers who gave their consent to participate in the study and those who were available on the day of data collection were included. After data collection each day, data was entered and analyzed in SPSS version 16.0 computer software and represented in frequency and percentage in the form of tables.

Qualitative information collection:

Qualitative information to explore healthcare provider's knowledge, attitude and practices regarding hand washing was accomplished by FGDs (focus group discussion) among selected healthcare providers till point of exhaustion. They gave their opinion regarding issues pertaining to the theme.

Ethical permission to conduct the study was obtained from Institutional Ethics Committee of Tripura Medical College and Dr. BRAM Teaching Hospital before conducting the actual study.

Results:

The study revealed that, majority of the participants were of 18 to 25 years age group (73.6 %), female (70.5%). Most of them (94.5%) were Hindu, 2.6% Christian. Majority (44.6%) were higher secondary pass followed by 32.6% Graduate. Majority of the health care providers we have interviewed were from nursing backgrounds, i.e, 35.2% nursing staffs and 31.6% nursing students (trainees) followed by doctors (13%), laboratory technicians and ward boy/girls (6.2% each). 20.7% of them had a working experience of more than 2 years in this tertiary care settings (Table No.1).

Table no- 1: Distribution of the study participants according to Socio-demographic profile:

(n=193)

Socio-demographic profile	Frequency (n)	Percentage (%)
Age (in years)		
18 to 25	142	73.6
26 to 33	36	18.7
34 to 41	9	4.6
42 to 50	6	3.1
Gender		
Male	57	29.5
Female	136	70.5
Religion		
Hindu	183	94.5
Muslim	2	1.0
Christian	5	2.6
Buddhist	3	1.9
Education of respondents		
Upto Pre Primary	1	0.5
Upto Primary Education	4	2.1
Secondary Education	2	1.0
Higher Secondary Education (12 th Pass)	86	44.6
Graduate	63	32.6

Post Graduate	1	0.5
Occupation		
Doctors	25	13.0
Nurses	68	35.2
Lab technicians	12	6.2
OT assistants	8	4.2
Ward boy/ girls	12	6.2
Sweepers	7	3.6
Nursing students	61	31.6
Working since		
Less than 1 month	12	6.2
1 month to 6 month	16	8.3
6 month to 1 year	10	5.2
1 year to 2 year	19	9.8
More than 2 years	40	20.7

Table No. 2:- Distribution of the health care providers according to their knowledge of hand-washing: 3)

Knowledge of Hand Washing	Frequency (n)	Percentage (%)
Know about importance of hand washing		
Yes	188	97.5
No	1	0.5
Don't know / No response	4	2.0
Know about Different Methods of proper hand washing		
Rubbing with soap and water	129	67.2
Only with water	10	5.2
Use of Sanitizer	32	16.6
Use of Alcohol	4	2.1
Rubbing hands by clothes	4	2.1
Do not know / No response	13	7.8
Know about six steps of hand washing		
Yes	162	84.0
No	13	6.7
Don't know / No response	18	9.3
Source of information about six steps of hand washing		
Training programs	69	43.1
Books	47	29.4
Watching colleagues	21	13.1
Mass media	9	5.6
Workshop	4	2.5
Articles	1	0.7
Others (Hospital Authority)	9	5.6

Table No. 2 showed the knowledge about hand washing among health care providers where nearly all (97.5%) of them knew about importance of hand washing. Majority of the study participant (67.2%) told, **rubbing with soap and water was one of the important methods of hand washing followed by use of sanitizer (16.6%), surprisingly 7.8% did not know about methods of proper hand washing.** Among study participants, most of them (84%) knew about the six steps of hand washing and acquired this knowledge of six steps of hand washing mainly from training programs (43.1%) followed by **books (29.4%)**, watching co-workers (13.1%).

Regarding attitude about hand washing, 97.9% agreed that hand washing was important for maintaining health & hygiene and **78% of them** believed that hand washing should be done to prevent infection and **18.4% felt it was essential** to maintain hygiene. Out of all the participants, 97.4 % believed that hand washing is important for patient care in their institution. [Table no. 3]

Table No. 3:- Distribution of the study participants according to their attitude about hand washing:(n=193)

Attitude about hand washing	Frequency (n)	Percentage (%)
Hand washing is important		
Agree	189	97.9
Disagree	3	1.6
Neutral / No response	1	0.5
Need of hand washing		
Prevent infection	148	78.0
Remove dirt	6	3.1
Maintain hygiene	35	18.4
Don't know	1	0.5
Hand washing is important in patient care		
Agree	188	97.4
Disagree	2	1.0
Neutral / No response	3	1.6

Table No. 4:- Distribution of study participants according to their practice of hand washing: (n=193)

Practice of hand washing	Frequency (n)	Percentage (%)
Hand washing after handling every patients		
Yes	176	91.2
No	17	8.8
Frequency of hand washing practice after handling every patients		
Always	156	80.8
Sometimes	25	13.0
Occasionally	1	0.5
Don't know	2	1.0

No response	9	4.7
Advise the patient to wash hands before taking food		
Yes	185	95.9
No	8	4.1
Follow six steps of hand washing		
Yes	156	80.8
No	21	10.9
Do not know	16	8.3
Time required for Hand washing		
<30 sec	59	30.6
30-60 sec	62	32.1
60-120 sec	46	23.8
>120 sec	16	8.3
Don't know	10	5.2
Materials used for hand washing		
Soap and water	93	48.3
Liquid hand wash	85	44.0
Sanitizer	8	4.1
Water	3	1.6
Do not know	4	2.0
Reason for using items for proper hand washing		
Low cost	29	15.0
Easy availability	73	37.8
Most effective	74	38.4
Hospital supply	15	7.8
Do not know/ No response	2	1.0

Table No. 4 showed hand washing practices among health care providers where maximum participants (91.2%) washed their hands after handling every patient and most of them (80.8%) always washed their hands after handling every patient. Out of study participants 95.9 % advised patients to practice regular hand washing before taking food.

Most of them (80.8%) practice six steps of hand washing during patient care in hospital, but only 8.3% took >120 seconds time for hand washing, whereas majority (32.1% and 30.6% respectively) took 30-60 seconds and < 30 seconds time for proper hand washing.

Nearly half (48.3%) of the participants used soap for hand washing followed by 44% with liquid hand wash, 4.1% sanitizer, 1.6% with plain water. On further inquiry about the reason for using items for hand washing; majority (38.4% and 37.8% respectively) replied cost-effectiveness and easy availability as main reason, whereas 7.8% hospital supply and 15% preferred for low cost hand washing items.

Table 5: Findings of focus group discussion with health care providers regarding Hand Washing practices:

Codes	Response
Source of information	From seminars (conducted occasionally at hospital level), mass media, books, discussion with co-workers and classes (for doctors and nurses)
Washing materials	Cost effectiveness and easy availability. They mainly use soap and water, spirit and liquid wash.
Timings	Always wash hands after taking care of every patient. Hand wash before taking food, after defecation and any medical procedures. Less time spent in washing hands.
Importance	Maintenance of health and hygiene. Prevention of infection. Removal of dirt.
Training	They felt that lack of sincerity by fellow health care staff and inadequate hand washing practice at hospital level is a matter of concern.

DISCUSSION:-

The present study was conducted in a tertiary care hospital of Tripura about the awareness of hand washing among healthcare providers (Doctors, Nurses, O.T technicians, Laboratory technicians, Ward boys, Ward girls, Cleaners) with a sample size of 193 healthcare workers where most of them was nurses (35.2%) and nursing students (31.6%). The study revealed majority (73.6%) of the populations were among 18-25 years age group with a female predominance (70.5% females and 29.5% males) and most of them were Hindu (94.5 %), similar to a study conducted by Amisshah I in Ghana where majority were nurses (41.9%) and house officers (16.3%), and females (62.3%).⁷

Present study reveals 188 (97.5%) were know about the importance of hand washing which was almost similar to different studies conducted by Nair SS in Raichur⁸ and Birks M in Malaysia 2011.⁹

Presently study has also revealed that more than half (67.2%) of health workers have the knowledge of steps of hand washing technique, but only half (48.3%) of them wash hand with soap followed by liquid hand wash (44%) as compared to another study by Anargh V in Pune¹⁰, that showed 91%

washed hands with soap and water.

In another study conducted by Meghwal SC in Southern Rajasthan, 2015¹¹, compliance to hand hygiene practice was 33.33% before and 43.33% after patient contact whereas the study conducted by Alex-Hart BA in a Teaching Hospital in Port Harcourt, Nigeria¹² showed 51.2% washed hands after handling the patient. In contrast to this the present study observed the compliance 80.8% after handling every patient, similar results were also seen in studies conducted by Amissah I, in Ghana.⁷

CONCLUSION:

The current study revealed their knowledge, attitude but absence of sufficient practice of hand washing among health care workers. Not only they believed that improper practice of ordinary rubbing of hands with soap was sufficient to prevent the transmission of infection but they also lacked the practice of washing hands after handling every patient. Future studies in this context are recommended to further determine the factors responsible for these lacunae. Also there is a need to educate the health care workers about hand washing practices and to periodically train them about the six steps of hand washing.

ACKNOWLEDGEMENT: The authors express their sincere gratitude towards all the study participants for their co-operation.

SOURCE OF FUNDING: NO funding was received from any agency to conduct this study.

CONFLICTS OF INTEREST: Authors declares NO conflict of interest.

ETHICAL APPROVAL: The study was approved by the Institutional Ethics Committee.

REFERENCES:

- [1] KuKanich KS, Kaur R, Freeman LC, Powell DA. Evaluation of a Hand Hygiene Campaign in Outpatient Health Care Clinics. *Am J Nurs*. 2013; 113 (3): 36-42.
- [2] WHO: The Burden of health care-associated infection worldwide. A Summary. Available from: http://www.who.int/gpsc/country_work/summary_2010_0430_en.pdf. Last assessed on 18.09.2017
- [3] Jacquelyn H. Flaskerad, Janet M. Serers. Infection control in the Nursing Clinics of North America. 2002; 37(2): 272-83.
- [4] Public health agency of Canada. Hand Hygiene practices in Healthcare setting, Ottawa. 2012
- [5] Mahmood S E, Verma R, Khan M B. Hand hygiene practices among nursing students and importance of improving current training programs. *International Journal of Community Medicine and Public Health*. 2015; 2(4): 466-471
- [6] Al-Wazzan A, Salmeen Y, Eisa Al-Amiri E, Abul

A, Bouhaimed M, Al-Taiar A (2010): Hand Hygiene Practices among Nursing Staff in Public Secondary Care Hospitals in Kuwait: Self-Report and Direct Observation. *Med Princ Pract* 2011; 20: 326–331.

- [7] Amissah I: A study to assess hand hygiene knowledge and practices among health care workers in a teaching hospital in Ghana. *International Journal of Science and Research*. 2016; 5 (8): 301-307.
- [8] Nair SS, Hanumantappa R, Hiremath SG, Siraj MA, Raghunath P. Knowledge, attitude, and practice of hand hygiene among medical and nursing students at tertiary health care centre at Raichur, India. *ISRN Preventive Medicine*. 2014. Available from <https://www.hindawi.com/journals/isrn/2014/608927/>. Last assessed on 10.10.2017
- [9] Birks M, Coyle M, Porter J, Mills J. (2011): Perceptions of hand hygiene amongst HCWs East Malaysia. *Int J Infect Control* 2011; 8: 10-13.
- [10] Anargh v, Singh H, Kulkarni A, Kotwal A, Mahen A. Hand hygiene practices among health care workers in a tertiary care facility in Pune. *Medical journal Armed forces India*. 2013; 69 (1): 54-6.
- [11] Meghwal S C, Sharma S, Galav A, Jain M: Hand Washing Facilities and Adherence To Hand Hygiene Practices In a Tertiary Care Centre in Southern Rajasthan. *Journal of Research in Medical and Dental Science*. 2015; 3 (1): 119-121.
- [12] Alex-Hart BA, Opara PI. Handwashing Practices amongst Health Workers in a Teaching Hospital in Port Harcourt, Rivers State, Nigeria. *American Journal of Infectious Diseases*. 2011; 7 (1): 8-15.