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<b>Assessment of Knowledge, Attitude and Practice of Hand Hygiene in Healthcare Workers of Gulab Devi Chest Hospital Lahore, Pakistan</b>	
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<b>Abstract:</b>	
<b>Background:</b> Hand hygiene is a general term referring to any action of hand cleansing by using water and detergent and for the removal of transient microorganisms from hands. Hand hygiene is recognized as the leading measure to prevent cross-transmission of microorganisms and to reduce the incidence of healthcare associated infections. There are many experiences that the lack of knowledge, attitude and poor practice in hand hygiene in healthcare workers transmit infection in patients and in other healthcare workers.	
<b>Methodology:</b> This descriptive study was conducted in Gulab Devi Chest Hospital. I had taken 100 healthcare workers to complete my research. The sampling technique of my research was cross-sectional sampling technique, use to collect the data.	
<b>Results:</b> In this research knowledge was not good in all HCWs, Overall knowledge of hand hygiene by all HCWs was less than 50%. The attitude in nurses and medical student in this research was moderate doctors and technologists have poor attitude in hand hygiene. The practices among HCWs in Gulab Devi Chest Hospital were also poor which was less than 50%.	
<b>Conclusion:</b> The HCWs in Gulab Devi Hospital had poor knowledge, practices on hand hygiene. However, attitudes of medical student and nursing had satisfactory.	
<b>Key words:</b> WHO, Hand Hygiene, Healthcare workers	
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<b>Abbreviations:</b>	
HCRI: Healthcare Related Infection	
HCWs: Healthcare Workers	
HH: Hand Hygiene	
NS: Not Significant	
WHO: World Health Organization	

### Introduction:

Hand hygiene is a general term referring to any action of hand cleansing by using water and detergent and/or the use of alcohol-based hand sanitizers for the removal of transient microorganisms from hands (1). WHO ranks healthcare related infection [HCRI] as one of the top ten causes of hospital deaths each year (2). Transmission of infection from patient to patient mainly occurs through the hands of healthcare workers (3). Patient's skin, mucous and any discharge can be colonized by many organisms, which may be transferred to surrounding surfaces and contaminate the environment in the hospital (4). The hands of the healthcare workers will be contaminated through daily caring for patient or his environment, despite wearing gloves (5). Therefore, hand hygiene (HH) is considered the most effective way to prevent cross-transmission of HCRI (6). Healthcare related infection is estimated to affect 10% of patients in developed countries, and 25% in developing countries (7). Furthermore, many studies done to assess the knowledge, attitudes, compliance and reasons for non-

adherence to hand hygiene guidelines have found that compliance with hand hygiene protocols by healthcare workers (HCW) is poor due to several constraints including heavy work load, high number of clinical procedures and skin conditions of the HCW. Hand hygiene is an important aspect of the care provided to hospitalized patients (8). Hand hygiene is considered one of the simplest but important ways to break the chain of infection (8). Proper hand hygiene before and after each contact with any patient is an important measure to prevent HCRI (8). Although HCRI is a major threat to patient's health and safety, it is highly preventable by proper HH (8).

### Methodology:

This descriptive study was conducted in Gulab Devi Chest Hospital, a teaching hospital in Lahore, Pakistan. 100 healthcare workers were taken to complete the research. Non-probability purposive sampling technique was used to collect the data for the research. All the healthcare workers were explained the content and nature of the study.

**Table 1. Comparison of knowledge between doctors, nurses, medical students and technologists**

Sr. no	Statement	Doctors (n= 25)	Nurses (n= 25)	Medical Students (n= 25)	Technologists (n= 25)	p-value
1	Do you know there is a formal training in hand hygiene? <b>Yes</b>	20	24	22	16	<0.05
2	Do you receive formal training in hand hygiene? <b>Yes</b>	15	21	14	7	<0.05
3	Do you think hand hygiene is an important part of your job? <b>Yes</b>	24	25	25	24	NS
4	Which of the hand hygiene method is required Before palpation of the abdomen? <b>Rubbing</b>	7	3	9	9	NS
5	Which of the hand hygiene method is required Before giving an injection? <b>Rubbing</b>	6	3	8	10	NS
6	Which of the hand hygiene method is required After changing dressing of patient? <b>Washing</b>	8	11	16	11	NS
7	Which of the hand hygiene method is required after removing examination gloves? <b>Washing</b>	4	7	8	6	NS
8	Which of the hand hygiene method is required After inserting Foley's catheter? <b>Washing</b>	17	12	12	13	NS
9	Which of the hand hygiene method is required After visible exposure to blood? <b>Washing</b>	10	10	7	13	NS
10	Which of the hand hygiene method is required Before starting an elective procedure? <b>Rubbing</b>	13	16	19	15	NS

A self-administrated questionnaire containing a set of questions regarding hand-hygiene knowledge, attitudes, and practices was distributed to all participants. Knowledge, attitude and practice was assessed using WHO's hand hygiene questionnaire for healthcare workers.

**Data Analysis:** The entire statistics were recorded as well as analysed by means of statistical package for social sciences SPSS (16.00). All references were cited by EndNote X6. Mean  $\pm$  S.D was used to analyse the quantitative data while qualitative data was analysed using appropriate graph and frequency tables along with its percentage.

### Results:

Four healthcare worker groups participated in this study: these groups were doctors, nurses, medical students and technologists with ages between 21 to 51 years. Among them, 27% were males and 73% were females. Equal number of participants from each group were taken in this study. Comparison of knowledge between doctors, nurses, medical students and technologists is shown in **Error! Reference source not found..**

**Error! Reference source not found.** is explaining the comparison of attitude between doctor nurses, medical students and

technologists. And practice between doctors, nurses, medical students and technologists is explained in **Error! Reference source not found..**

### Discussion:

In this research, we had taken 100 HCW to complete my research and divided them into four groups as 25 doctor, 25 nurses, 25 medical student, 25 technologists and assess their knowledge, attitude and practice. The mean age ( $\pm$  standard deviation [SD]) of the participants was  $28.01 \pm 6.678$  years of the 100 respondents, 73 (73%) were female and 27 (27%) male. Of the entire study population, a majority (82%, 82 out of 100) knows that there is formal training in hand hygiene and majority of them 57 (57.0%) claimed to have received formal training in hand hygiene ( $p$  value 0.023). In previous research, the research was conducted in Imam Hussein Hospital in 2013 in this research the entire study population, a minority (16.4%, 42 out of 256) claimed to have received formal training in hand hygiene (9). Medical student 20 (80%) and nurses 18 (72%) had good hand hygiene performing knowledge, technologists 17 (68%) and doctors 16 (62%) had moderate knowledge in performing hand hygiene. In previous studied the hand hygiene knowledge

**Table 2. Comparison of attitude between doctor nurses, medical students and technologists**

Sr. No	Statement	Doctor (n= 25)	Nurses (n= 25)	Medical student (n=25)	Technologists (n=25)	p-value
1	Do you think that all healthcare workers should take hand hygiene training? <b>Yes</b>	25	23	24	25	NS
2	Do you need to have a separate basin for hand washing? <b>Yes</b>	22	19	23	23	NS
3	Do you think hand washing is not necessary while moving from one patient to another patient? <b>No</b>	18	21	22	19	NS
4	Do you think there should be attached an antiseptic solution [Op Sept] for hand washing on the side of every patient bed? <b>Yes</b>	23	24	25	24	NS
5	Do you want to follow the WHO protocol for hand hygiene? <b>Yes</b>	25	25	25	24	NS
6	Do you think hand hygiene is not preventing the healthcare related infection [HCRI]? <b>No</b>	22	24	25	19	NS

of 187 candidates during final MBBS OSCE (Objective Structured Clinical Examination) at The Royal London Hospital School of Medicine and Dentistry in UK and found that only 8.5% of candidates washed their hands after patient contact (10).

Four groups had poor knowledge regarding the correct method use prior to palpation of abdomen doctors 28%, nurses 12%, medical student and technologists 36% and the correct appropriate response regarding hand rubbing and hand washing is not significant. In previous researches the knowledge asses among final year medical and nursing student at university of Sri-Jayewardenepura, Both groups had poor knowledge regarding the correct method of use prior to palpation of abdomen (31%), giving an injection (26%) and after making a patient's bed (25%), Both medical and nursing students had a good knowledge (69%, 83% respectively) of the proper method of hygiene following removal of examination gloves, however the overall correct responses regarding appropriate use of hand rub and hand washing was unsatisfactory (11). In my research knowledge was not good in all HCW, nurses have high % of 46% only. All HCW should improve their knowledge and take training in hand hygiene. Overall knowledge of hand hygiene by all HCWs was less than 50%.

The attitude nurses and medical student in this research is moderate as overall compliance of attitude in nurses is 51%, medical student 53% and doctors 41.3%, technologists 49.6% have poor attitude in

hand hygiene. The attitude of doctors 25 (25%) and technologists have good toward that all HCWs should take hand hygiene training, but in previous researches attitude toward this question is poor as medical student 22 (11.2%) out of 196 and nursing student 28 (30.1) (11).

The attitude of preventing HCRI was high in medical student 25 (100%), nurses 24 (96%), doctors 22 (88%) and technologists 19 (76%), but in previous research, while poor hand hygiene compliance on the part of healthcare workers and its complication of healthcare-associated infections have impact on patients, visitors, and healthcare workers (12). The attitude that hand washing was necessary while moving patient to patient is good in medical student 22 (88%), nurses 21 (84%), technologists 19 (76%), doctors 18 (72%), In previous researches the attitude asses among final year medical and nursing student at university of sri-Jayewardenepura medical student 185 (94.4%) and nurses 93 (100%) think hand hygiene necessary after touching patient (13).

The practices among HCWs in Gulab Devi Chest Hospital was also poor, the overall compliances in doctors 37.3%, nurses 38%, medical students 32.3% and technologists 33% which was less than 50%. It has been suggested that the optimal duration of hand washing is between a minimum of 20 seconds and a maximum of 30 seconds. Only few HCWs (21%) follow this time. In previous

Sr. No	Statement	Doctors (n= 25)	Nurses (n=25)	Medical Students (n=25)	Technologists (n=25)	p-value
1	Do you routinely use hand rub [soap, iodine scrub, op sept] for hand hygiene? <b>Yes</b>	23	25	23	21	NS
2	Do you remove jewellery [ring, bracelet, watch etc.] while performing hand hygiene? <b>Yes</b>	23	23	20	22	NS
3	Do you wash your hands at time when your OPD / ward is too busy? <b>Yes</b>	17	21	12	18	NS
4	Natural nails of healthcare workers should not extend beyond the tips of finger. Do You follow this protocol? <b>Yes</b>	23	23	17	16	<0.05

research, it has been also suggested that the optimal duration of hand washing is between a minimum of 20 seconds and a maximum of 30 seconds. However, only a few medical residents (12.1%) observed the optimal time in the hand hygiene procedure (9). During hand hygiene, 23 (92%) doctors, 23 (92%) nurses, 20 (80%) medical students and 22 (88%) technologists remove jewellery which is good, and it is a positive compliance other than that overall practice was poor. In previous research conducted at University of Sri-Jayewardenepura, medical students: 153 (78%) out of 196 and nurses: 90 (96.8%) agree to remove jewellery when hand washing (13).

### Conclusion:

In overall the knowledge and practice of HCWs in Gulab Devi Chest Hospital was poor and attitude of nurses, medical student was moderate. However, hand hygiene is a single most effective preventive measure against hospital acquired infections. So, it is necessary to improve the knowledge, attitude and practice of HCWs by carrying out training programs on hand hygiene regularly for healthcare workers of hospital and providing them proper hand hygiene facilities. On the other hand, it is also important to improve the current training programs targeting hand hygiene practices in HCWs. Hand hygiene training sessions may need to be conducted more frequently for medical HCWs with continuous monitoring and performance feedback to encourage them to follow correct hand hygiene practices.

**Conflict of Interest Statement:** This research is free of conflict of interest.

**Statement of Informed Consent:** The data was collected after informed consent.

### Statement of Human and Animal Rights:

This research did not harm self-respect / rights of any human and / or animals.

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