

## PERSPECTIVE OF FUTURE HEALTH PROFESSIONALS ON HAND HYGIENE IN A MEDICAL SCHOOL OF A DEVELOPING COUNTRY

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### ABSTRACT

**Objective:** To determine the knowledge, attitude and practices of undergraduate medical and nursing students about hand hygiene.

**Study Design:** Cross-sectional study.

**Place and Duration of Study:** This study was conducted in Institute of Nursing at Combined Military Hospital (CMH) Lahore Medical College & Institute of Dentistry, from Dec 2018 to Feb 2019.

**Methodology:** A self-administered inventory was distributed to all fourth, final year undergraduate medical students (UGMS) and second, third and fourth year undergraduate nursing students (UGNS). The inventory consisted of 31 items. Descriptive statistics were used for calculating percentages of all items. Percentage >75 showed good awareness, while percentage <50 showed poor awareness.

**Results:** A total of 285 students, 195 (68.4%) undergraduate medical students and 90 (31.6%) undergraduate nursing students filled out the inventory with the response rate of 77%. Only 176 (62%) had good knowledge regarding hand hygiene. The attitude of students on hand hygiene was good with highest percentage score of 85%. The practice subscale score of students was 73.2%. The overall score of the whole group was 70%, indicating the moderate awareness of students regarding hand hygiene. No significant differences were found between percentages of correct answers of the two cohorts of participants ( $p>0.05$ ).

**Conclusion:** Both undergraduate medical and nursing students showed positive attitude with moderately satisfactory knowledge and practice towards hand hygiene. No difference was found in both groups with almost similar knowledge, attitude and practices.

**Keywords:** Hand hygiene, Knowledge, Nurses, Practices, Undergraduate medical students.

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### INTRODUCTION

Healthcare Associated Infections (HAIs) is a global issue for patient safety. This problem needs to be explored and its prevention should be the top priority for the delivery of safe care in healthcare institutions. Effective hand hygiene (HH) is recognized as the single most key factor of dropping the rate of HAIs. This cost effective simple procedure can prevent many challenges of healthcare industry including not only from patient safety and economic perspectives due to long disability or stay in hospital, but also reduces excess morbidity and mortality of patients<sup>1</sup>. Despite it being such a simple action, several studies reported poor compliance with HH and

furthermore, there is substantial evidence that poor HH is found even prior to serious procedures among health professionals<sup>2</sup>.

World Health Organization reveals that more than 1.4 million individuals are affected from HAIs and the range fluctuates from 3% to 21% in different hospitals around the globe<sup>3</sup>. Reported rates of HAIs were 14% higher in the developing world<sup>4</sup>. WHO has also introduced "My Save moments for hand hygiene" for the facilitation of this simple action among healthcare professionals.

Factors found to be linked with poor adherence to HH are hand irritation, inadequate provision of facilities for hand cleaning, work overload and lack of awareness regarding HH<sup>5</sup>. There are several strategies in order to promote adherence to HH including educational

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programs, monitoring, reporting and availability of equipment for HH<sup>6</sup>.

In Pakistan, there is high rate of unjustified deaths and severe health issues due to lack of resources and inequities in the delivery of safe care to patients by the system<sup>7</sup>. Furthermore, the available literature shows poor adherence to HH among health professionals<sup>8</sup>.

We planned this study to assess knowledge, attitude and practices of undergraduate medical and nursing students about HH. The present study is expected to provide the baseline awareness of future health professionals in military set up about HH. The findings assist instructional designers for the development of educational program for the provision of safe care to patients.

## METHODOLOGY

This cross-sectional study was conducted from December 2018 to February 2019 at the Combined Military Hospital Lahore Medical College & Institute of Nursing (CMHLMC & ION) after getting the clearance from Ethical Review Committee of, CMHLMC & ION. Medical and nursing students who began training in hospitals were included. Participants of this study included all undergraduate nursing students (UGNS) apart from students in first year and undergraduate medical students (UGMS) of fourth and final year. Sample consisted of 195 UGMS from CMH Lahore Medical & IOD and 90 UGNS from CMH Institute of Nursing. Census sampling was used for the study. Consent was obtained from UGMS and UGNS and the students were explained about the purpose, anonymity and voluntary nature of the study. A pre-tested questionnaire was used for the current study. It comprised of two parts: Part one was planned to obtain information regarding demographic traits such as gender, year of graduation and field of study (nursing/medical). Part two was a self-administered inventory consisted of 31 items (17-knowledge, 3-attitude, and 11-practice) to investigate awareness regarding HH advised by the WHO. The responses of items were answered in terms of "Yes" or "No". Each item

scored 1 point in case of right answer. The response of 11 out of 17 knowledge items and one question (item 10) about practice was considered correct if they were answered as "No", and all remaining questions considered correct in case of "Yes" response.

A higher score indicated good awareness regarding awareness of HH and knowledge of hand washing procedures advised by the WHO. This suggests that the total maximum marks of HH inventory was 31 and least possible score was 0. In current study, descriptive statistics were used by calculating percentages for all statements. The values for good, moderate and poor awareness were used on the basis of previous studies. The interpretation for scoring; >75% points was considered good awareness, 50-74% points was classified moderate awareness, while score <50% points reflected poor awareness towards HH. The three domains, knowledge, attitude & practice (KAP) towards HH were used as to identify areas of improvement for the designing of effective educational program for future health professionals. Data analysis was done using SPSS version 20. Categorical data was mentioned in frequency tables, and test of significance Chi-square was used. The  $p \leq 0.05$  was considered statistically significant.

## RESULTS

A total of 285 students, 195 (68.4%) UGMS

**Table-I: Demographic characteristics of participants.**

Category	n (%) n=285
<b>Course</b>	
MBBS	195 (68.4)
Nursing	90 (31.6)
<b>Gender (Undergraduate Medical Students)</b>	
Male	114 (58.5)
Female	81 (41.5)
<b>Year of Course</b>	
4 <sup>th</sup> Year Medical students	106 (54.4)
Final Year Medical students	89 (45.6)
<b>Year of Course</b>	
2 <sup>nd</sup> Year Nursing students	41 (45.6)
3 <sup>rd</sup> Year Nursing students	40 (44.4)
Final Year Nursing students	09 (10.0)

and 90 (31.6%) UGNS filled out the inventory with the response rate of 77%. Distribution of the participants to each statement on hand hygiene

**Table-II: Responses of Undergraduate Medical Students & Undergraduate Nursing Students towards hand hygiene.**

S. No.	Health professional's Knowledge towards hand hygiene	Answer	Correct Answers n (%)
1	Traditional hand washing (water plus regular soap) decreases the number of germs	Yes	285 (100)
2	Using gloves eliminates the necessity to wash hands	No	285 (100)
3	Hand washing is required before and after wearing gloves	Yes	285 (100)
4	Using instant hand sanitizer to quickly wash hands is always adequate	No	242 (85)
5	Must use anti-septic soap for proper hand washing	No	142 (49.8)
6	Must use both anti-septic soap plus hand sanitizer for proper hand washing	No	229 (80.4)
7	After washing hands, turn off water taps with your hands	No	87 (30.5)
8	After washing hands, turn off taps using piece of paper towel	Yes	272 (95.4)
9	Perform hand hygiene only before encountering patient (even without performing physical examination)	No	285 (100)
10	Perform hand hygiene only after encountering patient (even without performing physical examination)	No	87 (30.5)
11	Perform hand hygiene before and after encountering each patient (even without doing physical examination)	Yes	130 (45.6)
12	Enforce hand hygiene only before physically examining the patient	No	56 (19.6)
13	Enforce hand hygiene only after physically examining the patient	No	86 (30.2)
14	Enforce hand hygiene before and after physically examining the patient	Yes	99 (34.7)
15	Implement hand hygiene only after contact with secretions/bodily fluids (resp. secretions, saliva, vomit and blood)	No	56 (19.6)
16	On unsoiled hands, an alcohol-based hand rub is recommended over an anti-septic soap hand washing	Yes	229 (80.4)
17	On unsoiled hands, an alcohol-based hand rub is recommended over a 3-minute surgical scrub	No	142 (49.8)
<b>Health professional's perceived attitudes towards hand hygiene</b>			
1	Before starting my clinical training, I reviewed the respective WHO and CDC guidelines for hand hygiene.	Yes	242 (85)
2	Healthcare providers are educating patients and their families about hand hygiene and its importance	Yes	242 (85)
3	Proper hand hygiene is an important matter to be emphasized in medical curricula and health care centers	Yes	242 (85)
<b>Practices/ Steps of hand washing practice among health professionals</b>			
1	Removing rings, bracelets and watches	Yes	57 (20)
2	Removing only rings and watches	Yes	285 (100)
3	Wetting hands and applying enough soap to cover all surfaces	Yes	285 (100)
4	Scrubbing one palm with the other palm	Yes	285 (100)
5	Rubbing right palm with back of the left hand and vice versa	Yes	100 (35)
6	Scrubbing between fingers and nails	Yes	285 (100)
7	Rubbing wrists and thumbs	Yes	285 (100)
8	Washing hands from the fingers towards the wrist	Yes	285 (100)
9	Drying hands with disposable paper towel or drying hands in air	Yes	285 (100)
10	Turning off the tap with the hands	No	242 (85)
11	Turning off the tap with the aid of disposable towel	Yes	100 (35)

students by gender, course and year of education was given in table-I.

knowledge, attitude and practice were given in table-II.

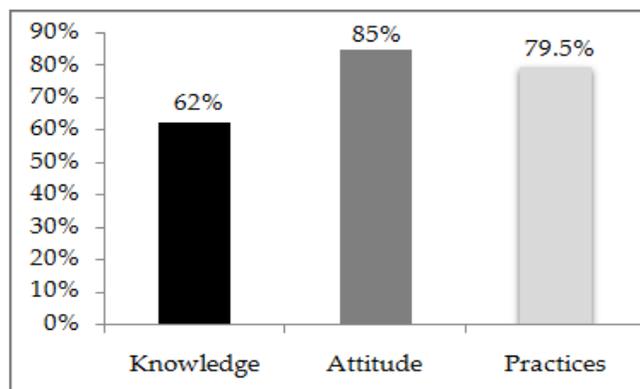
In knowledge domain, there was a misconception on the importance and use of antiseptic soap as 142 participants (50%) agreed that it is required. The overall attitude was positive in 245 participants (85%) and both groups acknowledge the importance of HH in curricula. In practice domain, only 100 (35%) participants practice right

**Table-III: Comparison between students on the basis of gender male & and course.**

Category	p-value
<b>Course</b>	
MBBS	0.97
Nursing	
<b>Sex (Undergraduate Medical Students)</b>	
Male	0.67
Female	

method of hand wash.

Out of 285 only 176 participants had good knowledge regarding hand hygiene and this domain gained the lowest percentage of 62%. The knowledge, practice and attitude of students on hand hygiene shown in fig-1.



**Figure: Knowledge attitude and practices of hand hygiene among study participants.**

The overall percentage score of the whole group was 70%, indicated the moderate awareness of students regarding HH. No significant differences were found between percentages of correct answers of the two cohorts of participants ( $p=0.97$ ). In the same way, no significant differences were found based on the gender of UG students ( $p=0.69$ ) (table-III).

## DISCUSSION

Globally HAI is a very important health issue, and for control of infection, HH is an effective and simple method. Recent studies revealed variable awareness level regarding HH among health care professionals including students, doctors and nurses. Researches on HH among doctors and nurses are available from Pakistan<sup>9</sup>, however HH practices have not been studied among UGMS and UGMN. Consistent with other studies, the knowledge level was found to be moderate/fair among UGMS and UGNS. As described by Almadani *et al* majority medical students recognized the importance and correct indications of HH and the students from last clinical year had better compliance than fourth year students<sup>10</sup>. In our study, there was no significant difference found based on year of study both in UGMS and UGNS.

In our study, 62% students had good knowledge about HH. Our results are comparable with the Pakistani study in which 85% had good knowledge<sup>11</sup>. Jemal *et al* study also revealed better knowledge (66%), compliance and self-reported practices regarding HH as compared to doctors ( $p<0.001$ ) but majority of the participants had low HH practices (68.4%)<sup>12</sup>. Contrary to these studies we did not find any difference between UGNS and UGMS. A study from South Africa show much lower mean score of the participants as their average score was 46.8%<sup>13</sup>. Although our results in knowledge domain of HH is lower 62% as compared to a study from Sri Lanka in which 77% participants were knowledgeable<sup>6</sup> but our study participants had good attitude and practices with 79.5% and 85% respectively as compared to <50% in their study. In our study no significant differences were found between percentages of correct answers of the two cohorts of participants ( $p\geq 0.05$ ) however in their results the nursing students had better knowledge ( $p=0.023$ ), attitudes ( $p<0.001$ ) and practices ( $p<0.001$ ) compared with the medical students. Based on the gender of UG students we did not find any significant difference ( $p\geq 0.05$ ) similar to a study pub-

lished by Azzam al Kadishowing no significant difference ( $p \geq 0.05$ ) between two genders<sup>14</sup>.

In our study majority had the knowledge about using disposable towel for turning off the tap after hand washing but practiced by only 100 (35%). A follow up study about awareness and compliance of HH among the medical students conducted in 2014 had shown statistically significant as compared to results of the study conducted in 2012<sup>15</sup>. Similarly, a study conducted in Dow medical College Karachi the overall compliance of HH practices was found to be 38.8% and majority of participants considered "lack of hand washing facility; sinks, soap, water and disposable towel" to be a major barrier towards HH adherence<sup>8</sup>.

There is certain misconception about the importance and use of antibacterial soap in HH as 142 (50%) correctly disagreed with the question "Must use anti-septic soap for proper hand washing". Our results are much better than the concepts and results of a study from KSA in which only 23% correctly disagreed with the importance of antiseptic soap in hand sanitization<sup>16</sup>. A recent study about the effectiveness of anti-septic soap showed that when used in real life situations these soaps are no more effective than plain soap at reducing bacterial contamination<sup>17,18</sup>.

## CONCLUSION

Undergraduate medical and nursing students have a positive attitude and good practices regarding hand hygiene. However, gaps exist in the knowledge of hand hygiene as a basic measure to prevent and control infection.

## CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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