

Knowledge Attitude and Practice of Hand Hygiene Among the Medical, Dental, Nursing and Paramedical Students Post COVID: A Cross Sectional Study

Praveen Kumar Doddamani¹, Sunil Kumar Biradar², Ravish Kumar M³, Parmeshwari Patil⁴

¹Associate Professor, Dept. of Microbiology, ESIC Medical College, Kalaburagi

²HOD and Professor, Dept. of Microbiology, M.R. Medical College, Kalaburagi

³Associate Professor, Dept. of Microbiology, ESIC Medical College and Hospital, Chennai

⁴Associate Professor, Dept. of Microbiology, M.R. Medical College, Kalaburagi

Received: 29-07-2023 / Revised: 08-08-2023 / Accepted: 16-08-2023

Corresponding author: Dr. Parmeshwari Patil

Conflict of interest: Nil

Abstract:

Introduction: Hand hygiene is one of the most important measures among infection control practices. Knowledge of hand hygiene among medical graduates crucial in minimizing nosocomial infections. During the pandemic COVID-19, awareness is being created through various routes concerning hand hygiene to combat the pandemic. The current study targeted at determining the impact of awareness programs on hand hygiene awareness among medical graduates.

Materials and Methods: This is a cross-sectional study based on a questionnaire to evaluate the knowledge of hand hygiene among Graduate Medical, Dental, Nursing and paramedical students. This study conducted in ESIC Medical College and Hospital, Kalaburagi (From mar 2021 to June 2022).

Results: A total of 206 participants were included in this study. Majority of the study participants were female, One twenty one (58.7%) were female and 85(41.3%) were male. Out of 206 participants, majority of the participants were medical students and others followed by dental, nursing and paramedical. From the study participants, 197(95.6%) of the study participants were having very good knowledge about the hand Hygiene, were 36.4% were heard about the hand hygiene from the college, whereas 9.7% have heard from awareness and training programmes. 59.7% practicing of hand hygiene whereas 53.9% had received the training of hand hygiene, 7.3% not having any idea about the hand hygiene.

Conclusion: It was noticed from the results obtained in this study, that a significant rise in the knowledge levels and positive attitude among medical graduates during pandemic COVID-19.

Keywords: COVID-19; Hand wash; Hospital-acquired infections, Medical, Dental etc.

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

Human existence is watching an odd time battling against an unseen opponent, the novel coronavirus-19. A cluster of unexplained origin of pneumonia cases appeared in Wuhan, Hubei, China in December 2019, with Clinical findings closely resembling viral pneumonia. Extreme genomic analysis from lower respiratory tract samples revealed a novel coronavirus [1]. The new virus was originally designated by WHO as 2019-nCoV. WHO declared an official designation for the novel coronavirus disease on 11 Feb 2020: Coronavirus disease 2019 (COVID-19) [2]. On the very same day, the International Committee on Virus Taxonomy Coronavirus Research Group (CSG) posted a memorandum on bioRxiv, recommending that 2019-nCoV be identified as an extreme acute respiratory syndrome coronavirus 2 (SARS-CoV-2) based on a phylogenetic analysis of associated coronaviruses [3]. As per the

existing evidence, the COVID-19 virus is transmitted primarily through respiratory droplets and communication routes between people [4]. Droplet transmission happens when a person is in direct contact (within 1 m) with someone else with respiratory symptoms (e.g., coughing or sneezing) and is thus at risk of exposure to potentially contagious respiratory droplets through his / her mucosa (mouth and nose) or conjunctiva (eyes). Fomites around the infected person in the immediate environment will also play an important role in the transmission of infection [5]. The COVID-19 pandemic has visibly reached a new phase with a rapid rise in countries and all sectors of society must recognize and take steps to protect themselves and avoid infection transmission to others. COVID-19 pandemic brings undeniable proof that pandemic prevention demands the urgent implementation of non-pharmaceutical

proof-based interventions (NPIs) by a motivated and informed population. One of the NPIs is hand hygiene. Maintaining appropriate hand hygiene is the key role in combating any respiratory viral infection. For several reasons, an analysis of the impact of hand-hygiene interventions to reduce infectious diseases in the community and hospital environment is important. Hand hygiene is considered an essential indicator of prevention for pandemic risks to public health, such as severe acute respiratory syndrome. Thus the awareness is being created through various routes concerning hand hygiene to combat pandemic COVID-19.

The present study was aimed to determine the impact of COVID-19 pandemic on the knowledge and attitude of medical graduates on hand hygiene.

Materials and Methods: This is a cross-sectional study based on a questionnaire to evaluate the knowledge of hand hygiene among graduate Medical, Dental, Nursing and paramedical students. This study conducted in ESIC Medical college and Hospital, Kalaburagi (From Mar 2021 to June 2022). Individual responses received and the data analyzed.

Inclusion criteria: Undergraduate students of Medical, Dental, Nursing and paramedical students and those who gave consent to participate in the study.

Exclusion criteria: Students of other undergraduate courses.

Results

Table 1: Distribution of sex

Sex	Frequency	Percent
Female	121	58.7
Male	85	41.3
Total	206	100.0

Table 2: The distribution of the students from different departments

Distribution of students from different courses	Frequency
Medical	91
Dental	25
Nursing	35
Paramedical	55
Total	206

Table 3: Knowledge about Hygiene

Knowledge	Frequency	Percent
Maybe	5	2.4
No	4	1.9
Yes	197	95.6
Total	206	100.0

Table 4: Knowledge attitude and practices

KAP questions	Frequency	Percent
where did you first hear about hand hygiene		
College/Hospital	75	36.4
awareness and training programs	20	9.7
from friends/relatives	32	15.5

A total of 206 participants were included in this study. Majority of the study participants were female, One twenty one (58.7%) were female and 85(41.3%) were male. Out of 206 participants, majority of the participants were medical students and others followed by dental, nursing and paramedical. From the study participants, 197(95.6%) of the study participants were having very good knowledge about the hand Hygiene, were 36.4% were heard about the hand hygiene from the college, where as 9.7% have heard from awareness and training programs. 59.7% practicing of hand hygiene whereas 53.9% had received the training of hand hygiene, 7.3% not having any idea about the hand hygiene. 51.5% have very good awareness of hand hygiene whereas 32.5% need training in the hand hygiene. 54.4% had good practice of hand hygiene. 84% study participants had knowledge about the WHO hand hygiene procedures and 63.1% were aware about the WHO hand hygiene procedures, whereas 53.9% were followed the WHO hand hygiene procedures. The following results show that, study participants were having good knowledge, attitude and practices towards hand hygiene and followed the WHO. There is a significant difference in the hand hygiene knowledge, attitude and practices before and after the pandemic. The Present study clears that, need time to time training and programmes on hand hygiene in the undergraduate students. Hence, the students will more updates on the hand hygiene. The study should be conduct with larger sample size; the results will be more reliable.

media/social media/advertisements in Television	79	38.3
How often do you wash your hands in hospital setting?		
after coming out of hospital	21	10.2
after finishing each work at hospital	62	30.1
after visiting the patients/performing any work	123	59.7
How often do you use alcohol base hand sanitizers hospital setting?		
3-4 times a day	19	9.2
every 5-10 min	28	13.6
never	3	1.5
when ever you feel hand is contaminated	150	72.8
Did you receive formal training in hand hygiene in the last three years?		
Maybe	15	7.3
No	80	38.8
Yes	111	53.9
Which of the following is the main route of cross-transmission of potentially harmful germs between patients in a health-care facility? (tick one answer only)		
Air circulating in the hospital	18	8.7
Health-care workers' hands when not clean	71	34.5
Patients' exposure to colonised surfaces (i.e., beds, chairs, tables, floors)	88	42.7
Sharing non-invasive objects (i.e., stethoscopes, pressure cuffs, etc.) between patients	29	14.1
Which of the following hand hygiene actions prevents transmission of germs to the patient?		
a. Before touching a patient	106	51.5
b. Immediately after a risk of body fluid exposure	19	9.2
c. After exposure to the immediate surroundings of a patient	39	18.9
d. Immediately before a clean/aseptic procedure	42	20.4
What is the most frequent source of germs responsible for health care-associated infections? (tick one answer only)		
Germs already present on or within the patient	83	40.3
The hospital air	10	4.9
The hospital environment (surfaces)	109	52.9
The hospital's water system	4	1.9
Which of the following statements on alcohol-based handrub and handwashing with soap and water are true?		
a. Handrubbing is more rapid for hand cleansing than handwashing	72	35.0
b. Handrubbing causes skin dryness more than handwashing	32	15.5
c. Handrubbing is more effective against germs than handwashing	35	17.0
d. Handwashing and handrubbing are recommended to be performed in sequence	67	32.5
Which type of hand hygiene method is required in the following situations? a. Before palpation of the abdomen, b. Before giving an injection c. After emptying a bedpan, d. After removing examination gloves e. After making a patient's bed, f. After visible exposure to blood		
hand rub a,b,c	20	9.7
hand rub a,b,c,d,e,f	33	16.0
hand wash a,b,c,d,e,f	112	54.4
hand wash f	41	19.9
Which of the following should be avoided, as associated with increased likelihood of colonization of hands with harmful germs?		
a. Wearing jewellery	2	1.0
both a and b	150	72.8
c. Artificial fingernails	26	12.6
none	28	13.6
have you ever advised your friend/collogues/relatives about importance of hand hygiene?		
don't remember	4	1.9
Maybe	29	14.1
No	11	5.3
Yes	160	77.7
do you know that simple step of hand hygiene can prevent infections.		

cant say	1	.5
Maybe	16	7.8
No	8	3.9
Yes	178	86.4

Table 5: WHO Hand Hygiene

WHO Hand Hygiene	Frequency	Percent
do u have knowledge of WHO 5 moments of hand hygiene		
may be	14	6.8
No	19	9.2
yes	173	84.0
do you follow WHO steps of hand wash while washing your hands.		
cant say	6	2.9
No	17	8.3
occasionally	53	25.7
yes	130	63.1
WHO five moments of hand wash/hand rub: 1.before touching patients 2.after a procedure 3.after procedure. 4.after touching patients. 5. after touching patients surrounding. how often do u follow all the moments		
10-30%	6	2.9
50-70%	19	9.2
70-100%	36	17.5
always 100%	34	16.5
less than 10%	4	1.9
WHO steps of hand wash/hand rub: how seriously you follow?		
do not follow who steps	1	0.5
follow all the steps 100%	51	24.8
follow all the steps 50% times	31	15.0
partially follow the step not all steps	16	7.8

Table 6:

when did you come to know about importance of hand hygiene with respect to corona pandemic	Frequency	Percent
after pandemic	111	53.9
before pandemic	87	42.2
don't remember	8	3.9
Total	206	100.0

Discussion

At the time of this survey, participants were subjected to extensive media and government awareness programs of the pandemic's need for hand hygiene. The present study revealed the knowledge level of medical graduates concerning hand hygiene was good and found to be satisfactory. Overall, 87% of students scored more than 75 points. This research also showed the perception of hand hygiene of both the sexes is different from one another. Surprisingly no female participant scored less than 50 points in the questionnaire. This was similar to the study conducted by Herbert et al. However no statistical difference was noticed between the two genders [7]. In yet another study, the female students were found to have a higher level of effective hand hygiene compared with males. This reflects the idea that female

students could show better self-assessment for adherence to hygiene guidelines than for males. & Maybe correlated with their propensity to adopt socially appropriate behaviors, the greater conformity of females [8]. Our findings are in contrast with the study conducted in a university in Saudi Arabia found that there was no substantial gap in the knowledge of hand hygiene between the two genders among medical students [9]. All participants in the study revealed 100% correct responses to certain questions such as alcohol as the important ingredient of any hand rub for the maintenance of accurate hand hygiene, and another critical step in the maintenance of proper hand hygiene is contact time. In this study, all the participants agreed that wearing jewelry increases the likelihood of microbial colonization. Students' correct responses were limited to certain general concepts of hand hygiene but not towards hand hygiene practices concerning WHO 5 movements. This could be due to the message

received on television and social media was to protect themselves and not the patient in the healthcare setting. Various studies from different parts of the world before the pandemic COVID-19 showed poor to moderate levels of knowledge among medical students [10,11,12].

Conclusion

Acquired knowledge and attitude related to hand hygiene during pandemic COVID-19 can be sustained by implementing continuous strategies such as training that target on hand hygiene techniques, indications, recognition of opportunities for this procedure (five moments described by WHO).

References

1. Ong SW, Tan YK, Chia PY, Lee TH, Ng OT, Wong MS, et al. Air, Surface Environmental, and Personal Protective Equipment Contamination by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) From a Symptomatic Patient. *JAMA*. 2020;323(16):1610-1612
2. World Health Organization. Hand Hygiene Knowledge Questionnaire for Health-Care Workers. World Health Organization. 2009
3. World Health Organization. Novel coronavirus-China. WHO. Jan 12, 2020; (accessed Apr 19, 2020).
4. WHO. Coronavirus disease. WHO. 2019
5. Coronaviridae Study Group of the International Committee on Taxonomy of Viruses. The species severe acute respiratory syndrome-related coronavirus - classifying 2019-nCoV and naming it SARS-CoV-2. *Nat Microbiol*. 2020; 5(4):536-544.
6. Nair SS, Hanumantappa R, Hiremath SG, Siraj MA, Raghunath P. Knowledge, attitude, and practice of hand hygiene among medical and nursing students at a tertiary health care centre in Raichur, India
7. Herbert VG, Schlumm P, Kessler HH, Frings A. Knowledge of and adherence to hygiene guidelines among medical students in Austria. *Interdisciplinary perspectives on infectious diseases*. 2013
8. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *The Lancet*. 2020;395(10223):497-506
9. Anderson JL, Warren CA, Perez E, Louis RI, Phillips S, Wheeler J, et al. Gender and ethnic differences in hand hygiene practices among college students. *Am J Infect Cont*. 2008;36(5):361-368
10. Al Kadi A, Salati SA. Hand hygiene practices among medical students. *Interdisciplinary Perspective Infect Dis*. 2012
11. Ariyaratne M, Gunasekara T, Weerasekara M, Kottahachchi J, Kudavidanage B, Fernando S. Knowledge, attitudes and practices of hand hygiene among final year medical and nursing students at the University of Sri Jayewardenepura. *Sri Lanka J Infect Dis*. 2013;3(1):15-25
12. Feather A, Stone SP, Wessier A, Boursicot KA, Pratt C. 'Now please wash your hands'- the handwashing behaviour of final MBBS candidates. *J Hosp Infect*. 2000;45(1):62-64