Knowledge, Attitude, and Practices regarding COVID-19 (Coronavirus) Infection Control and Prevention among Radiology Staff; a perspective from largest private tertiary care Hospital in Pakistan.

Abstract

COVID-19 has affected radiology practices globally. X-ray followed by Computed Tomography (CT) has become a gold standard examination. Best practices for safe imaging of patients with COVID-19 infection require appropriate screenings, disinfection of equipment, and use of personal protection equipment. Our survey aimed to assess knowledge, attitudes, and practices among radiology staff toward COVID-19 infection control and prevention. A cross-sectional single-center survey was performed in the Radiology Department of Aga Khan University Hospital between June 01, 2020, and July 01, 2020. A self-administered validated questionnaire was designed and administered. Cronbach's Alpha was applied to measure the internal consistency and reliability; 0.8 was achieved for the Knowledge and Practice sections, respectively, while 0.7 was for the attitude section. Most participants (86%) had adequate knowledge about COVID-19. A significant association with higher knowledge scores was found among the seniors in terms of rank and education as compared to junior staff. Overall, 75.4% of the participants have a positive attitude towards COVID-19 infection control and prevention; significance was found between the education level, working hours, and positive attitudes. Most female participants, seniors of the department, front-line workers, and people with >50 work hours/week had their practices more in line with global guidelines than other groups. In conclusion, the knowledge, attitude, and practices of most of the people working in the radiology department were adequate and representative of safe practices. The mean scores of junior staff were still lower, and there is room for improvement via awareness sessions and factful discussions.

1. **Introduction**

In December 2019, a novel coronavirus, now named SARS-CoV-2, was detected in Wuhan, China as the cause of acute atypical respiratory diseases. Owing to its high infectivity, it rapidly spread worldwide, and on 30 January 2020, WHO declared the COVID-19 outbreak a Public Health Emergency of International Concern (PHEIC).(1) The global response against COVID-19 pandemic involved many drastic changes.(2) Many countries instituted mask mandates, increased testing and contact tracing, enforced lockdowns and extended socio-economic support to citizens early during the pandemic.(3) After the vaccines were developed, many countries made these widely and freely available to the public.(4, 5) While these infection control measures were largely successful in preventing a rise in COVID-19 cases, some remained skeptical of their effectiveness.

Like many other countries, Pakistan imposed a series of lockdowns to combat the rapid spread of COVID-19 infections.(6, 7) With the 4th wave of COVID-19 now imminent, the pandemic is far from over. Success against emerging strains of COVID-19 pandemic is now even more than ever dependent on adherence to infection control measures and effective vaccinations. Standard testing of COVID-19 infection is based on reverse-transcription polymerase chain reaction (RT-PCR) however negative RT-PCR cannot exclude COVID-19 infection due to low sensitivity. Imaging with chest radiography and computed tomography (CT) has therefore become a complementary examination.(8, 9) CT is widely available, can be performed rapidly and has high sensitivity. Many centers are therefore using CT for screening, evaluation, and follow up of COVID-19 patients with respiratory symptoms.

Ground glass opacities (GGO) with or without consolidation in bilateral peripheral and posterior lungs were initially described as the cardinal feature of COVID-19 pneumonia on CT. (10) Further research led to recognition of multiple additional findings seen with variable frequency. These include interlobular septal thickening, crazy paving pattern, bronchial wall thickening, reverse halo sign and air bronchograms.(11-13) COVID-19 has affected radiology practices globally. Best practices for safe imaging of patients with COVID-19 infection requires appropriate screenings, disinfection of equipment, and use of personal protection equipment. Non-urgent imaging and interventional procedures may be rescheduled. The purpose of our survey was to assess knowledge, attitude, and practices among radiology staff towards COVID-19 infection control and prevention.

2. **Materials and Methods**
2.1. *Study Design and Subjects*

A cross-sectional single center survey was performed in the Radiology Department of Aga Khan University Hospital during the rapid rise period of the COVID-19 outbreak was used to assess the knowledge and understanding among radiology department staff between June 01, 2020 and July 01, 2020 amid national lockdown. The survey was administered online via Google forms. The study was exempted by the institutional Ethical Review Committee of Aga Khan University Hospital.

2.2. *Inclusion and Exclusion Criteria:*

All workers in Radiology Department were eligible for participation in the study, including medical staff, such as physicians, nurses, pharmacists, laboratory technicians, and non-medical support staff and nonmedical administrators, security, maintenance, and housekeeping staff. All the participants gave their informed consent for inclusion in the study. Exclusion Criteria included all the people who did not give consent, were on leave for COVID, or were not literate enough to understand the questionnaire.

2.3. Questionnaire and Data Collection:

A self-administered validated questionnaire was designed and administered to obtain information about the level of knowledge participants had towards infection control and prevention measures. The questionnaire was anonymous and no personally identifiable information was obtained. It consisted of four parts. First part was about the demographic parameters of sample population (age, gender, job title, number of years working in radiology, weekly working hours, qualifications etc.). Other three parts consist of Knowledge, Attitude and Practice section. Knowledge section consisted of 15 questions each marked for 01 point and a cumulative score of 11 and above was considered as adequate Knowledge score. Third segment consisted of 07 questions related to attitude of sample population regarding COVID-19 infection control and prevention, it was scored as 1 point for each positive attitude and cumulative score of 4 and above was considered as a positive attitude. Last part consisted of 08 questions which concerns the practices of sample population regarding COVID-19 infection control and prevention, it was recorded on a 5-point Likert-Scale starting from 1 (Always), 2 (Often), 3 (Sometimes), 4 (Rarely) and 5 (Never).

Since no previous scales were available for this purpose, the questionnaire was constructed and approved by research team to ensure its face validity. Material for questionnaire was acquired from literature reviews and data available by World Health Organization (WHO) and National Institute of Health Pakistan. Three authors developed the original version of questionnaire and then two researchers revised it for internal clarity and validity, furthermore it was rechecked by two professionals with experience in epidemiology, infectious diseases, and public health to ensure the validity and appropriate questionnaire designing in order to keep bias to minimum. It was tested on a sample of 25 participants to determine the reliability and Cronbach's Alpha was applied to measure the internal consistency and reliability, value of 0.8 was achieved for Knowledge and Practice section respectively while value of 0.7 was for attitude section.

2.4. Data Analysis:

Data was analyzed using Statistical Package for the Social Sciences (SPSS) version 25. The mean with standard deviation was calculated for quantitative variables while frequency and percentages for qualitative variables. Chi-Square was used to establish associations between the variables and p-value <0.05 was considered as significant at a 95% confidence interval. ANOVA and Mann-Whitney test were also applied according to distribution of data and p value of <0.05 was considered as significant.

3. Results:

A total of 185 participants filled the questionnaire out of which 162 were completely filled and used for data analysis (response rate was 87.5%). Majority of the sample population 61% belong to the age bracket of 35-45 years and 23% of sample population was above the age of >50 years. Half of the sample (51.8%) comprised of woman while 48% were male. Approximately one third of sample population consist of radiographer while other two thirds comprised of nursing staff, radiologist, receptionists, janitors etc. Majority of sample population (51%) has a postgraduate qualification, followed by 35% having graduate degree and only 13% having high school diploma (Matric/ intermediate). The majority of the population has more than ten years of experience working in radiology. A summary of participants' characteristics is presented in Table 01.

(Table 01)

3.1. Knowledge:

Most participants (86%) had adequate knowledge about COVID-19. 94% of the sample population were aware of the causative organism for COVID-19. In comparison, 85% were aware of the mode and route of transmission, and>90% population was knowledgeable about the virus's primary signs and symptoms and incubation period. Still, only 81% were aware of symptoms other than the common fever and flu. Only 88% of people knew the benefits of proper handwashing in disease prevention. 82% people knew that chances of getting severe COVID infection increase with comorbidities. 98% were aware of the efficacy of masks against infection, while only 33% were sure there is a cure for COVID, and only 72% were knowledgeable of the vaccines. A summary of participants' knowledge regarding COVID-19 is presented in table 02.

(Table 02)

In order to determine the association between demographic characteristics and total knowledge score, data was further analyzed. Mann-Whitney U test was applied to determine the relationship between ender and knowledge scores, but no significance was found, but the mean score of females was more than their male counterparts. ANOVA was applied to determine the association between mean knowledge scores and job category, and significant association was found with a p value of <0.05, mean score of seniors in terms of rank (radiologist, patient-facing staff) was more than off radiographers and nurses. There was no association between mean knowledge scores and years spend in this field and frontline health care worker status. Significant association was found with level of education with p value of <0.05; post graduates having a higher mean then workers having graduation and intermediate as their final degrees. There was also a significance association (p-value: <0.05) with number of working hours, people working >80 hours or <20 hours have greater mean knowledge score then those working between 20-80 hours per week. A summary of participants' knowledge regarding COVID and association with participants' characteristics is presented in table 03.

(Table 03)

3.2. Attitude:

Overall, 75.4% of the participants has positive attitude towards COVID-19 infection control and prevention. Majority of the participants 44.4% were afraid of COVID-19 with only 38.8% having believe that this disease could be curbed in 2021, whereas 57.7% were unsure about the control of disease in 2021. Majority of the trends were positive in terms of infection control as people were aware of importance of quarantine, benefits of proper temperature checking and dreadful effects of traveling during covid. Although one third of the population was unaware about the role of food in prevention and control of infection. A summary of participants' attitude regarding COVID is presented in table 04.

(Table 04)

Further subgroup analysis was done; ANOVA was applied and significant p value <0.05 was found between the education level and working hours. Participants working after getting a post graduate degree had a higher level of positive attitude scores with a mean of 6.5 and people working 20-50 hours also had a lower mean of 4.2 as compared with those working <20 hours (mean score: 5.8) and >50 hours (mean score: 6.2).

3.3. Practice:

A 5-point Likert-Scale was used to record the response of participants about their practice regarding infection control and prevention against COVID. Overall, positive attitude and proper practice were adopted. 72% of the population were covering their mouth and nose during coughing and sneezing. 96% of population was properly disposing off their used tissues. While majority of the population were also properly washing their hands accordingly with WHO guidelines, donning the proper PPE, wearing a mask and avoid touching their face and nose with contaminated hands. A summary of participants' practices regarding COVID is presented in table 05.

(Table 05)

Further Chi-Square was applied to determine association between demographics and practices. Significant p-value <0.05 was found with most of the practices and demographic variable as shown in table 05.

4. Discussion:

The Knowledge, Attitude, and Practice (KAP) theory divides human behavioural change into three distinct steps: acquisition of knowledge, generation of attitudes/beliefs, and formation of behaviour.(14) According to KAP theory, behavioural change involves acquiring knowledge, generating attitudes, and forming behaviour. Thus, we aimed to survey potential weak points in behavioural change. Even though PCR is the primary diagnostic tool, imaging has gained immense importance in its diagnosis, prognostication and follow-up for complications. Thus, medical imaging providers have become essential to the healthcare teams managing patients with COVID-19 worldwide. (2)

Our collected data revealed that a vast majority had sufficient knowledge about COVID-19, the causative organism, its transmission, symptoms and signs. It could be because our surveyed population worked at the private tertiary care hospital. Consequently, they were in direct contact with those infected and had to work toward preventing further spread. Knowledge plays a paramount role in enhancing the practice of preventive behaviour, as

shown by our earlier findings. In addition, other studies have previously reported similar associations when performing KAP surveys toward COVID-19.(15, 16)

To our surprise, the attitudes and practices did compare. Despite the bombardment of heartbreaking news reports from all over, most participants had a positive attitude, which is 75.4%. (17) Moreover, post-graduates and those who worked 20-50 hours had higher positive attitude scores than others. The most common reason for this might be the experience that comes with years of working and education. Similar trend was shown in a study done in Jordon and healthcare providers (18). The timeframe of work hours ranging from 20-50 per week are ideal and provides an individual time to read up newest literature available and improve on their practices as compared with healthcare providers who are overworked and not have time to read up on new trends in field. (19)

72% of the population covered their mouth and nose, whereas 96% adequately disposed of their used tissues; proper general practices followed. Moreover, correct hand washing, donning the proper PPE, wearing a mask and avoiding touching their face and nose with contaminated hands were observed. These results are similar to other surveys carried out elsewhere in the world. (20) In contrast, other places with adequate knowledge did not share the same enthusiasm for practices.(21) Another trend which was observed in our study was females having higher mean scores with significance in terms of knowledge, attitude and practice as compared to their male counterparts that can be due to more fear of disease spread among family as similar trend was followed in a study conducted in India. (22)

The domain of our study is limited to COVID-19 infection and being a hot topic more or less everyone is aware of some knowledge and practices in regards to it but in comparison with general practice for infection control and prevention among radiologist a study conducted in Yemen revealed very low knowledge, attitude and practice scores. (23) This is one of the major limitation of this study. Another being the study conducted in a well-funded private sector tertiary care hospital, in contrast the condition in government sector hospitals can be different due to excessive patient load, unfavorable working hours, low monetary support and poor training but due to limited resources scope of our study is limited.(24, 25) We would like to encourage people working in this domain to work in lines with a comparative study.

In conclusion, the knowledge, attitude and practices of majority of the people working in radiology department was adequate and were representative of safe practices. Mean scores of junior staff was still lower and there is still room for improvement via awareness sessions and factful discussions.

References:

1.   Jee Y. WHO International Health Regulations Emergency Committee for the COVID-19 outbreak. Epidemiology and health. 2020;42:e2020013.
2.   Caulkins J, Grass D, Feichtinger G, Hartl R, Kort PM, Prskawetz A, et al. How long should the COVID-19 lockdown continue? PloS one. 2020;15(12):e0243413.
3.   G. D. The Coronavirus relief fund (CARES Act, Title V): Background and state and local allocations. . Washington: ; 2020.
4.   Wright A, Chawla G, Chen L, Farmer A. Tracking Mask Mandates during the COVID-19 Pandemic. Becker Friedman Institute for Research In Economics; 2020.
5.   Guy GP, Jr., Massetti GM, Sauber-Schatz E. Mask Mandates, On-Premises Dining, and COVID-19. Jama. 2021;325(21):2199-200.
6.   Chandir S, Siddiqi DA, Setayesh H, Khan AJ. Impact of COVID-19 lockdown on routine immunisation in Karachi, Pakistan. The Lancet Global health. 2020;8(9):e1118-e20.
7.   Saeed U, Sherdil K, Ashraf U, Mohey-Ud-Din G, Younas I, Butt HJ, et al. Identification of potential lockdown areas during COVID-19 transmission in Punjab, Pakistan. Public health. 2021;190:42-51.
8.   Wan YL, Schoepf UJ, Wu CC, Giovagnoli DP, Wu MT, Hsu HH, et al. Preparedness and Best Practice in Radiology Department for COVID-19 and Other Future Pandemics of Severe Acute Respiratory Infection. Journal of thoracic imaging. 2020;35(4):239-45.
9.   Ng MY, Lee EYP, Yang J, Yang F, Li X, Wang H, et al. Imaging Profile of the COVID-19 Infection: Radiologic Findings and Literature Review. Radiology Cardiothoracic imaging. 2020;2(1):e200034.
10.   Chung M, Bernheim A, Mei X, Zhang N, Huang M, Zeng X, et al. CT Imaging Features of 2019 Novel Coronavirus (2019-nCoV). Radiology. 2020;295(1):202-7.
11.   Wu J, Wu X, Zeng W, Guo D, Fang Z, Chen L, et al. Chest CT Findings in Patients With Coronavirus Disease 2019 and Its Relationship With Clinical Features. Investigative radiology. 2020;55(5):257-61.
12.   Shi H, Han X, Jiang N, Cao Y, Alwalid O, Gu J, et al. Radiological findings from 81 patients with COVID-19 pneumonia in Wuhan, China: a descriptive study. The Lancet Infectious diseases. 2020;20(4):425-34.
13.   Li K, Wu J, Wu F, Guo D, Chen L, Fang Z, et al. The Clinical and Chest CT Features Associated With Severe and Critical COVID-19 Pneumonia. Investigative radiology. 2020;55(6):327-31.
14.   The KAP Survey Model (Knowledge, Attitudes, and Practices) 2014. [Internet]. 2011 [cited December 2, 2022]. Available from: https://www.spring-nutrition.org/publications/tool-summaries/kap-survey-model-knowledge-attitudes-and-practices.
15.   Papagiannis D, Malli F, Raptis DG, Papathanasiou IV, Fradelos EC, Daniil Z, et al. Assessment of Knowledge, Attitudes, and Practices towards New Coronavirus (SARS-CoV-2) of Health Care Professionals in Greece before the Outbreak Period. 2020;17(14):4925.
16.   Afzal MS, Khan A, Qureshi UUR, Saleem S, Saqib MAN, Shabbir RMK, et al. Community-Based Assessment of Knowledge, Attitude, Practices and Risk Factors Regarding COVID-19 Among Pakistanis Residents During a Recent Outbreak: A Cross-Sectional Survey. Journal of community health. 2021;46(3):476-86.
17.   Gupta C, Gupta R, Kumari R, Gupta RK, Bhagat P, Mir MT, et al. Public knowledge, attitudes, and practices toward COVID-19: An online cross-sectional study in the Union territory of Jammu and Kashmir. 2021;10(3):1155-60.
18.   Amro FM, Rayan AH, Eshah NF, MS AL. Knowledge, Attitude, and Practices Concerning Covid-19 Preventive Measures Among Healthcare Providers in Jordan. SAGE open nursing. 2022;8:23779608221106422.
19.   Bernstrøm VH, Alves DE, Ellingsen D, Ingelsrud MH. Healthy working time arrangements for healthcare personnel and patients: a systematic literature review. BMC Health Services Research. 2019;19(1):193.

20.   Zhong BL, Luo W, Li HM, Zhang QQ, Liu XG, Li WT, et al. Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: a quick online cross-sectional survey. International journal of biological sciences. 2020;16(10):1745-52.

21.   Chai CS, Ng DL, Chua WJ, Tung YZ, Sindeh W, Ibrahim MA, et al. Knowledge, Attitude, and Practices Among the General Population During the Later Stage of the COVID-19 Pandemic in Malaysia: A Cross-Sectional Study. Risk management and healthcare policy. 2022;15:389-401.

22.   Singh PK, Anvikar A, Sinha A. COVID-19 related knowledge, attitudes, and practices in Indian Population: An online national cross-sectional survey. PLOS ONE. 2022;17(3):e0264752.

23.   Naji AT, Abu-hadi T, Abu-hadi Ba, Al-Yemeni Sa, Al-dhobhani R, Mohy Al-deen Ba, et al. Assessment of Knowledge, Attitude, and Practice Toward Infection Prevention and Control Among Diagnostic Radiographers in Yemen. Journal of Radiology Nursing. 2022.

24.   Iman Taghizadeh F, Homeira K, Mohamadreza M, Mahin T, Seyedmahrokh AM. Knowledge, Attitude, and Practice toward Prevention of COVID-19 Among Nursing and Midwifery Students: A cross-sectional Study in Gorgan, Northern Iran. Sudan Journal of Medical Sciences (SJMS). 2022;17(3).

25.   Kamacooko O, Kitonsa J, Bahemuka UM, Kibengo FM, Wajja A, Basajja V, et al. Knowledge, Attitudes, and Practices Regarding COVID-19 among Healthcare Workers in Uganda: A Cross-Sectional Survey. 2021;18(13):7004.

Table 01. Demographic Characteristics of Sample Population.		
Variable	N	%
Gender		
• Male	78	48.15
• Female	84	51.85
Job Category		
• Nursing Staff	15	9.26
• Radiographer	60	37.04
• Radiologist	27	16.67
• Patient facing staff	21	12.96
• Other	39	24.07
Years of Experience		
• <1 Year	12	7.41
• 1-5 Years	33	20.37
• >5 Years	27	16.67
• >10 Years	90	55.56
Front Line Health Care Worker		
• Yes	132	81.48
• No	18	11.11
• Maybe	12	7.41
Working hours per week		
• <20 hours	15	9.26
• 20-50 hours	80	49.38
• 50-80 hours	61	37.65
• >80 hours	06	3.70
Highest Level of Education		
• Matric/Intermediate	21	12.96
• Graduate	57	35.19
• Post-graduate	84	51.85

No	Variable	Correct		Incorrect	
		N	%	n	%
1.	Cause of COVID-19 disease?	153	94.4	09	5.6
2.	COVID-19 a water-borne disease?	141	87	21	13
3.	COVID-19 airborne disease?	138	85.2	24	14.8
4.	COVID-19 transmitted by close contact with an infected person?	156	96.3	06	3.7
5.	What is the time range between infection with COVID-19 and the onset of symptoms?	153	94.4	09	5.6
6.	Fever, cough, and shortness of breath are common symptoms of COVID-19?	151	93.2	11	6.8
7.	Myalgia (muscle aches), sore throat, and diarrhea are also possible symptoms of COVID-19?	132	81.5	30	18.5
8.	Patients with underlying chronic diseases are at a higher risk of infection?	144	88.9	18	11.1
9.	Washing hands with soap and water can help in the prevention of COVID-19 transmission?	144	88.9	18	11.1
10.	Wearing a face mask is an effective prevention strategy for COVID-19?	159	98.1	03	1.9
11.	At this moment, is there a cure for COVID-19?	54	33.3	108	66.7
12.	At this moment, is there a vaccine active against COVID-19?	117	72.2	45	27.8
13.	COVID-19 can be life-threatening?	135	83.3	27	16.7
14.	Where was the first case of COVID-19 recorded?	161	99.4	01	0.6
15.	The scale of Covid-19 disease burden is high?	156	96.3	06	3.7

Table 02. Knowledge of Participants regarding COVID-19.

Table 03. Total knowledge score and their relationship with characteristics of Sample Population.				
Variable	Total Knowledge Score			
	Mean	Median	Interquartile range	p-value
Gender				
• Male	12.73	13.00	3.00	0.632*
• Female	13.11	13.00	1.50	
Job Category				
• Nursing Staff	11.80	13.00	4.00	0.000
• Radiographer	12.45	13.00	1.00	
• Radiologist	14.19	14.00	1.00	
• Patient facing staff	14.29	15.00	1.00	
• Other	12.49	13.00	2.00	
Years of Experience				
• <1 Year	13.75	14.50	2.50	0.161
• 1-5 Years	13.03	13.00	3.00	
• >5 Years	12.89	13.00	2.00	
• >10 Years	12.79	13.00	2.00	
Front Line Health Care Worker				
• Yes	12.86	13.00	2.00	0.474
• No	13.56	13.00	1.00	
• Maybe	12.50	12.50	3.50	
Working hours per week				
• <20 hours	14.00	14.00	0.00	0.002
• 20-50 hours	12.88	13.00	2.00	
• 50-80 hours	12.57	13.00	2.00	
• >80 hours	14.50	14.50	1.00	
Highest Level of Education				
• Matric/Intermediate	11.14	13.00	4.00	0.000
• Graduate	12.37	12.00	3.00	
• Post-graduate	13.75	14.00	1.50	

*Mann-Whitney U Test

Table 04. Attitude Sample Population.	Yes		No		Maybe	
Variable	N	%	n	%	n	%
Are you afraid of COVID-19?	72	44.4	63	38.8	27	16.6
Do you believe the scale of COVID-19 is overestimated by the media?	48	29.6	69	42.5	45	27.7
Do you think COVID-19 can be brought under control in 2021?	63	38.8	06	3.70	93	57.4
Do you think that people suspected to have COVID-19 should be quarantined?	147	90.7	9	5.56	6	3.70
Do you believe there are some foods that can effectively cure or prevent COVID-19?	24	14.9	90	55.6	48	29.6
Do you think thermal surveillance/screening of passengers at air or sea ports is helpful in preventing the spread of COVID-19?	99	61.1	19	11.7	44	27.2
Do you think it is safe to visit a country with reported COVID-19?	03	1.85	141	87.0	18	11.1

*Significant p values.

Table 05. Practices and their relationship with characteristics of Sample Population.											
Variable	Always	Often	Some time	Rarely	Never	Gender	Job	Experience	Frontline	Hours/week	Education
						p-value					
I cover my nose and mouth with a tissue during sneezing or coughing	117	33	12	-	-	0.000*	0.057	0.045*	0.001*	0.000*	0.016*
I throw the used tissue in the trash bin.	156	6	-	-	-	0.016*	0.000*	0.116	0.000*	0.094	0.055
I always change work clothes, first thing at home and wash them separately.	105	21	15	3	18	0.119	0.010*	0.003*	0.026*	0.000*	0.000*
I avoid touching my face (eyes, nose or mouth) with contaminated hands	111	24	21	3	3	0.000*	0.000*	0.000*	0.454	0.000*	0.000*
I use soap and water to wash my hands quickly after coughing or sneezing or touching contaminated objects such as a tissue	99	39	21	3	-	0.004*	0.000*	0.000*	0.000*	0.000*	0.042*
I use a face mask in the crowds and when I visit healthcare settings nowadays	156	3	3	-	-	0.035*	0.226	0.546	0.841	0.232	0.079
I apply WHO's "My 5 moments for hand hygiene" before touching a patient, before aseptic procedure, after touching a patient, after exposure to bodily fluid, and after touching a patient's surroundings.	126	27	6	3	-	0.008*	0.004*	0.133	0.000*	0.000*	0.626
During interaction with	102	42	9	6	3	0.001*	0.000*	0.000*	0.000*	0.001*	0.003*

non- COVID-19 patients, I observe any PPE according to protocol.											