

KNOWLEDGE AND PRACTICES OF LABORATORY STAFF REGARDING COVID-19 INFECTION

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ABSTRACT

Objective: To determine the level of knowledge and practices of laboratory staff regarding COVID-19 infection.

Materials and methods: It was a Multicenter, Cross-sectional Descriptive, Questionnaire-based study done in the Pathology laboratory of Khyber Teaching Hospital and Hayatabad Medical Complex Peshawar. The participants were asked to fill out proformas after obtaining consent. The data was analyzed by SPSS. The normality of data was determined by the Shapiro-Wilks test. The difference in scores between demographic characteristics was determined by the Whitney U test and the Kruskal Wallis test. Kendall Tau determined the correlation between scores and demographics. b, point biserial and Spearman rho tests. A p-value of less than 0.05 was considered statistically significant.

Results: The age of 89 study participants ranged from 15-58 years (mean age of 34 ± 9.6). The male-to-female ratio was 15.6:1. Mean knowledge and practice scores were 10.19 ± 1.66 and 10.2 ± 2.4 . Knowledge and practices were good in all participants except that 42 (45%) participants denied avoiding going to crowded places. Mean knowledge score and practice score were higher in females (as compared to males) and in married participants (as compared to unmarried ones), but lower in undergraduates. There was no correlation between scores and demographic characteristics.

Conclusion: The laboratory staff had good knowledge of COVID-19 and observed good practices. This shows the commitment of healthcare workers in Pakistan towards themselves and society in the crucial situation of COVID-19 infection. The scores were not associated with gender, marital status, or education level.

Keywords: Knowledge, practices, COVID-19.

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INTRODUCTION

Coronavirus is reported to arise from Bats.^{1,2} The virus is called novel coronavirus, and the disease it causes is called Corona Virus Disease-19 (COVID-19). The disease was first discovered in December 2019 in Wuhan city of China.³ Since then, it spread rapidly and affected every country in the world thus taking the form of a pandemic. It was on December 31st, 2019, that the first case of COVID-19 was reported by the World Health Organization (WHO). On January 30th, 2020, the WHO declared COVID-19 as a Pandemic.¹ The disease spread like fire from country

to country and in just three months' duration, there were more than 125,000 COVID cases and over 4600 deaths all over the world.^{1,4} The death rate of COVID-19 is reported to be 2.3%.^{5,6} In Pakistan, the first case of COVID-19 was reported on February 26th, 2020.⁷ The highest number of cases was seen in Punjab, followed in decreasing order by Sindh, Khyber Pakhtunkhwa, Balochistan, Gilgit Baltistan, and Islamabad, and the lowest prevalence was reported in Azad Jammu Kashmir.⁷

COVID-19 presents clinically as fever, cough, difficulty in breathing, and generalized body aches. In severe cases, the patients develop respiratory distress, coagulation abnormalities, and finally the patient enters a state of shock.^{3,5,8} Most of the patients present with mild disease and recover without any treatment. About 20% of the patients get severe disease and they may end up in respiratory failure and shock. About 2% of cases are so serious that they do not survive and die.⁹ It is highly infectious and spreads from person to person via respiratory droplets and close contacts. Till now, there is no definitive treatment for COVID-19. Therefore, the only way to prevent oneself is by adopting preventive measures to stop

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the spread of COVID-19.⁴

The staff of the pathology department is involved in patient care and hence is constantly exposed to the risk of getting infections from body samples of patients.^{4, 7, 10} The WHO has issued certain recommendations for healthcare workers regarding the control and prevention of COVID-19 among them.¹¹ Also, the WHO has conducted online training sessions for healthcare care workers to give knowledge and raise awareness among healthcare workers regarding COVID-19. Knowledge affects actions. So, knowledge about Covid 19 in healthcare workers affects their actions regarding adopting preventive measures.¹

Lack of knowledge and poor practices among healthcare workers can increase the spread of disease not only among the staff at the workplace but also in the general population.¹⁰ Therefore, it is necessary to take measures to stop the spread of infection among hospital staff.⁷ A survey about the knowledge and practices of health staff regarding Covid 19 is a smart way to assess the behavior of the staff. The preventive measures recommended for the public in COVID-19 include covering the face with a face mask, hand washing (for a 20-second duration), keeping a six-meter distance from people, avoiding crowded places, and boosting one's immunity by taking vitamin C and healthy food.⁹

COVID-19 badly hit Pakistan. There were reports of infection among the healthcare workers in hospitals. It seemed necessary to know the knowledge and practices of healthcare workers. Therefore, we aimed to conduct this study to determine the level of knowledge and practices of laboratory staff in the Pathology department in Peshawar.

MATERIALS AND METHODS

It was a multicentric Cross-sectional Analytical Questionnaire-based study. It was done from 1st May 2020 to 30th June 2020. The study participants included the Paramedical staff of the Pathology department and blood bank of Khyber Teaching Hospital and Hayatabad Medical Complex Peshawar. Sampling was done by non-probability purposive sampling technique. The sample size was calculated to be 74 using an online sample size calculator by taking a confidence level of 95% and a margin of error of 5%. Ethical approval was obtained from the Ethical Review Board. The questionnaire was developed as per questions on the World Health Organization (WHO) website.¹² The questionnaire was validated by three expert researchers. The questionnaire had 12 questions about knowledge and 13 questions on practices concerning COVID-19. The questions were given marks to quantify the questionnaire. The questions in the Knowledge section had one mark for correct answer and zero mark for wrong answer. So, the minimum knowledge score was zero and the maximum knowledge score was 12. The questions

in the Practice section had three options each, i.e., "no", "sometimes" and "yes", scored on a Likert scale as 0, 0, and 1 respectively. So, the minimum practice score was 0, and the maximum practice score was 13. A pilot study was done first on 9 participants and the questionnaire was modified based on results i.e., the questions were converted to easy language and simplified. Cronbach's alpha was calculated to determine the reliability of the questionnaire.¹³ The Cronbach's alpha was 0.763 for the questionnaire. Informed written consent was obtained from the participants. They were handed over the proforma and requested to fill it. Online proforma through Google Forms was developed for those participants who were working in isolation departments and it was sent to them to be filled. The data was collected and analyzed using SPSS. Mean and standard deviation were used for quantitative data. Frequency and percentages were used for qualitative data. Mean scores for knowledge and practice were determined and compared among various demographic characteristics. Shapiro Wilks test was used and histograms were examined to determine the normality of the data. Mann Whitney U test and Kruskal Wallis test were used to determine the significance of the difference between mean scores in different demographic characteristics in the case of non-parametric data. Spearman rho correlation was used to determine the association between knowledge score and practice score. Point Biserial correlation was used to assess the relationship between knowledge/practice scores and marital status and gender. Kendall tau correlations were used to determine the relationship between score and qualification levels.

RESULTS

Demographic characteristics are shown in Table 1. Figure 1 and 2 shows the knowledge and practices of study participants respectively. Table 2 shows the scores of knowledge and practices across different demographic characteristics. Figures 3 and 4 show knowledge and practice scores about gender, marital status, and qualifications. Table 3 shows the correlation of the scores with demographic characteristics.

DISCUSSION

The healthcare workers in the laboratory are in close contact with the patients and their body specimens like blood, nasal swabs, and body fluids. This puts them at a higher risk of contracting COVID-19 as compared to the general population. Therefore, it becomes necessary for staff working in hospitals to ensure adequate preventive practices, which in turn depend on their knowledge about Covid 19.^{7, 9} Therefore, the workers must have adequate knowledge which then influences their behavior in day-to-day activities in the workplace.

In the present study, the mean age of the study participants was 34±9.6 years. Similarly, in a study done

Table No 1: Demographics of the study participants (n=89)

Demographics	Values
Age (in years)	
(Mean±SD , Range)	34±9.6,15-58
Gender	
Males n(%)	84(94%)
Females n(%)	5(6%)
n(%)	
Education Level	
Undergraduate n(%)	20(22.4%)
Graduates n(%)	38(42.7%)
Masters n(%)	27(30.3%)
Post Graduate n(%)	4(4.5%)

Table No 2: Knowledge and Practices score

	Mean ±SD	Range	p-value
Knowledge score	10.19±1.66	5-12	-
Practice score	10.2±2.4	4-13	
Knowledge score	Males	10.16±1.69	.655*
	Females	10.7±0.5	
	Married	10.2±1.6	.648*
	Unmarried	10.32±1.57	
	Under-graduation	9.8±1.8	.574**
	Graduation	10.1±1.46	
	Masters	10.3±2.01	
	Post graduation	10.5±.57	
Practice score	Males	10.23±2.48	.561*
	Females	11.2±.5	
	Married	10.1±2.5	.361*
	Unmarried	10.9±1.5	
	Under-graduation	9.2±3.06	.180**
	Graduation	10.8±1.75	
	Masters	10.2±2.8	
	Post graduation	9±1.6	

*p-value determined by Mann Whitney U test

**p-value determined by Kruskal Wallis test

Table No 3: Correlation between knowledge, practice scores, and demographic variables

Correlation	Correlation coefficient	p-value
Between knowledge score and gender	.073*	.495
Between knowledge score and marital status	-.032*	.767
Between knowledge score and qualification	.112**	.211
Between practice score and gender	.087*	.419
Between practice score and marital status	-.153*	.155
Between practice score and qualification	.023**	.792
Between knowledge score and practice score	.459***	<.005

*Point biserial correlation coefficient

**Kendall tau-b correlation coefficient

***Spearman rho correlation coefficient.

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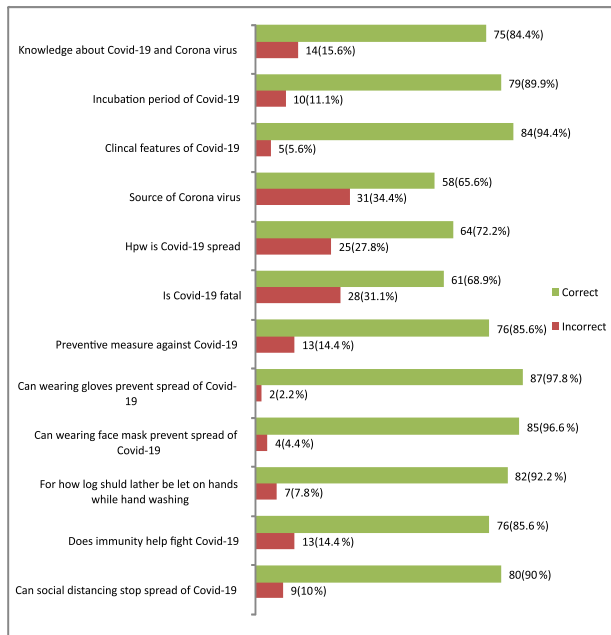


Fig 1: Knowledge of the study participants regarding COVID-19 (n=89)

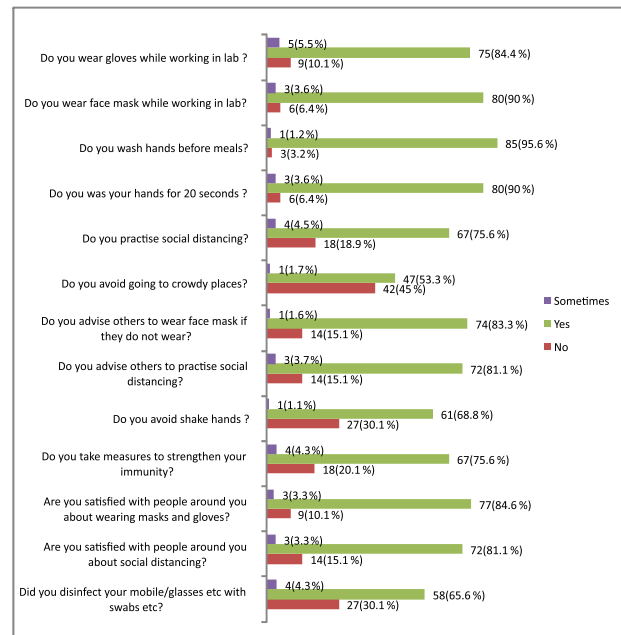
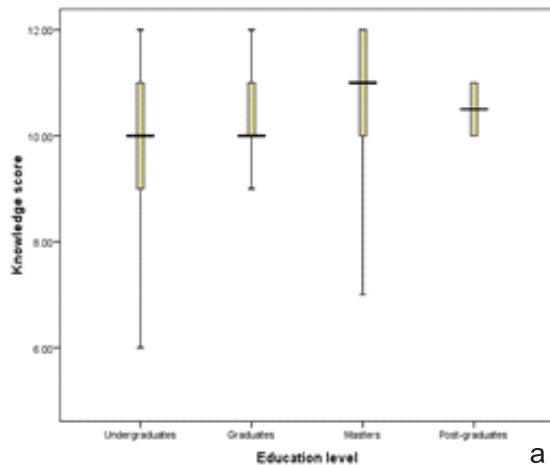
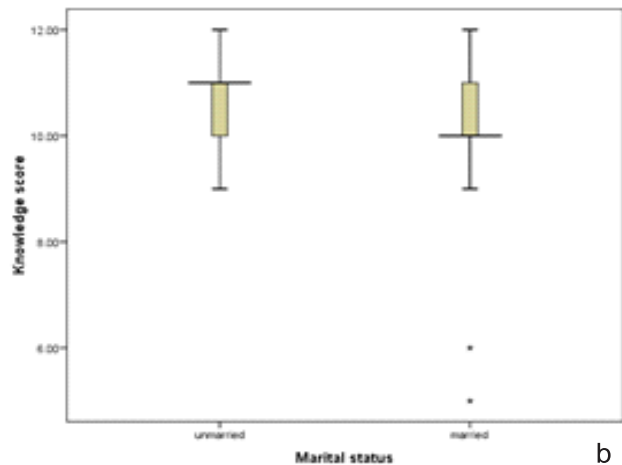


Fig 2: Practices of the study participants regarding COVID-19 (n=89)

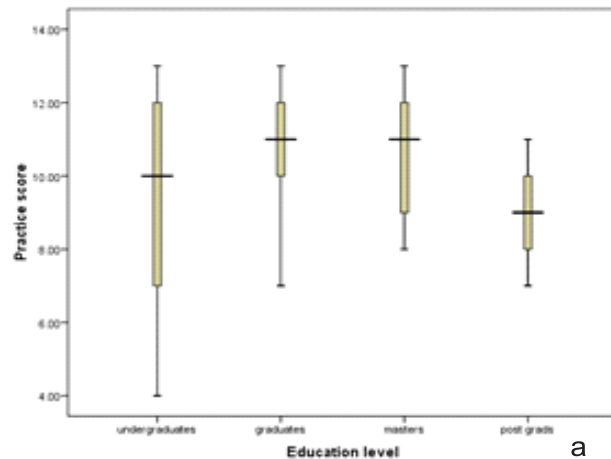


a

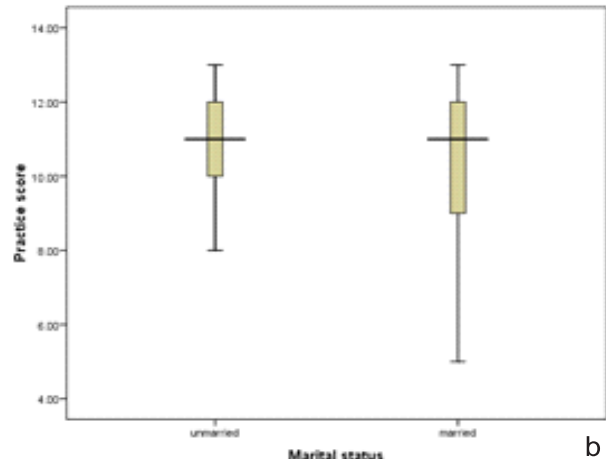


b

Fig 3: Knowledge scores concerning education level (a) and marital status (b)



a



b

Fig 4: Practice scores concerning education level (a) and marital status (b)

by Huynh G in China, the mean age of the participants was 30.1 ± 6.1 years⁹. In our study, there was male predominance. On the contrary, a study by Huynh G showed female predominance.⁹ A study done by Bhagvatula also showed male predominance.¹ In a study done by Hussain I in Peshawar, there was male predominance.¹⁴

In the present study, it was found that most of the study participants had a good knowledge of COVID-19, and they adopted good preventive practices during lab work. About 94% of participants were aware of the clinical features of COVID-19 and 92% knew that 20 seconds was the adequate duration of handwashing. About 90% of participants knew that social distancing was necessary to stop the spread of COVID-19, but only 75% of them practiced social distancing. Only 53% of participants avoided going to crowded places.

This is due to the social and cultural trends in this part of the world where avoiding social contact is considered disrespectful to others and people are inclined to show hospitality. In a study done by Zhong from China, it was reported that 96.4% of participants avoided crowded places, and 98% of participants used face masks.³ Similarly, Gao et al. and Bhagvatula in their studies reported that most of the participants had sufficient knowledge regarding COVID-19.^{1,9} Saqlain in his study also reported a good level of knowledge and practices among the participants⁷. A similar finding is shown by a study from Nepal.¹⁵

The present study showed that the mean score of knowledge and practice was high. Gao et al from China also reported that the knowledge and practice scores were high in study participants.⁹ In our study, the knowledge and practice scores were higher in females (as compared to males), in unmarried (as compared to married), and in those with higher qualifications, but all of these were not significant statistically.

The present study showed that the mean score for knowledge and practices was not correlated to marital status, age, and qualifications. However, Zhong et al from China found an association between poor practices and male gender³. Our study showed that there was a weak positive correlation between knowledge score and practice score (spearman rho coefficient = .459, p-value < .05). It means that as knowledge increases, so the level of good practices increases and vice versa. However, Huynh G reported a negative relationship between knowledge and practice scores.⁹ Saqlain in his study showed a positive relationship between knowledge and practice score.⁷

During the COVID-19 pandemic, preventive measures are taken by countries to stop the spread of the pandemic. These include closing educational institutions, shutting down public transport services, making it necessary to wear face masks by the public, locking down the markets, etc. All these were done in the best public inter-

est. Furthermore, the spread of awareness through social media and news was also done. It is necessary to educate the public as it will help them stop the spread of disease among themselves and the whole community.^{9,16,17}

CONCLUSION

The majority of participants had good knowledge of COVID-19 and good practices too. However, the lack of social distancing among the participants is alarming and may become the cause of the rapid spread of disease in the community.

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Authors Contribution:

Following authors have made substantial contributions to the manuscript as under

Authors	Conceived & designed the analysis	Collected the data	Contributed data or analysis tools	Performed the analysis	Wrote the paper	Other contribution
Khan MI	✓	✓	✓	×	✓	×
Ali M	✓	✓	×	×	✓	×
Shafi M	×	✓	×	×	×	✓
Gul A	✓	×	✓	✓	×	×
Waseem H	✓	✓	×	✓	×	×
Hussain S	×	✓	×	✓	✓	×

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Ethical Approval:

This Manuscript was approved by the Ethical Review Board of Khyber Medical College, Peshawar. Vide No. 951/DME/KMC.

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