Knowledge, Perception and Attitude of the Undergraduate Healthcare Students Relative to COVID-19 Infection at a Teaching Institute of Karachi

ABSTRACT:

Coronavirus disease 2019 (COVID-19) has been declared a pandemic by the World Health Organization. Efforts are being made all over the world to raise awareness in order to prevent the disease from spreading. The purpose of this study was to assess undergraduate healthcare students' attitudes, perceptions, and knowledge of COVID-19 disease. We conducted a cross-sectional survey in which a questionnaire with 12 questions was transformed online on Google forms and distributed online to healthcare students. Data was collected between May and June of 2021. The convenience sampling technique was used, resulting in a sample size of 926 people. A total of 926 individual questionnaires were evaluated. The findings revealed that the majority of participants learned about COVID-19 through social media and electronic media, which was the most common source of information. The majority of participants stated that older and middle-aged people are more likely to be affected. The protective measure against symptomatic and asymptomatic COVID 19 is N95 and surgical masks, as well as sanitization.

Half of the participants believe that Covid 19 is a bioweapon, and that it affects all religious groups equally. In general, undergraduate healthcare students had a fair understanding of the disease and a favorable attitude toward preventive measures. The government and the public are taking effective measures to combat disease spread; however, there is still a need for additional awareness campaigns and knowledge of safe interventions to combat disease spread.

Keyword: COVID-19, Knowledge, Perception, Attitude and Karachi

INTRODUCTION:

In December 2019, the highly contagious infection emerged in the city of Wuhan, China. This infection was caused by a coronavirus, which was eventually named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (1).

On January 30, 2020, WHO declared coronavirus as a global public health emergency (2). Then, in early March, many countries around the world reported a significant increase in the number of new cases. Since March 12, 2020, approximately 142,539 cases and 5,393 deaths have been confirmed in 118 different countries (3). The first coronavirus patient in Pakistan was reported on February 26, 2020 (4). Since June 17, 2020, there have been 154,760 confirmed cases; the death rate reported was 2,975, and the number of patients recovered from this condition in the country was 58,437. As of October 10th, 2020, Pakistan had reported 324,077 cases of COVID-19, with 6673 deaths, 9384 active cases (under treatment), and 308,020 recovered cases (5).

Coronaviruses have emerged as the primary pathogens of evolving respiratory disease outbreaks. They are part of a large family of single-stranded RNA viruses that can cause illnesses ranging from a common cold to severe symptoms like Middle East Respiratory Syndrome (MERS) and Severe acute respiratory syndrome (SARS) (6). The major symptoms associated with COVID-19 disease include fever, cough, fatigue, malaise, and shortness of breath. It can also affect the digestive tract, causing vomiting and diarrhoea. The primary mode of transmission is via respiratory droplets, which can spread through coughing or sneezing. Due to growing concerns about the virus has grown as a consequence of high transmission capability, which may be associated with morbidity and mortality (7, 8). Even though the World Health Organization (WHO) has defined an incubation period for the virus as 2 to 10 days, latest studies have predicted an incubation period of more than 2 weeks (9). The older individuals and patients with chronic health conditions are more likely to become infected, and they are also more likely to develop serious complications, such as acute respiratory distress syndrome (ARDS) and cytokine storm (10).

Since the proclamation of COVID-19, the Pakistani government has been working to raise safety awareness and enforce lockdown steps to prevent the spread of this infection. Similarly, the

WHO has strongly advised self-isolation, social distancing, and lockdown as important anti-disease measures (11).

In the light of that Qian et al. research highlighted three approaches which should be followed to prevent and control the spread: a) monitoring the potential causes responsible for spreading the disease, b) restricting further transmission, and c) protecting vulnerable members of society (12).

Along with launching a general public awareness campaign, Pakistan's National Institute of Health has played a critical role in developing and disseminating safety procedures for COVID-19 prevention and transmission. This has included giving information about the use of personal protective equipment and face masks, as well as adhering to an adequate personal hygiene regimen(13).

During this COVID-19 outbreak, healthcare workers are at high risk (14). A study conducted by Ikhlaq et al. on medical undergraduate students at Lahore Medical College discovered adequate knowledge and awareness of COVID-19 (15).

This survey was designed to assess healthcare students' knowledge, attitudes, and perceptions of COVID-19 at a teaching institute in Karachi. The current analysis was conducted using an online assessment to better understand the healthcare students' knowledge and risk perception of the COVID-19 outbreak.

METHODOLOGY:

A cross-sectional study was conducted among undergraduate students at Baqai University. The students gave their verbal consent to fill out the questionnaires. The questionnaire survey were anonymous in order to protect the privacy and confidentiality of all information disclosed in the study. The study received ethical clearance from the Ethical Review Committee. The research was conducted in accordance with the Helsinki Convention.

Due to the strict lockdown, a web - based survey form was created on Google Forms (Alphabet; Mountain View, California, United States). It was circulated to students of the different degree program relating to healthcare in the university via social media. Data was collected between May and June of 2021. The convenience sampling technique was used, resulting in a sample size of 926 people. The entire roster of dental and medical students enrolled from the first year onwards, as well as the interns/house officers who gave consent for participation, were included in the study; students who did not provide consent were excluded from the study.

During the research period, a questionnaire was created, tested, and validated twice. The task ahead was primarily aimed at senior medical and dental healthcare professionals with research experience, who were asked to provide their points of view on the simplification, relativity, and significance of questionnaire content. A pilot study (n = 25) was conducted with a smaller

sample of medical and dental students. The pilot study records were not used in our final investigation.

The following set of questionnaire was divided into three parts. The first part of the survey focused on the participants' demographic information, which included gender, age, geographical location, field of study, and year of study. The second section focused on the knowledge regarding main source of information of covid-19, symptoms and preventive measures. The third part include question regarding the perception and attitude of students regarding this unique COVID-19.

Statistical Package for the Social Sciences (SPSS) version 25 was used to perform descriptive analysis to calculate frequencies and percentages for sociodemographic characteristics, knowledge, attitude, practices, and perceptions toward COVID-19. The Chi-square test was used to assess medical students' attitudes and perceptions among socio-demographic groups (male and female).

RESULTS:

Out of 1210 participants, 926 participants completed the online questionnaire. The remaining 284 participants did not completely filled the questionnaire. As shown in Figure 1, the majority of the participants was between the ages of 18 and 26. The majority of respondents (68%) were females, with the remaining 32% were males.

With 456 participants, the majority were between the ages of 20 and 23 years old, followed by 423 between the ages of 18 and 20 years old, and the remainder were between the ages of 24 and 26 years.

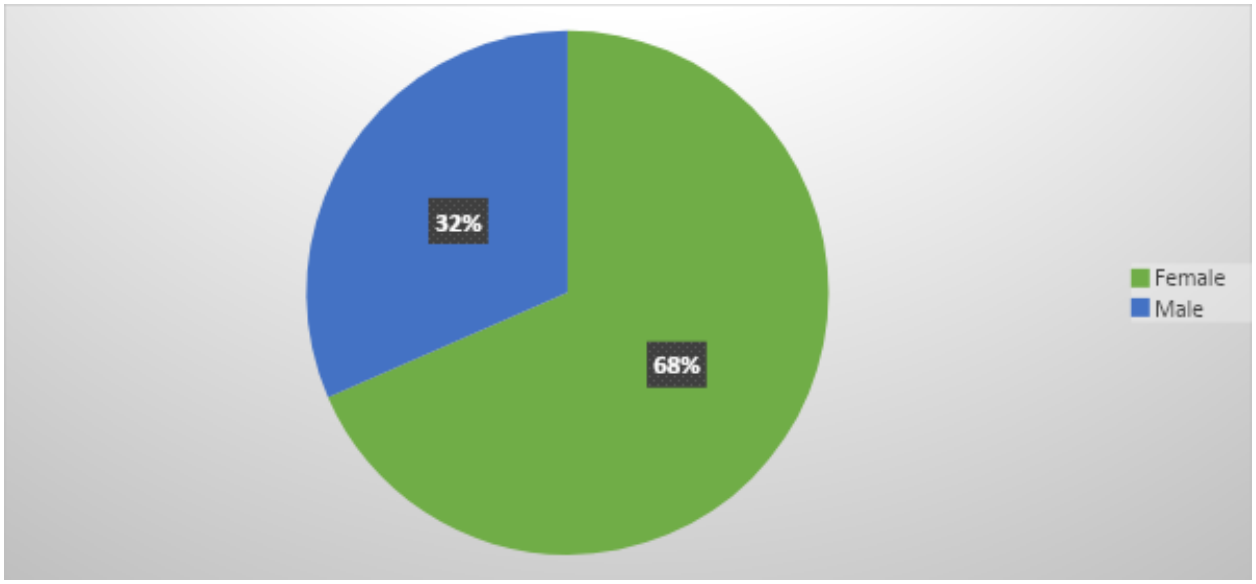

Figure 1: Gender-wise distribution of healthcare students

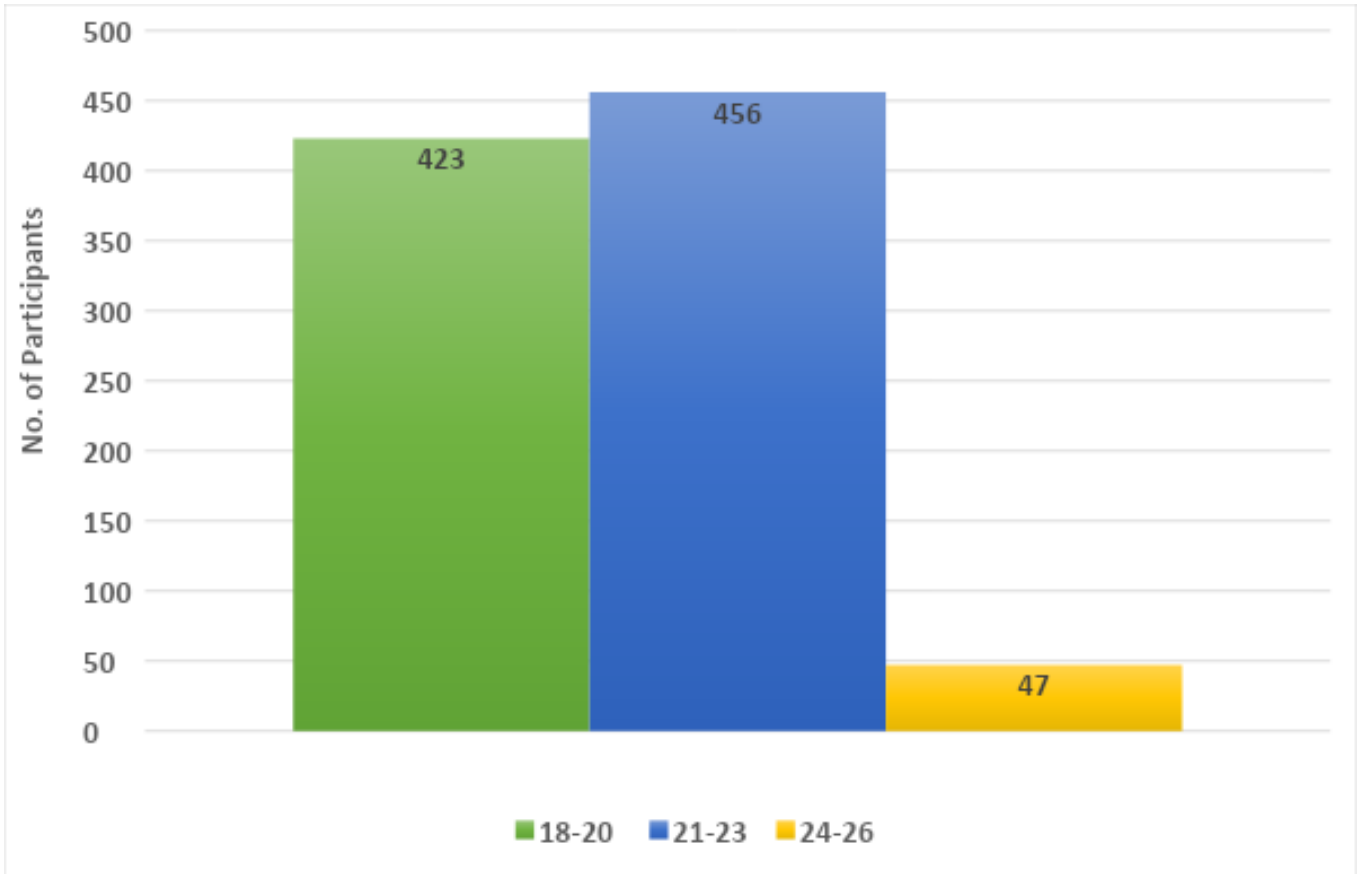

Figure 2: Age-wise distribution of healthcare students

Most of the students' knowledge and behavior toward the COVID-19 pandemic are critical to its spread, and according to our survey, the main source of information regarding COVID-19 was through social media (36.1%) and electronic media (35.9%) followed by through healthcare workers (11.7%) then friends and family (8.9%) and only a few students got it from print media (7.6%).

More than two-third of the student in our study thought that N95 (40.8%) and surgical mask (37.4%) were the most protective, while only a few thought that cloth mask with filter (11.3%) and store cloth mask (10.6 percent) were the most protective against Covid-19 infection.

In our study, we discovered that the majority of students perceived that the older, middle-aged, and adult age groups were the most commonly infected by COVID -19 infection. A small group of students believed that young people, teenagers, and children were more likely to become infected.

About one-thirds of healthcare students apprehended that the most effective way of controlling the disease is the use of masks and gloves (31.7%), followed by social distancing (20.4%), antiviral and vitamins medication (20.3%), and sanitization (20.4%). A few students (6%) believed that sun exposure was effective in the prevention of COVID-19, while 4.3 percent believed that eating fruits and vegetables was effective in the prevention of COVID-19.

The students have understood that the most common symptoms of the COVID-19 infection are fever and chills (45.4%), cough (20.3%), muscular pain (13.8%), and pain in the arm (13.4%). Only a few students thought fatigue (7.1%) was the most common symptom of COVID infection.

Table 1. Knowledge of COVID-19 among healthcare students

Knowledge	
What is your main source of information regarding COVID-19? 1. Social Media 2. Print Media 3. Electronic Media 4. Friends and Family 5. Healthcare workers	**334 (36.1%)** **70 (7.6%)** **332 (35.9%)** **82 (8.9%)** **108 (11.7%)**

What type of mask you think is more protective against COVID-19? 1. Surgical Mask 2. N95 3. Cloth Mask with filter 4. Store cloth Mask	**345 (37.4%)** **378 (40.8%)** **105 (11.3%)** **98 (10.6%)**
Which age group is more likely to get infected by COVID-19? 1. Children 2. Teenagers age group 3. Young age group 4. Adults age group 5. Middle age group 6. Older age group	**08 (0.8%)** **15 (1.6%)** **34 (3.7%)** **224 (24.2%)** **250 (27.0%)** **395 (42.7%)**
Which is the most effective method for protection against COVID-19? 1. Social distancing 2. Sanitization 3. Use of Mask and Gloves 4. Fruits and Vegetables 5. Sun exposure 6. Antiviral and Vitamin Medication	**189 (20.4%)** **169 (18.3%)** **294 (31.7%)** **40 (4.3%)** **56 (6.0%)** **188 (20.3%)**
Symptoms of a Covid 19 infection 1. Fever and Chills 2. Cough 3. Fatigue 4. Pain in the arm 5. Muscular pain	**420 (45.4%)** **188 (20.3%)** **66 (7.1%)** **124 (13.4%)** **128 (13.8%)**

Most of males believe COVID-19 is natural, whereas the majority of females believe it is not natural; however, when the results are compared, there is no significant difference between them.

Most students had no idea if COVID 19 was asymptomatic or not. As a result, there was no significant difference between the two groups.

In the current study, it was discovered that the majority of female students were unaware of the statistics of COVID 19 infection; however, male students believed they were aware of the statistics of COVID 19 infection. As a result, a significant difference was discovered between the two groups (p-0.001)

It was discovered that the majority of participants in both groups believed that COVID-19 affects all religious groups equally and that isolation is required for people who have been exposed to COVID-19. As a result, no significant difference was observed between the two perceived behaviors.

Because the majority of both gender groups believed that sanitization protects against COVID-19 and that wearing a mask prevents the spread of COVID-19, no significant change was observed.

Table 2. Attitudes and perceptions about COVID-19 Infection

ATTITUDE and PERCEPTION	FEMALE (n = 634)		MALE (n = 292)		*p*-value
1. COVID-19 is natural not a bioweapon.	**N**	**%**	**n**	**%**	
YES	**214**	**33.8%**	**120**	**41.1%**	**0.096**
MAYBE	**148**	**23.3%**	**60**	**20.5%**	
NO	**272**	**42.9%**	**112**	**38.4%**	
2. Can people have asymptomatic COVID-19?					
YES	**272**	**42.9%**	**127**	**43.5%**	
MAYBE	**317**	**50%**	**145**	**49.7%**	**0.874**
NO	**45**	**7.1%**	**20**	**6.8%**	
3. Do you think COVID-19 statistics (e.g. new cases, deaths, etc.) are made up?					
YES	**118**	**18.6%**	**142**	**48.6%**	**0.001**
MAYBE	**172**	**27.1%**	**78**	**26.7%**	
NO	**344**	**54.3%**	**72**	**24.7%**	
4. Do you think all religious groups are equally affected by COVID-19?	**496**	**78.2%**	**224**	**76.7%**	

YES MAYBE NO	**72** **66**	**11.4%** **10.4%**	**26** **42**	**8.9%** **14.4%**	**0.142**
5. Is isolation necessary for people who have been exposed to COVID-19? YES MAYBE NO	**600** **18** **16**	**94.6%** **2.8%** **2.5%**	**266** **14** **12**	**91.1%** **4.8%** **4.1%**	**0.124**
6. Does sanitization protect against COVID-19? YES MAYBE NO	**474** **134** **26**	**74.8%** **21.1%** **4.1%**	**198** **77** **17**	**67.8%** **26.4%** **5.8%**	**0.082**
7. Does wearing a mask prevent the spread COVID-19? YES MAYBE NO	**528** **76** **30**	**83.3%** **12.0%** **4.7%**	**236** **32** **24**	**80.8%** **26.0%** **8.2%**	**0.106**

DISCUSSION:

The health care students were polled online to conduct an in-depth analysis of their perceptions and knowledge of COVID-19. It only took one month to collect 1210 knowledge responses and a perception-based questionnaire with 12 questions, from which 926 responses were analyzed. According to the findings, most of participants learned about the disease COVID-19 or SARS-CoV-2 through social and electronic media. Even though these platforms are a natural source of access to information and data all over the world, they are not the most reliable option to choose from. False information is frequently associated with social networking sites such as Facebook. For instance, there was a lot of misconception about hydroxychloroquine being used as a possible therapy for COVID-19, which resulted in a drug scarcity for those that really needed it (16, 17).

The demographics of the participants, such as age and gender, revealed that female students participated the most. The distribution of participants suggested that it could be due to an increase in the number of female students admitted to healthcare systems (18).

According to the survey findings, participants were observed wearing masks and gloves, as well as social distancing, as a preventive measure against the disease. The health care students appeared to be oblivious to the COVID-19 precautions that needed to be taken (17). Participants from across the region believe that standard N95 masks are the most effective at protecting them from COVID infection, and they anticipate the protective ability of surgical masks over cloth masks. In a similar study conducted in Egypt, the general public appeared to assume that wearing masks would protect them from disease outbreak, but they were unsure which mask was effective. The WHO does not recommend that healthy young people wear masks; even so, if somebody is undergoing respiratory symptoms that could be caused by a SARS-CoV-2 infection, they should wear a N95 mask for protection.

There is some controversy about whether COVID-19 disease is a bioweapon, and according to our survey, more than one third of the participants said "yes," one third said "no," and a insignificant percentage said "maybe." The findings are intriguing in that people's perceptions support both notions, i.e., COVID-19 being a natural pandemic or a potential bioweapon. The findings are in accordance with a study in which the investigators explain how well this infection has virtually brought the world's superpowers to their knees by bringing the entire world in quarantine and wreaking havoc on the global economy.

According to our gathered answers, most of individuals believe everybody is vulnerable to the new coronavirus respiratory illness, while roughly the same number believe that older customers are more prone to get it. The findings are similar to those of a Chinese study that provides information about COVID-19 patients

Majority of the individual believe that COVID 19 may or may asymptomatic infection; moreover, as per the results of our survey, participants identified fever and chills, cough, muscular pain and pain in the arm as main symptoms of an infected individual. Our participants' knowledge is consistent with that of other epidemiological studies.

Almost half of male students believe that COVID19 case statistics and death rates are made up, while half of female students believe otherwise. This type of discrimination stems from the tremendous role of media professionals who play an important role in spreading misinformation through decisions about who or what to cover, and also the repetition of misleading information represents a lot of information likely to affect the attitudes of the Influenced people significantly (19)**.**

In the current study, three-fourths of students believe that all religious groups are equally effected; however, another study found that it is not the religious group that is effected or not;

rather, it is the behaviors associated with religious practices that may be responsible for higher infection rates and thus higher mortality rates (20).

More than 90% of the students believe that isolation is important, especially for patients who are exposed to disease. According to a study, it is extremely crucial to thoroughly understand the spread, morbidity, fatality, and development of immune response associated with coronavirus disease 2019 (COVID-19), which is caused by severe acute respiratory syndrome coronavirus 2, in order to establish an appropriate epidemiological and clinical response. Because current therapeutic options are only partially effective against COVID-19, exposure control is a critical component of the fight (21).

CONCLUSION:

In conclusion, the results of our survey indicate that undergraduate healthcare students at a teaching institute have rather appropriate practices and optimistic approaches as a result of the peak of a COVID-19 infection period. When it comes to the perception of COVID-19, each gender has a different point of view. The education and health programs have aimed to improve knowledge and change students' attitudes toward COVID-19, while also promoting safe practices and optimism.

STRENGTH AND LIMITATIONS:

This is among the few studies that have been conducted to assess undergraduate medical students' attitudes, perceptions, and knowledge of COVID-19. This study drew a large number of participants. Because the study was carried out during a lockdown, an online questionnaire was used for evaluation. The study only included healthcare students; no other undergraduate students were included.

Because of the small number of participants, more research like this is needed to look into other aspects of COVID-19 in Pakistan, such as the economic burden and availability of SARS-CoV-2 vaccines in low-income residents.

CONFLICT OF INTEREST

The authors declare that no commercial or financial relationships existed that could be construed as a potential conflict of interest when conducting the research.

REFERENCES:

1. Shigemura J, Ursano RJ, Morganstein JC, Kurosawa M, Benedek DM. Public responses to the novel 2019 coronavirus (2019-nCoV) in Japan: Mental health consequences and target populations. Psychiatry and clinical neurosciences. 2020;74(4):281.
2. Sohrabi C, Alsafi Z, O'neill N, Khan M, Kerwan A, Al-Jabir A, et al. World Health Organization declares global emergency: A review of the 2019 novel coronavirus (COVID-19). International journal of surgery. 2020;76:71-6.
3. COVID W. 19: USA Available at https://covid19. who. int/region/amro/country/us. Accessibility verified June. 2020;4.
4. Saqlain M, Munir MM, Rehman SU, Gulzar A, Naz S, Ahmed Z, et al. Knowledge, attitude, practice and perceived barriers among healthcare workers regarding COVID-19: a cross-sectional survey from Pakistan. Journal of Hospital Infection. 2020;105(3):419-23.
5. Coronavirus E. 13,968 Cases and 223 Deaths: https://www. worldometers. info/coronavirus/country/ethiopia. Accessed on. 2020;27.
6. Cascella M, Rajnik M, Aleem A, Dulebohn S, Di Napoli R. Features, evaluation, and treatment of coronavirus (COVID-19). StatPearls. 2021.
7. Ali S, Noreen S, Farooq I. COVID-19 and healthcare workers in pakistan: Are we losing this fight? Journal Of Medical Sciences. 2020;28(2):186-8.
8. Yang Y, Peng F, Wang R, Guan K, Jiang T, Xu G, et al. The deadly coronaviruses: The 2003 SARS pandemic and the 2020 novel coronavirus epidemic in China. Journal of autoimmunity. 2020;109:102434.
9. Di Gennaro F, Pizzol D, Marotta C, Antunes M, Racalbuto V, Veronese N, et al. Coronavirus diseases (COVID-19) current status and future perspectives: a narrative review. International journal of environmental research and public health. 2020;17(8):2690.
10. Guo Y-R, Cao Q-D, Hong Z-S, Tan Y-Y, Chen S-D, Jin H-J, et al. The origin, transmission and clinical therapies on coronavirus disease 2019 (COVID-19) outbreak–an update on the status. Military Medical Research. 2020;7(1):1-10.
11. Saqib A, Amin H, Idrak A, Bashir HAR. A REVIEW OF COVID 19 PANDEMIC IN PHYSIOTHERAPY CARE OF PATIENTS WITH CORONAVIRUS DISEASE IN PAKISTAN: LIMITATIONS AND GAPS. Turkish Journal of Physiotherapy and Rehabilitation.32:3.
12. Qian X, Ren R, Wang Y, Guo Y, Fang J, Wu Z. Members of Steering Committee ,Society of Global Health ,Chinese Preventive Medicine Association. Fighting against the common enemy of COVID-19: a practice of building a community with a shared future for mankind. Infect Dis Poverty. 2020;9(1):34.
13. Saqlain M, Munir MM, Ahmed A, Tahir AH, Kamran S. Is Pakistan prepared to tackle the coronavirus epidemic? Drugs & Therapy Perspectives. 2020:1.
14. Ali S, Noreen S, Farooq I, Bugshan A, Vohra F. Risk assessment of healthcare workers at the frontline against COVID-19. Pakistan journal of medical sciences. 2020;36(COVID19-S4):S99.
15. Ikhlaq A, Hunniya B-E, Riaz IB, Ijaz F. Awareness and attitude of undergraduate medical students towards 2019-novel corona virus. Pakistan Journal of Medical Sciences. 2020;36(COVID19-S4):S32.
16. Ahmed N, Khan A, Naveed HA, Moizuddin SM, Khan J. Concerns of undergraduate medical students towards an outbreak of COVID-19. Int J Curr Med Pharm Res. 2020;6(03).

17. Dar Odeh N, Babkair H, Abu-Hammad S, Borzangy S, Abu-Hammad A, Abu-Hammad O. COVID-19: present and future challenges for dental practice. International journal of environmental research and public health. 2020;17(9):3151.
18. Kim AH, Sparks JA, Liew JW, Putman MS, Berenbaum F, Duarte-García A, et al. A rush to judgment? Rapid reporting and dissemination of results and its consequences regarding the use of hydroxychloroquine for COVID-19. American College of Physicians; 2020.
19. Riska E. Women in the medical profession: international trends. The Palgrave handbook of gender and healthcare: Springer; 2010. p. 389-404.
20. Brodeur A, Gray D, Islam A, Bhuiyan S. A literature review of the economics of COVID-19. Journal of Economic Surveys. 2021;35(4):1007-44.
21. Gaughan CH, Ayoubkhani D, Nafilyan V, Goldblatt P, White C, TIngay K, et al. Religious affiliation and COVID-19-related mortality: a retrospective cohort study of prelockdown and postlockdown risks in England and Wales. J Epidemiol Community Health. 2021;75(6):509-14.
22. Rosolanka R, Henao-Martinez AF, Pisney L, Franco-Paredes C, Krsak M. COVID-19: a review of current knowledge regarding exposure, quarantine, isolation and other preventive measures. Therapeutic Advances in Infectious Disease. 2021;8:20499361211032039.