COVID-19 SURVEILLANCE IN TERTIARY CARE HOSPITAL OF DISTRICT NOWSHERA, PAKISTAN

Sobia Haris[1], Muhammad Haris[2], Farah Deeba[1], Muhammad Jehangir Khan[3]

[1]Department of Medical Education, Nowshera Medical College, Nowshera, Pakistan.

[2]Department of Anatomy, Nowshera Medical College, Nowshera, Pakistan.

[3]Department of Pediatric Surgery, Makka Medical Center, Nowshera, Pakistan.

ABSTRACT

Objective: *To find out the frequency of COVID-19 in the population of district Nowshera, Pakistan.*

Materials and Methods: *It was a descriptive cross-sectional study in which data was collected through non probability convenient sampling for about 02 months. Sample size was 358. All those who were suspected of having COVID-19 regardless of their age and gender were included in the study whereas those with other medical problems were excluded.*

Results: *The study participants ranged from 1 to 85 years of age, with a mean age of 35±16 years. Of the total of 358, 259 (72.3%) were males and 99 (27.7%) females. The mean duration of exposure to someone suspected of having or confirmed to have COVID-19 was 6±2 days. Highly statistically significant but weakly positive correlation of a positive PCR test with COVID-19 exposure (rs = 0.23, p = 0.001) was observed. Travel history to a known outbreak was also weakly correlated (rs = 0.12, p = 0.02.*

Conclusions: *We concluded from our study that elderly adults were more vulnerable to COVID-19 infection than young. Furthermore, travel history to an epidemic area, as well as intimate contact with COVID-19 patients or those suspected of having the virus, is strongly linked with the development of COVID-19 infection.*

Keywords: *Corona virus disease, COVID-19, Nowshera, Pakistan, surveillance.*

INTRODUCTION

By 30th May, 2021, at least 169 million people around the world have been infected with Corona Virus Disease of 2019 (COVID-19), with more than 3.5 million deaths worldwide [1]. This new deadly virus emerged in December 2019 with the appearance of deadly pneumonia of indefinite origin. Soon after, the Centre for Disease Control and Prevention, China along with the CDC ascribed it to new virus belonging to corona ancestry and was called as nCoV-2019 well known as COVID-19 [2]. The very first case of nCoV-2019 was reported from the Wuhan city of Hubei province in China in December 2019 as cases of severe respiratory distress syndrome. Causes are yet to be identified and confirmed, but most of the researchers are of the view that it is mainly originated from the corona virus of animal origin, SARS-CoV, that affected the people n 2002 [3]. The current outbreak seems to have started at the Huanan food market in Wuhan city, as reports suggest 66% of the infected patients had a contact history with this sea food market [4]. In China keeping in view the importance of clinical presentation, voyage record to a pandemic region or close interaction with COVID-19 infected person they defined their suspect as any patient presenting with a history of fever, flu, cough, shortness of breath record of journey to the outbreak area (i.e. Hubei province), or with active interaction history while a definite case was a person with a positive PCR [5]. In Pakistan, as of 31th May, 2021, the presented records from National Command

Correspondence:
Dr. Muhammad Haris
Assistant Professor
Department of Anatomy, Nowshera Medical College, Nowshera, Pakistan.
Cell: +92 3459186156
Email: dx_harris@hotmail.com

Operation Centre (NCOC) and Ministry of National Health Services Regulations and Coordination sources declare 921,053 definite cases with 20779 deaths. The highest number of COVID-19 cases which are 339686 are in the province of Punjab, followed by Sindh 317665, KPK 132549, Islamabad 81195, Baluchistan 25148, Azad Jammu and Kashmir 19332 and Gilgit Baltistan 5578 cases [6]. This study was aimed to find out the frequency of COVID-19 infectivity and its correlation with age, gender, travel and exposure history in population of District Nowshera, Pakistan.

MATERIALS AND METHODS

This was a descriptive cross-sectional study conducted at COVID-19 clinic of Qazi Hussain Ahmad Medical Complex, Nowshera, Pakistan.After obtaining the ethical approval by Ethics Board (EB) of Khyber Medical University, Peshawar, Pakistan vide letter No: DIR/KMU-EB/CS/00080, this study was conducted from June, 2021 till August, 2021. A total of 358 participants were included in the study. Sample size was calculated through Raosoft® [7], using margin of error 05%, confidence interval (CI) of 95%, and a population size of 1.5 million and response distribution of 50% in general population.

All those people who were suspected of having COVID-19 and presented to COVID-19 clinic, regardless of their age and gender were included in this study whereas, those who presented for other medical problems, or injuries were excluded.

All the study participants who presented to Qazi Hussain Ahmad Medical Complex, Nowshera, Pakistan with symptoms suggesting COVID-19 were screened for PCR test using pre-validated approved criteria of Qazi Hussain Ahmad Medical Complex, Nowshera, Pakistan on the recommendations of the Infectious Disease Control Committee. People who scored more than 05 were tested for COVID-19 using nasopharyngeal swabs. All study participants with scores of less than five were not tested and were advised to go home and take precautionary measures.

Descriptive statistics were presented in percentages. The Spearman correlation coefficient (rs) was used to find out the link of PCR positivity, with the patient age, gender and contact with someone with COVID-19. All the analysis was done using SPSS version 25.

RESULTS

The research was carried out on participants from a variety of age and gender groupings. All the study participants were classified into three age groups: the young (18-35), the middle-aged (36-55), and the elderly (over 55). The adolescents and youngster age groups, on the other hand were combined in order to improve data assessment. The average number of participants ranging in age from 18 to 35 years old accounted for 63.1%. Participants below the age of 18 years were 13.4%, between the ages of 36 and 55 years accounted for 23.7% with 13.2% of those above the age of 55 years. The total numbers of 358 participants were divided into three age groups: the young, the middle-aged, and the elderly, with 178, 85, and 47 individuals in each category, respectively. Comparing the number of male and female participants, it is clear that the male participants outweigh the female participants. During the research, 259 males participated, accounting for 72.34% whereas 99 females participated in the current study which accounted for 27.66% of the total number of participants (Table 1).

The average time it took to become a suspected victim of COVID-19 was 06±02 days. The Spearman correlation (rs) test was performed for checking different variables for the patients that tested positive for COVID-19. It was also attempted to compare the connection with the PCR test in the event of a positive instance. Data was highly significant which showed positive but weak correlation between the positive PCR and the exposure to COVID-19 (rs = 0.22, p=0.001), which indicated clues for further studies. Additionally, there was a modest connection between the history of travel from the pandemic areas (rs=0.11, p=0.019) and the history of travel from other locations. A total of 144 study participants were chosen to participate in the PCR test for the identification of COVID-19; this accounted for 40.23%. The virus of COVID-19 was detected in the samples of 40 individuals, representing a positive rate of 27.77%. The results of the 78 individuals were negative (54.16%). There were only three candidates whose PCR findings were inconclusive (2.08%), and the results of the other 23 participants were still waiting, accounting for 15.97%. The travel history as well as the exposure history provided some interesting facts. It was identified through further analysis that 52.79% of the individuals who tested

positive for COVID-19 had a history of exposure to COVID-19 patients, which amounted to 189 persons in the whole study. Furthermore, 67 participants who had positive PCR for COVID-19 had positive travel history (18.71%).Table 2 contains a summary of all of the findings.

In terms of gender, it was found a somewhat favourable connection between male gender and travel history, as well as a relationship between rising age and travel history. The correlation coefficients for travel history rs=0.108 and p=0.021, whereas the correlation coefficients for age rs=0.141 and p=0.005 (Table 3).

DISCUSSION

The current COVID-19 pandemic has revealed a series of previously unidentified challenges to

Table 1: Demographics

Age groups	**Frequency**	**Percentage**
<18 years	48	13.4
18-35 years	178	49.7
36-55 years	85	23.7
>55 years	47	13.2
Total	358	100
Gender	Frequency	Percentage
Male	259	72.34
Female	99	27.66
Total	358	100

Table 2: Testing frequency, test results, travel, and contact exposure

PCR results	**Frequency**	**Percentage**
Negative	78	54.16
Positive	40	27.77
Pending	23	15.97
Inconclusive	3	2.08
PCR performed	144	40.23
PCR not performed	214	59.77
Total	358	100
Exposure history		
Yes	189	52.79
No	169	47.21
Total	358	100
Travel history		
Yes	67	18.71
No	291	81.29
Total	358	100

Table 3: Correlation matrix for PCR positive with different risk variables

		PCR positivity	Gender	Age groups	Travel history
Gender	rs	0.025			
	p	0.606			
Age group	rs	0.141	-0.04		
	p	0.005	0.313		
Travel history	rs	0.108	0.106	0.106	
	p	0.021	0.038	0.038	
Exposure history	rs	0.227	0.089	0.073	0.069
	p	0.000	0.081	0.156	0.172
Total		358	358	358	358

disease surveillance, including the impact of media reporting during the early stages of the pandemic; changes in healthcare-seeking behaviour as a result of government guidance on social distancing and accessing healthcare services; and changes in clinical coding and patient management systems [8]. It is critical to take a step back and consider the implications of each choice on a larger scale before making a decision [9]. The gathering of particular statistical data is required in order for authorities to make informed decisions that are backed by scientific evidence in order to prevent the spread of the COVID-19 virus, which is currently on the rise [10]. Therefore, the main goal of this study was to offer official authorities statistical data that would assist them in resolving their concerns while also providing a credible basis on which to make decisions when establishing laws for the pandemic scenario under consideration. This provides statistical data for the COVID-19 cases that have been verified which assists in the resolution of problems that are unique to a certain geographical area.

In accordance with the statistical data that was given, authorities were able to evaluate the severity of the pandemic in a specific area while also making adjustments in accordance with the number of cases reported and the method of transmission [11]. The suggested criteria for viral identification had a very high success rate, suggesting that they were very efficient in identifying viruses [11]. In the present study, existence of the virus was confirmed via PCR testing and was acquired by 40.02% of all participants. According to the results of a PCR assay, 40 (27.77%) of 144 individuals who were highly suspected of having COVID-19 were positive when the test was administered. Similar study was carried out in Japan which showed that the proportion of positive cases was 17.54% (95% CI: 15.3-19.2%) [12]. Furthermore, in another study of 70,868 individuals found that 43,778 (61.7%) of them tested positive for the presence of viral nucleic acid using the method of PCR [13]. Comparing their positive percentage to the present results, theirs was much greater. On the other hand, their results came from a region that had been extensively contaminated with the virus. In addition, it suggests that the strength of the relationship between the data and the severity of viral propagation was linked to the spread of the infection. According to our results, 189 (52.7%) of the participants had a history of contact with people who had COVID-19 or were highly suspected of having COVID-19 in the preceding two weeks, which was collected by our study group in a similar manner. Thirty-four (34) out of the 40 positive cases (84.9%) had a history of contact with other COVID-19 positive individuals, according to the study. As a result, it was determined that the vast majority of individuals were infected as a result of their contact with an infected individual. In addition to putting significant strain on society, health and social services, and research, the COVID-19 epidemic is also putting a strain on the environment.

Being able to recognize the development and present effect the pandemic is having is critical to planning, managing and mitigating the disease's long-term impact on the population. In every public health system, surveillance is the most important role. A multi-component surveillance system for COVID-19 is required to understand the burden of disease in various strata of any health system as well as the general population. Thus, we will be better able to understand the high number of deaths that have been reported thus far, as well as correlate

different risk factors with the infectivity and lethality of the danger.

CONCLUSIONS

We came to the conclusion that the prevalence of infection among our study participants was 27.14% after doing the PCR test and collecting information such as travel history and exposure history. CI for the findings was set at 95% which indicates that the data was of good quality and that a fair judgment can be made based on it. Furthermore, male individuals were more likely to be infected with the COVID-19 than female participants. This may have occurred because men spend the majority of their time outdoors and interact with a variety of people as a result of their jobs or business obligations. The COVID-19, on the other hand, is a fatal virus that also affects the females but, in less proportion, so the reason might be that they have less contact with outsiders, which helps them stay safe. Thus, it was concluded that elderly adults were more vulnerable to COVID-19 infection than younger adults. The virus was able to infect the elderly because of their weak immune system. Furthermore, it has been shown that a history of travel to an epidemic area, as well as exposure history with COVID-19 patients or those suspected of having the virus, is strongly linked with the development of COVID-19 infection.

REFERENCES

1. World Health Organization, Corona virus disease 2019 (COVID-19) Dashboard. (2021). https://covid19.who.int/.
2. Cascella M, Rajnik M, Aleem A, et al.: Features, evaluation, and treatment of coronavirus (COVID-19). StatPearls. 2021,
3. Chan JF, Kok KH, Zhu Z, et al.: Genomic characterization of the 2019 novel human-pathogenic coronavirus isolated from a patient with atypical pneumonia after visiting Wuhan. Emerging Microbes & Infections. 2020, 9(1):221-236. Doi: 10.1080/22221751.2020.1719902
4. Gudi SK, Tiwari KK: Preparedness and lessons learned from the novel coronavirus disease. Int J Occup Environ Med. 2020, 11(2):108-112. Doi: 10.34172%2Fijoem.2020.1977
5. Jin YH, Cai L, Cheng ZS, et al.: A rapid advice guideline for the diagnosis and treatment of 2019 novel coronavirus (2019-nCoV) infected pneumonia (standard version). Military Medical Research. 2020, 7. Doi: 10.1186/s40779-020-0233-6
6. National Command Operation Center and Ministry of National Health Services Regulations and Coordination Dashboard. (2021). https://covid.gov.pk/stats/pakistan.
7. http://www.raosoft.com/samplesize.html.
8. Elliot AJ, Harcourt SE, Hughes HE, et al.: The COVID-19 pandemic: a new challenge for syndromic surveillance. Epidemiology & Infection. 2020, 148:e122. Doi: 10.1017/S0950268820001314
9. Jansen O: Administrative Law Rules and Principles in Decisionmaking of the World Health Organization During the COVID-19 Pandemic. Administrative Law Review. 2021.
10. Shereen MA, Khan S, Kazmi A, et al.: COVID-19 infection: Origin, transmission, and characteristics of human coronaviruses. J Adv Res. 2020, 24:91-98. Doi: 10.1016%2Fj.jare.2020.03.005
11. Ai T, Yang Z, Hou H, et al.: Correlation of chest CT and RT-PCR testing for coronavirus disease 2019 (COVID-19) in China: a report of 1014 cases. Radiology. 2020, 296(2):32-40. Doi: 10.1148/radiol.2020200642
12. Odagaki T: Analysis of the outbreak of COVID-19 in Japan by SIQR model. Infectious Disease Modelling. 2020, 5:691-698. Doi: 10.1016/j.idm.2020.08.013
13. Mizumoto K, Kagaya K, Zarebski A, et al.: Estimating the asymptomatic proportion of coronavirus disease 2019 (COVID-19) cases on board the Diamond Princess cruise ship, Yokohama, Japan, 2020. Euro Surveill. 2020, 25(10). Doi: 10.2807/1560-7917.ES.2020.25.10.2000180.