ASSOCIATION OF GENDER, AGE, AND COMORBIDITIES WITH MORTALITY IN COVID-19 PATIENTS OF DISTRICT BAJAUR, PAKISTAN

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ABSTRACT

Objective: *To find the association of co-morbidities with mortality among infected population in District Bajaur.*

Materials and Methods: *The data were collected from patients by face to face interviews and both verbal and written informed consent was collected. The nasal swabs were collected from symptomatic patients for confirmatory test and were confirmed by rRT-PCR test.*

Results: *A total of 860 individual were enrolled in this study with means age score of 32.6±1.5, 159 (82.4%) were male and 34 (17.6%) were female. Among co-morbidities patients, 16 (8.3%) were suffering from cardiovascular diseases like hypertension, 1 (0.5%) with Chronic Lung Disease, 6 (3.1%) with Diabetes.*

Conclusion: *There was positive correlation between comorbidities and patient outcome status (P<0.001). Mortality ratio was more in aged group people. There was increase mortality rate with co-morbidities patients.*

Key words: *COVID-19, Diagnosis, Epidemiology, rRT-PCR, SARS-CoV-2.*

INTRODUCTION

In December 2019, many cases of pneumonia like fever were reported in china. With proper investigation, it was identified that a new strain of coronavirus is the cause of this disease [1]. Later, WHO named this disease, coronavirus disease 2019 (COVID-19) and the virus were named Severe Acquired Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). Coronavirus was reported for the first time in 1960 in chicken but in human, SARS-CoV was reported in 2003 for the first time. Another strain of the same virus named as Middle East Respiratory Syndrome Coronavirus (MERS-CoV) was reported in 2012[2].

Some of the symptoms of COVID-19 are like pneumonia and seasonal flu. The symptoms of COVID-19 are fever, headache, diarrhea, loss of taste, tiredness, nasal congestion, runny nose, dry cough, and difficulty in breathing. Some patients are asymptomatic but are the carrier of SARS-CoV-2. After infection, the symptoms appear in about 2-14 days[1]. COVID-19 may occur at the same time in patients having other diseases. Some of the reported co-morbidities are hypertension, chronic lung disease, diabetes, obesity and heart diseases[3].

According to a situation report by WHO disclosed on 5th August 2020, in the world total number

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of positive cases are 183.54 million. Americas is on the top in the globe (9 841 842 cases) having highest number of cases, followed by Europe (3451556 cases), South-East Asia (2 299433 cases) and Eastern Mediterranean countries (1585458 cases)[4]. In eastern Mediterranean countries Pakistan is on third number having 294638 cases reported on 27th August, 2020[5].

The COVID-19 is disseminated throughout the world by traveling from the affected countries to the unaffected countries. According to a surveillance report of the first 11 week of the outbreak in the world, the first case of three quarter of the affected countries have recent travel history to the countries like China, Italy or Iran[6]. In Pakistan, within 15 days after the outbreak all the confirmed cases have recently travel back from Syria, London and Iran[7].

This study was designed to determine the frequency of COVID-19 positive patients, diagnosed and confirmed by PCR test in the District Bajaur, KP, Pakistan. Epidemiological characteristics of COVID-19 were also reported. The results of this study will be helpful for health department in the management of infectious diseases and in future it will be helpful for further epidemiological and web-based surveillance report.

MATERIALS AND METHODS

A descriptive cross-sectional study was conducted at District headquarter hospital (DHQ) hospital Khar, Bajaur, KP, Pakistan.

In this study, 860 corona-suspected patients were recruited. All these patients were admitted in Corona ward of DHQ hospital Khar. Those patients who have fever, cough and other symptoms as per WHO guidelines, were admitted in a specified Corona ward. Consent were obtained from all the patients. In this study diagnosis and epidemiological characteristics of all the patients were studied. This study was conducted from 19th February to 25thJuly, 2020. Nasopharyngeal swabs were collected from all COVID-19 suspected patients. The samples were further processed for COVID-19 confirmatory test.

The study received formal ethical permission from the district headquarter hospital (DHQ) in Khar, Bajaur, Pakistan [239/M-1/MS]. The participants' anonymity was preserved. The Helsinki Declaration (Revised 2013) and the International Ethical Guidelines for Human Research in Health (2016) were used in this investigation to ensure the highest degree of ethical standards.

Clinical samples were sent to the Public Health Molecular Research Laboratory, Swat and Peshawar for confirmatory test, in viral transport medium (VTM) brand; IMPROSWAB®, Guangzhou, Improve Medical Instruments Co., Ltd (China). First RNA was extracted by Qiagen Viral RNA Mini Kit. The samples were confirmed by Real time reverse transcriptase polymerase Chain Reaction (rRT-PCR) test. It was done by using MIC PCR (real time multiplex RT-PCR) and ABI 7500 real time RT-PCR.

All the data was stored and analyzed in SPSS version 23.0. Mean $\pm$ SD was calculated for quantitative variables like age. Frequency and percentages was calculated for categorical variables. To find association between Co-morbidity, and mortality by using chi square test with p value of ≤ 0.05 as significant. All results is presented in the form of tables and graphs.

RESULTS

A total of 860 patients were enrolled in this study. All the patients included in this study were symptomatic. The rt-PCR results show that 193(22.4%) of the total individuals (860) were positive for SARS-CoV-2. While remaining 667(77.6%) were reported negative. given in the Table 1.

Out of the total 193 positive patients, 89.5% (770) patients were male and 10.4% (90) were female as shown in figure 01.

Out of all, 6(3%) were active while 87 (45%), 94(49%), 4(2%), 2(1%) were recovered, cleared, expired and under investigation respectively as shown in Table 02.

All patients were categorized according to province wise. In KP 185(95.9%), Punjab 1(0.5%), Sindh 3(1.6%), and Balochistan 4(2.1%) as given in Table 03.

Among all patients 17(8.8%) were reported with comorbidities while 176(91.2%) participants were repeated with no comorbidities as shown in Table 04.

Among comorbidities patients, 16(8.3%) were suffering from cardiovascular diseases like hypertension, 1(0.5%) with Chronic Lung Disease, 6(3.1%) with Diabetes as shown in Table 05.

Out of the total 193 patients, 15(7.8%) were health workers and 178(92.2%) were non-health workers.

Total of 860 patients were included in the study. Among total positive patient with mean age score of 32.6±1.5 while least percentage 0.5% in more than ninety years as shown in table 08.

Table 07. Percentage of different age groups among positive patients.

Table 01. Result of rt-PCR showing numbers and percentage of positive and negative covid-19 patients.

Gender	Frequency	Percent
NEGATIVE	667	77.6
POSITIVE	193	22.4
Total	860	100.0

Table 02. Status of patient

Patient status	Frequency	Percentage	Valid Percentage
Under Investigation	2	1	1
Recoverd	87	45	45
Cleared	94	49	49
Active	6	3	3
Expired	4	2	2
Total	193	100.0	100.0

Table 03. Individual Resident History Province Wise Distribution

Location	Frequency	Percentage	Valid Percentage
KP	185	95.9	95.9
Punjab	1	0.5	0.5
Sindh	3	1.6	1.6
Balochistan	4	2.1	2.1
Total	193	100.0	100.0

Table 04. Co-Morbidities in covid-19 patients.

Co-morbidities	Number	Percentage	Valid Percentage
NO	176	91.2	91.2
Yes	17	8.8	8.8
Total	193	100	100.0

Table 05. Different Disease Status showing co-morbidities.

Disease	No		Yes		Total
	Number	%	Number	%	
CVD	177	91.7	16	8.3	193
Chronic Lung Disease	192	99.5	1	0.5	193
Diabetes	187	96.9	6	3.1	193

Table 06. percentage of health workers among positive patients.

Health worker	No	Yes	Total
Number	178	15	193
Percentage	92.2	7.8	100

Table 07. Percentage of different age groups among positive patients.

Age group	Frequency	Percentage (%)	Valid Percentage (%)	P-Value
1-10	0	0.0	0.0	
11-20	10	5.2	5.2	
21-30	46	23.8	23.8	
31-40	40	20.7	20.7	
41-50	26	13.5	13.5	
51-60	40	20.7	20.7	0.002
61-70	24	12.4	12.4	
71-80	5	2.6	2.6	
81-90	1	0.5	0.5	
>90	1	0.5	0.5	
Total	193	100.0	100.0	

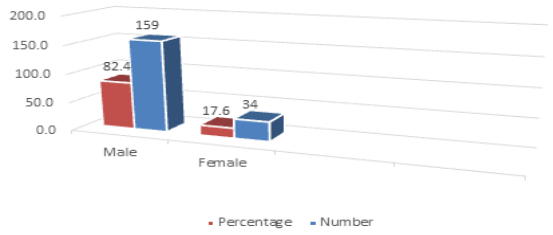

Figure 01. Gender Wise Distribution.

DISCUSSION

During the outbreak of COVID -19 in Pakistan, mostly people have recent travel history from other countries such as Iran when 1st case was reported in Karachi. Testing for COVID-19 were started at Airports and other borders for symptomatic and asymptomatic people who have travel history.

As described in the results section, there have been a total of 860 cases of COVID-19, spread across the district in the mentioned period. A total of 3019 health workers were infected which accounted for 3.83% of total number of infections, and extremely burdened the health system which support our study finding[9] . The mortality rate was 2% which is less than the previous SARS-CoV and MARS-CoV which was 10% and 35 % respectively [10] .

In this study total percent of the population infected was 22.4%, in which 82.8% were male while 17.2 % were female. Among age wise distribution the positive cases the highest ratio was 21.8% among 30-39 years patient, while 21.3 % in 20-29 years aged. Our study finding is similar with observation reported by Jin Kiu., *et al.* 2020 [11]. The results of our study showed that case fatality rate (CFR) was high in 70-79 age patients among positive [12.] Highest frequency of infection was observed in the permanent resident Khyber-Pakhtunkhwa where the rate of infection was 96.5%. while non-local patients from Sindh was at second number where infection cases were 2.0%, while from Baluchistan 1.5%.But due to more population of Bajaur (KP), the virus become epidemic very rapidly due lake of precautionary measures and social distancing among people and virus transmission rate. Our finding has correlation with the study[13.] Our results showed that 3.3% out of the total patients were recently traveled to the affected regions. Among these patients, 0.3% has recent foreign travel history. 7.8% patients were workers of the hospital. The highest percentage of health-care workers was from doctors and para-medic staff, having percentage of 42.2% and 32.8% respectively. This result was in correspondence to the statistical report of National Institute Of Health, Pakistan[14,15]especially in the Asia Pacific region, are seeking effective public-health interventions in the continuing epidemic of severe acute respiratory

syndrome (SARS

In this recent study the most common co-morbidities diagnosed in these patients are CVD, including hypertension (8.3%) and diabetes (3.1%), but chronic lung diseases were identified only in 0.5% patients. Sanyaolu A. *et al.* Reported the same result that the highest co-morbidities identified were CVD and hypertension [3]. Another report states that the co-morbidity in the major epicenter countries are CVD and hypertension (36.3%) and diabetes (17.4%) [16].

The CFR determined in this recent study is same as reported by Pericàs J. M. *et al.* in different countries like Italy (13.7%), France (14.7%) and Belgium (15.8%). The pandemic era in district Bajaur, KP, Pakistan was not critical as compared with these countries, but the CFR is same because of the difference in the study duration. The study duration of Pericàs J. M. *et al.* was less than the duration of this study, which is five months [18].

CONCLUSION

In conclusion this is the first preliminary investigating the role of gender wise mortality and morbidity ratio among people of local population in District Bajaur, KP, Pakistan. Mortality ratio was more in aged group people. Male population is more prone due to their social linking in male dominant society. There is increase mortality rate with comorbidities patients.

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