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ORIGINAL ARTICLE/ORİJİNAL MAKALE

Characteristics of COVID-19 patients and risk factors of mortality in the early times of pandemic, Herat-Afghanistan

Herat-Afganistan'da pandeminin erken dönemlerinde COVID-19 hastalarının özellikleri ve mortalite risk faktörleri

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Abstract

Objective: Coronaviruses are a large family of viruses that cause different types of diseases. This study aims to evaluate the risk factors for mortality based on comorbidity and socio-demographic characteristics among COVID-19 patients.

Methods: This cross-sectional study conducted in Herat, Afghanistan, from February 24 to July 5, 2020, used data provided by the public health department, including socio-demographics, symptoms, comorbidities, hospitalization, contact history, and COVID-19 test type. The Chi-square test was used to observe differences between categorical variables. In bivariate analysis, all independent variables with a significant p-value were put into the model. Odds ratios and 95% confidence intervals were calculated, and a p-value less than 0.05 was considered statistically significant.

Results: The study analyzed 11,183 COVID-19 cases, with a 53.5% positivity rate. Recovery rates in the city and Herat province districts were 96.2% and 94.7%, respectively. Case-fatality rates varied with age, with 0.4% for those aged 1-29 and 33% for those aged 80-105. Mortality rates were highest for those with COPD and cancer, at 12.5% and 18.2%, respectively. In the logistic regression results, age, gender, and COPD were significant variables for COVID-19 mortality.

Conclusion: By providing more health service facilities to people in risk groups, especially in rural areas, the mortality rate of COVID-19 and other diseases can be decreased.

Keywords: COVID-19, Herat, Afghanistan, Mortality, Risk factor

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Öz

Amaç: Coronavirüsler, farklı hastalık türlerine neden olan geniş bir virüs ailesidir. Bu çalışma, COVID-19 hastalarında komorbidite ve hastaların sosyo-demografik özelliklerine göre mortalite risk faktörlerini değerlendirmeyi amaçlamaktadır.

Yöntem: Bu kesitsel çalışma, 24 Şubat-5 Temmuz tarihleri arasında Afganistan'ın Herat ilinde yürütülmüştür. Çalışmanın verileri Herat İl Halk Sağlığı Müdürlüğü tarafından sağlanmış olup hastaların sosyo-demografik verileri, hastalığın belirti ve bulguları, eşlik eden hastalıklar, hastaların hastaneye yatış özellikleri, enfekte bir kişiyle temas öyküsü ve COVID-19'u teşhis etmek için kullanılan test türü incelenmiştir. Çalışmada, kategorik değişkenler arasındaki farklılıkları gözlemlemek için ki-kare testi kullanılmıştır. İki değişkenli analizde, anlamlı bir p değerine sahip tüm bağımsız değişkenler modele alınmıştır. Olasılık oranları ve %95 güven aralıkları hesaplanmış ve 0,05'ten küçük bir p değeri istatistiksel olarak anlamlı kabul edilmiştir.

Bulgular: Çalışmada, %53.5 pozitiflik oranıyla 11.183 COVID-19 vakası analiz edilmiştir. Herat il merkezi ve ilçelerinde iyileşme oranları sırasıyla %96.2 ve %94.7 bulunmuştur. Bu çalışma, Herat ili ilçelerinde %94.7 olan iyileşme oranının kent merkezinde yaşayan hastalarda %96.2 olduğunu göstermektedir. Yaşa göre değişkenlik gösteren vaka-ölüm oranları, 1-29 yaşları için %0.4 ve 80-105 yaşları için %33 bulunmuştur. Ölüm oranları sırasıyla %12.5 ve %18.2 ile KOAH ve kanser hastalarında en yüksekti. Lojistik regresyon analizi sonucunda yaş, cinsiyet ve KOAH COVID-19 ölüm oranı ile ilişkili bulunan değişkenler olarak bulunmuştur.

Sonuç: Bu çalışma, özellikle kırsal alanlarda daha fazla sağlık hizmeti sağlayarak COVID-19 ve diğer hastalıkların ölüm oranının azaltılabileceğini göstermektedir.

Anahtar Kelimeler: COVID-19, Herat, Afganistan, Mortalite, Risk faktörü

INTRODUCTION

Coronavirus is a large family of viruses that cause different scopes of disease, from a simple common cold to severe illnesses such as severe acute respiratory syndrome and Middle East Respiratory Syndrome.[1] The novel coronavirus which causes Coronavirus disease 2019 was named severe acute respiratory syndrome coronavirus-2 or SARS-CoV-2.[2]

The COVID-19 pandemic was first seen in Wuhan city of China and spirited worldwide.[3] More than 97 million COVID-19 confirmed cases and almost 2 million deaths from across 200 countries worldwide had been reported worldwide at the study time.[4]

The data suggest that, among all patients with COVID-19, 5–20% develop a critical illness characterized by acute respiratory distress syndrome.[5] In another study, among COVID-19 patients who were developing the risk factor for death, 8% were treated in the Intensive Care Unit (ICU). Up to 80% of COVID-19 patients admitted to ICU received a mechanical ventilator. [6]

There are three most common symptoms in patients with COVID-19, which appear differently for different people. Fever, dry cough, and tiredness are the most common symptoms of COVID-19. [7] Symptoms may appear 2-14 days after exposure to the virus.

Extrapulmonary symptoms are also common in some patients; for example, loss of sense of smell, cardiac involvement, acute kidney injury, coagulation disorders, and thrombotic complications could be associated with a poor prognosis. In most cases, it takes 2 to 14 days for signs and symptoms of the disease to appear.[8]

When the COVID-19 pandemic started, the focus was on SARS-CoV-2. Still, the relationship between non-communicable diseases and COVID-19 start getting attention as it was believed that this might change the burden of illness. Almost 70% of all deaths are caused by non-communicable diseases (NCDs), and 80% of these deaths occur in low- and middle-income countries. Evidence shows a connection between COVID-19 disease, NCDs, and high death rates.

The first positive COVID-19 case was confirmed on February 24, 2020, in Afghanistan where people had entered Afghanistan from Iran. On September 12, 2020, according to the Ministry of Public Health of Afghanistan, there were 38,641 cases at the time of the study, of which 31,234 recovered and 1,420 died.[9]

There is no study of this sample size on COVID-19 in Afghanistan. This study aims to evaluate the risk factors for mortality based on comorbidity and socio-demographic characteristics among COVID-19 patients.

METHODS

Definitions

Confirmed Case: A confirmed case of COVID-19 is a person with laboratory confirmation of COVID-19 infection, irrespective of clinical signs and symptoms.[10]

Suspected Case: A person who meets clinical (acute onset of fever and cough) and epidemiological (residing or working in an area where the risk of transmission is high) criteria.[10]

Study Design, Place, and Duration

This cross-sectional study was conducted from Feb 24 to July 5, 2000, in Herat province of Afghanistan (Herat city and its villages) and covered every citizen of this province suspected of COVID-19 and went to the health department's centers in the province for the test. Herat province, with an estimated population of 1,890,000 people and an area of 54,778 km^2, is located in eastern Afghanistan and shares a border with Iran and Turkmenistan countries. This study covers 11,183 COVID-19 cases aged between 1-year-old up to 105 years old.

Data Collection

The data provided by the surveillance center of the health department of Herat province is complete and inclusive and consist of the following sections:

1. The sociodemographic data, such as ID number, name, father's name, phone number, gender, age, patient's residence (province, district, village), and occupation.

2. The disease's signs and symptoms, including the starting date of these signs and symptoms, such as fever, cough, shortness of breath, sore throat, diarrhea, headache, weakness and lethargy, and other signs and symptoms.

3. Comorbidities, such as cardiovascular

disease and including hypertension, diabetes, liver diseases, chronic neurological diseases (Alzheimer's disease, Parkinson's disease, dystonia, Amyotrophic lateral sclerosis disease, Huntington's disease, neuromuscular disease, multiple sclerosis, and epilepsy), renal diseases, chronic lung diseases, cancer, immunodeficiency diseases, and other diseases.

4. Characteristics of hospitalization of the patients such as Hospitalization, date of hospitalization, hospitalization in ICU, need for the use of a ventilator, name of the hospitalization center, and facilities of the hospitalization center.

5. History of contact with an infected person, refereeing or not refereeing reports of the person in the last 14 days to the health center before the appearance of signs and symptoms of COVID-19, contact or disconnect report of the person with COVID-19 infected person in the last 14 days, travel reports to other countries and the name of the nations.

6. Type of the test to diagnose COVID-19, performing the PCR test, first test date, results of the test, dates of the later tests, and the patients' consequences (Healed, Died, Active case).

Ethical Approval

In this study, the data was used after legal permission and ethical approval from the surveillance center of the health department of Herat province on 10/07/2020. The study was conducted in accordance with the Declaration of Helsinki.

Statistical Analysis

Statistical analysis was performed using IBM SPSS Statistics Version 23.0. Categorical variables were presented with numbers (n) and percentages (%), and a Chi-square test was used to observe differences between categorical variables. In bivariate analysis, all independent variables with a significant p-value were put in the logistic regression model (age, sex, residency, and comorbidities such as diabetes, COPD, cardiovascular diseases, and cancer). The forward LR method was used for the strength of the association between dependent and independent variables. The female sex and the age group of 1–18 are used as reference groups. Odds ratios (OR) and 95% confidence intervals (95% CI) were calculated, and a p-value less than 0.05 was considered statistically significant.

RESULTS

Of the 11,183 participants tested with SARS-CoV-2 for COVID-19 in this study, 57.1% were male, 30.9% were aged 19-29 years, and 75.7% lived in Herat city. Herat's median age for COVID-19 RT- PCR positive cases was 37.00 (IQR 28.00-50.00) years old (38 for males, 35 for females). Overall test positivity was 53.6%. (Table 1)

Of 11,183 suspected cases in this study, 98.6% of them had at least one kind of symptom. Based on the results, 85% of the suspected cases had a cough, 81.9% experienced fever, 64.9% had a sore throat, and 64.2% had shortness of breath. Furthermore, 99.5% of the 5,990 COVID-19 RT-PCR-positive cases showed symptoms. 88.0% had a cough, 87.4% of them had a fever, 81.4% had a headache, 73.2% experienced weakness, 70.7% had a sore throat, 68.2% had experienced shortness

of breath, and 23.2% experienced diarrhea. (Table 2)

Table 1. Socio-demographic profile of COVID-19 patients – Herat- Afghanistan (n=11183)

		Tested for COVID-19		COVID-19 RT-PCR-positive	
		n	%	n	%
Gender	Male	6389	57.1	3496	58.4
	Female	4794	42.9	2494	41.6
Age Groups	1-18	740	6.6	235	3.9
	19-29	3459	30.9	1556	26.0
	30-39	2634	23.6	1398	23.3
	40-49	1837	16.4	1105	18.4
	50-59	1206	10.8	768	12.8
	60-69	801	7.2	540	9.0
	70-79	366	3.3	280	4.7
	80-105	140	1.3	108	1.8
Residence	Herat city	8463	75.7	4818	80.4
	Herat city district	2720	24.3	1172	19.6
Total		11183	100.0	5990	100.0

Table 2. Comparison of different signs and symptoms between the suspect cases and RT-PCR-positive cases in Herat- Afghanistan (n=11183)

	Tested for COVID-19		COVID-19 RT-PCR-positive	
	n	%	n	%
Any signs and symptoms	11026	98.6	5961	99.5
Cough	9502	85.0	5269	88.0
Fever	9164	81.9	5235	87.4
Headache	8214	73.5	4873	81.4
Weakness	7060	63.1	4386	73.2
Sore throat	7258	64.9	4234	70.7
Shortness of breath	7176	64.2	4084	68.2
Diarrhea	2174	19.2	1389	23.2

Of all the suspected cases of COVID-19 in this study, 16.7% of them had at least one or more comorbidities. 7.7% of them had cardiovascular disease, including hypertension, 4% had a chronic neurological disease, 3.2% had diabetes, 3% had chronic lung disease, 3% had immunodeficiency, and 2.3% had renal disease. Of 5,990 COVID-19 patients, 1,175 among them had underlying conditions. Of all the patients, 9.1% of them had cardiovascular diseases, including hypertension, 4.3% of them had diabetes, 1.3% had liver diseases, 4.3% of patients had a chronic neurological disease, 2.7% had renal diseases, 3.2% had chronic lung diseases, 0.2% of patients had malignancy (cancer), 3.2% of patients had immunodeficiency, and 1.1% of the patients had other diseases. (Table 3)

Table 3. Comparison of different comorbidity between the suspect cases and RT-PCR-positive cases in Herat- Afghanistan (n=11183)

	Tested for COVID-19		COVID-19 RT-PCR-positive	
	n	%	n	%
Any underlying conditions	1856	16.7	1175	19.6
Cardiovascular disease, including hypertension	856	7.7	574	9.1
Diabetes	362	3.2	259	4.3
Liver disease	138	1.2	77	1.3
Chronic neurological	451	4.0	258	4.3
Renal disease	260	2.3	160	2.7
Chronic lung disease	330	3.0	189	3.2
Malignancy	20	0.2	11	0.2
Immunodeficiency	331	3.0	189	3.2
Other diseases*	86	0.8	66	1.1
Total	11183	100.0	5990	100.0

*Asthma, Cystic Fibrosis, etc.

Of the 5,990 COVID-19 cases in this study, 91.5% were recovered, 3.9% died, and 4.6% were still sick. 22.6% of patients were hospitalized, where 1.7% of cases were in ICU, and this 1.7% of cases needed ventilation. 1.5% of patients traveled to Iran before

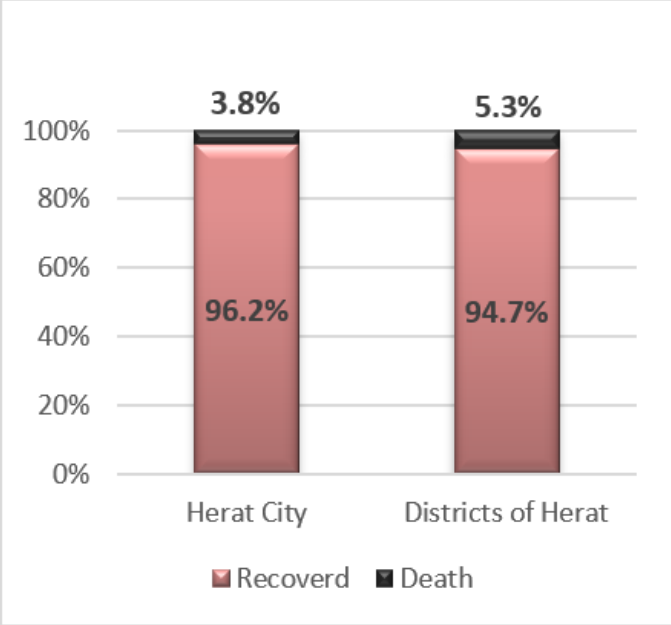
symptoms onset. (Table 4)

Table 4. Comparison of different healthcare situations between the suspect cases and RT-PCR-positive cases in Herat- Afghanistan (n=11,183)

		COVID-19 RT-PCR-positive	
		n	%
Health outcome	Recovered	5481	91.5
	The active case at the study endpoint	278	4.6
	Death	231	3.9
Hospitalized	Yes	1355	22.6
	No	4635	77.4
ICU	Yes	103	1.7
	No	5,888	98.3
Has the case had contact with a confirmed case in the 14 days before symptom onset?			
	Yes	1137	19.0
	No	4853	81.0
Has the case traveled in the 14 days before symptom onset?			
	Yes	89	1.5
	No	5901	98.5
Other countries	No	5901	98.5
	Iran	89	1.5
Type of specimen	Nasopharyngeal +Oropharyngeal swab	385	6.4
	Nasopharyngeal swab	1278	21.3
	Oropharyngeal swab	4327	72.2
Total		5990	100.0

(Figure 1a) The proportion of patients who recovered and were living in the city is higher than those living in districts of Herat province. (Figure 1b) The case-fatality rate among male patients was found higher than among female patients in this study. (Figure 1c) COVID-19 patients' mortality based on age groups shows that it increases with patients' age increase. (Figure 1)

Figure 1. Percentage of COVID-19 patient mortality based on age groups, gender, and residence in Herat province – Afghanistan.



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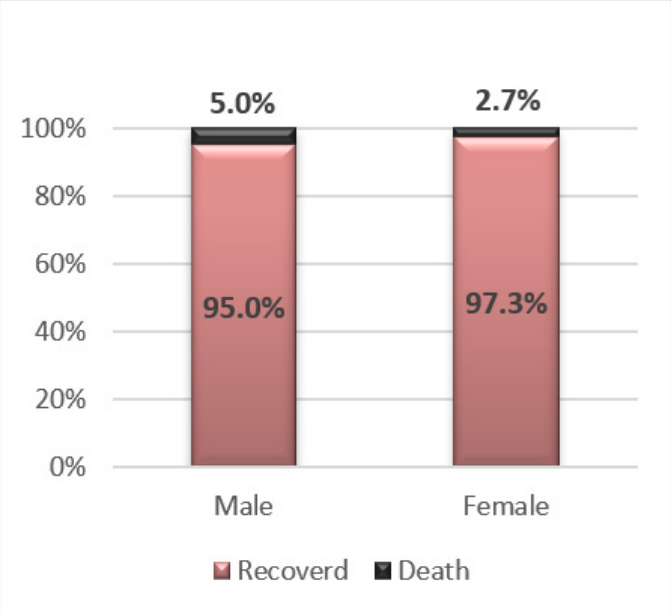

Figure 1b. The case-fatality rate among male patients was found higher than among female patients in this study.

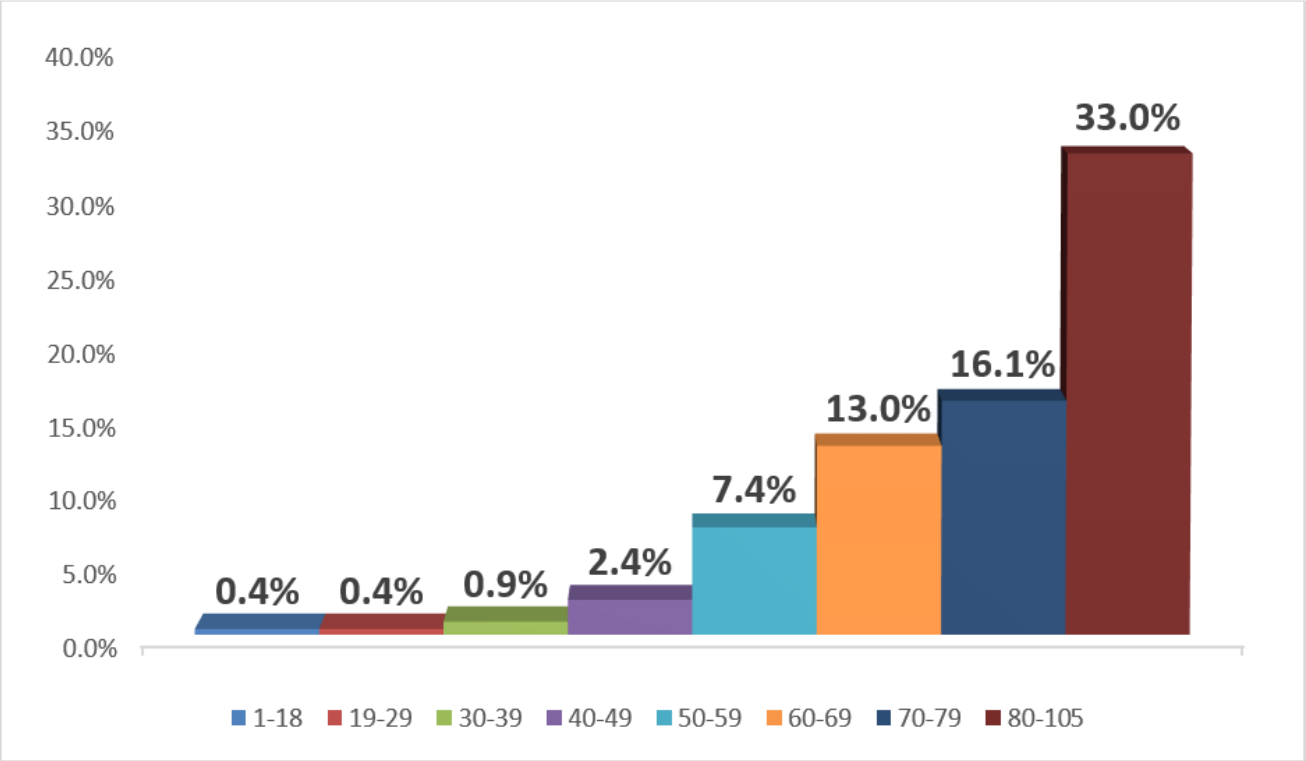

Figure 1c. Shows the death percentage based on age groups. X2= 18.802, p= <0.001

According to data used in this study, of 5,990 COVID-19 patients, 5% of men and 2.7% of women died due to COVID-19. 99.6% of patients in the age group of 1-29 years old recovered. 33.0% of patients in the age group of 80-100 years old died due to COVID-19.

The Herat city's mortality percentage was 3.8%, and in the villages, it was 5.3% (The rest of the 278 patients are still active cases). There was a significant difference in symptoms of shortness of breath, sore throat, and diarrhea between died and recovered patients. (Table 5)

Table 5. Comparison of different signs and symptoms between recovered and death cases– Herat-Afghanistan (n=5,481)

	Recovered		Death		Statistics	
	n	%	n	%	X^2	p*
Fever	4,772	96.0	197	4.0	0.623	0.430
Cough	4,814	96.0	201	4.0	0.138	0.710
Shortness of breath	3,656	94.7	204	5.3	47.192	**<0.001**
Sore throat	3,891	96.7	132	3.3	20.410	**<0.001**
Diarrhea	1,285	97.2	37	2.8	6.874	**0.009**
Headache	4,446	96.1	179	3.9	1.893	0.169
Weakness	3,993	96.1	164	3.9	0.370	0.543
Total	5,481	96.0	231	4.0		

According to this study, 8.9% of patients who died due to COVID-19 had cardiovascular diseases with hypertension. 3.9 % of the patients who did not have CVD died due to COVID-19. 9.6% of patients who died due to COVID-19 had diabetes. Of the COVID-19 patients who had liver diseases, 6.7% of them died, COVID-19 patients, who had chronic neurological diseases, and 2.4% died, COVID-19 patients, who had malignancy (cancer), 18.2% of them died.

There was a significant difference in underlying diseases such as cardiovascular disease with hypertension, diabetes, COPD, and malignancy when comparing recovered and death cases. (Table 6)

Table 6. Comparison of different comorbidity between recovered and death cases– Herat- Afghanistan (n=5,481)

	Recovered		Death		statistics	
	n	%	n	%	X^2	p*
Cardiovascular disease with hypertension	460	91.1	45	8.9	33.813	**<0.001**
Diabetes	226	90.4	24	9.6	20.796	**<0.001**
Liver disease	70	93.3	5	6.7	1.347	0.246
Chronic neurological	241	97.6	6	2.4	1.735	0.188
Immunodeficiency	176	97.2	5	2.8	0.791	0.374
Renal disease	144	96.0	6	4.0	0.001	0.978
COPD*	154	87.5	22	12.5	33.460	**<0.001**
Malignancy	9	81.8	2	18.2	5.677	**0.017**
Total	5481	96.0	231	4.0		

* Chronic Obstructive Pulmonary Disease

This study included statistically significant variables such as age, sex, residency, and comorbidities such as diabetes, COPD, cardiovascular diseases, and cancer in the logistic regression model. The dependent variable in the model was the state of healing and death due to COVID-19. Finally, gender, age, and COPD remain in the model.

Females are considered as a reference group and men are 1.814 times more exposed to mortality due to COVID-19 than female patients. The absence of COPD is considered as a reference group in the model, patients with COPD as comorbidity, the mortality rate is 1.803 times higher than patients without COPD.

The age group of 1-18 years is considered a reference group in the model and the age groups of 19-29, 30-39 and 40-49 years did not show a statistically significant difference, but the age group of 50-59 years 15.510 times, age groups of 60-69 years 28.829 times, age groups of 70-79 years 35.714 times and age groups of 80-105 years 90.857 times according to the reference group shows a higher mortality rate and in terms of Statistics are also significant. (Table 7)

Table 7. Logistic regression models of mortality among COVID-19 patients in Herat-Afghanistan

	B	S.E.	Wald	df	p-value	Exp(B)	95% C.I. for Exp(B)	
							Lower	Upper
COVID-19 patients								
Constant	-5.696	1.006	32.073	1	<0.001	0.003		
Sex (Female)	0.596	0.157	14.377	1	<0.001	1.814	1.333	2.469
COPD (no)	0.589	0.256	5.304	1	0.021	1.803	1.092	2.978
Age (1-18)			250.846	7	<0.001			
Age (19-29)	- 0.197	1.083	0.033	1	0.856	0.821	0.098	6.859
Age (30-39)	0.541	1.044	0.269	1	0.604	1.718	0.222	13.301
Age (40-49)	1.541	1.023	2.268	1	0.132	4.669	0.628	34.700
Age (50-59)	2.741	1.013	7.322	1	0.007	15.510	2.129	112.979
Age (60-69)	3.361	1.012	11.038	1	0.001	28.829	3.968	209.429
Age (70-79)	3.576	1.019	12.322	1	<0.001	35.714	4.851	262.950
Age (80-105)	4.509	1.029	19.200	1	<0.001	90.857	12.089	682.849

References: Age (1-18 years) , Sex (Female), COPD (No), p<0.05 Significance level

DISCUSSION

In Herat province, 11,183 people were tested for COVID-19 till Jul 5, 2000, of which 5,990 test results were positive. The high positivity rate is an indication that Herat could not test widely for that period. One of the main reasons for the lower number of cases of COVID-19 is the lack of equipment and tools needed to test.[11]

The data shows that the total number of people tested for COVID-19 and confirmed cases in men was higher than in women in Afghanistan. Compared to a study by Mohamad Nikpouraghdam et al., Iran found a positive COVID-19 cases ratio between males and females 1.93:1.[12] Another study in Denmark shows the ratio of death among confirmed cases of COVID-19 2.1:1.[13] This shows the prevalence of COVID-19 men higher than women; one of the reasons could be the conditions and limitations on surf out of the house for women in Afghanistan. Another reason for this can be the lack of accessibility to health services for women in Afghanistan, compared to men, it is much more difficult for women to access health services. This study shows that males' case-fatality rate is higher than females, as the study in Georgia shows the percentage mortality of male gender 23% vs. 13.8% for female mortality rate.[14]

This study highlights that the case-fatality rate is age-dependent and rises with aging. It is consistent with findings by Priyank Shah et al., who reported a mortality rate of 8.9% in COVID-19 patients under 50 and 20% in those over 50.[14] In most of the cases aged between 19-29 years, the results of research conducted in Pakistan are similar to this study.[15] But the results of research conducted in other countries on age groups differ according to this study because the median age in other countries such as Iran was found 56 [16].which was higher than the median age of COVID-19 patients in Afghanistan. The main reason for this is the vast young population in Afghanistan.[17] The main explanation for the low frequency of positive cases in rural participants is that they have less access to health care. (Table 1)

Of all patients with COVID-19, 88.0% of patients had a cough, 87.4% had a fever, 81.4% of patients had a headache, 73.2% of patients suffered weakness, 70.7% of patients experienced a sore throat, 68.2% of patients had dyspnea, 23.2% of the patients had diarrhea, Another study result shows fever (88.8%) as the most common symptom, followed by dry cough (68%) and fatigue (33%).[18] compared to a study by Parag Goyal, M.D. et al. [17] that shows 79.4% of COVID-19 patients experienced cough, 77.1% had a fever, and 23.7% experienced diarrhea. In both cases, gastrointestinal problems were almost the same, which means 1 in each 4 – 5 patients had suffered this kind of problem during dealing with COVID-19. In another study by Lei Pan in Hubei, China, they found that 34% of COVID-19 patients experienced diarrhea. This shows 1 in 3 COVID-19 patients suffered diarrhea. The reason for this difference could be patients' answers about their symptoms in different stages; in this study, the data are collected from patients at the first stages of their disease when they experienced the primary symptoms, but Lei Pan et al. [19] collected their data from patients who were in their middle or severity stage of the disease. This shows that as severity increases, gastrointestinal symptoms get worse. (Table 2)

In this study prevalence of cardiovascular diseases, including hypertension, was 9.1%, the prevalence of diabetes comorbidity was 4.3%, and the prevalence of liver diseases was found to be 1.3% among COVID-19 cases, however in a study by Jing Yang et al.[20], in China, the prevalence of cardiovascular diseases including hypertension was found 21.1%, the prevalence of diabetes was reported 9.7%. In a study by Wei-Jie Guan et al.[21], the prevalence of hypertension in China was 16.9%, and the prevalence of diabetes was reported at 1.59%. In another study by Shazia Zeb et al.[22], in Pakistan, hypertension, and diabetes make up 45.4% of the comorbidities of COVID-19. The main reasons for this could be the lack of health service access and the bad economic situation in Afghanistan which causes the chronic disease mortality rate to higher. Another reason for this could be the younger median age of the Afghanistan population which was found 34 in this study.

The test result of 53.6% of tested people was positive. Despite Afghanistan's low preparation for COVID-19, the health outcomes of COVID-19 patients were acceptable, 46.4% of tested people's test result was negative. According to data, 44.6% of COVID-19 patients recovered. 22.6% of COVID-19 patients were hospitalized. 1.7% of positive cases needed ICU at least once. Another study in New York shows that 14.2% of COVID-19 patients were treated in the intensive care unit.[23]

This study found that COVID-19-positive cases with cardiovascular disease and hypertension had a mortality rate of 8.9%, while COVID-19-negative cases with the same conditions had a mortality rate of 3.6%, as opposed to a study by Clerkin et al.[24], that reported a 31% mortality rate in COVID-19 patients with cardiovascular diseases, including hypertension. This study found that 12.5% of COVID-19 patients who had COPD died. COPD is one of the chronic lung diseases that can elevate the chance of mortality.[25] The association of comorbidities increases with increases in age (higher than 60 years old). [26]

Incidents of association of comorbidities in COVID-19 patients bedded in hospitals are high and have a bad impact on the prognosis of the disease.[27] However, other studies show a bolder role of comorbidities than in Afghanistan; the reason for this can be the lower median age of Afghanistan COVID-19 patients compared to other countries.[28]

This study found the mortality rate of COVID-19 cases who had cancer was 18.2%. According to these findings, malignancy is the deadliest comorbidity for COVID-19 patients, as another study in New York state by Robilotti et al. [29] shows the mortality rate at 12%. One of the reasons for this could be the difference between accessibility to health care facilities as Afghanistan has very little equipment needed to treat cancer patients.[30-31]

The results of logistic regression in this study indicate that age, gender, and COPD are among the influential factors of mortality in patients with COVID-19. The results of this study also show that the male COVID-19 patients mortality rate to female patients is 1.814. Other studies, on this, support the results of this study and found similar results. The meta-analysis study by Noor et al.32, found a mortality ratio of 1.63 for men to women, while the meta-analysis study by Chidambaram et al.33, reported a ratio of 1.45. Alberta et al. stated a ratio of 1.60734, and Harrison et al. found a ratio of 1.7535.

The results of this study also identify age as a risk factor for mortality in patients with COVID-19. However, all age groups show a higher level of mortality rate compared to the reference group (1-18 years), the age group of 50-59 years and higher are statistically significant too.

In this study, the mortality rate in COVID-19 patients increases by 1.079 per year with age increase. Other studies also have similar results in this case. A study by Harrison et al.35, which addressed the age group 50 years old and younger as the reference group, shows that the mortality rate increases by 1.06 per year with age. A meta-analysis by Chidambaram et al.33, found that the mortality rate increases with the increase of age. According to a study by Alberta et34, the mortality rate rises by 1,079 per year with increasing age. Another study by Mehraeen et al.36, indicates a mortality rate of 1.18 per year of age increase. Also, another study by Noor et al.32, which divided the age groups into younger than 65 years old and older than 65 years old, shows that with age increases, the mortality rate of COVID-19 increases. The mortality rate in age groups above 65 years is 3.59, which is very higher than in the age group 65 years old and below.

The results of this study show that the existence of COPD increases the mortality rate by 1.803, this rate was found 3.93 in a study by Mehraeen et al.36, 2.23 in a study by Noor et al.32, and 1.24 in the study of Harrison et al.35

The most important limitation of this study is that it is limited to the nature and adequacy of the data collected in the format defined by the health authority of the region. However, even in this state, it is also important that contain a large data set from a region that can produce very little data in a very special period both a pandemic and additional regional difficulty.

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CONCLUSION

The first case of COVID-19 in Afghanistan was diagnosed in the Herat province of Afghanistan and spread fast across the country. The low capacity of diagnostic equipment for COVID-19 is the main reason behind the fact that most of the suspected people for COVID-19 test results are reported positive. In these findings, men are more infected than women, and people who live in the city are infected more than those living in rural areas. COPD mortality rates rise in older men and those living in rural areas. CVDs, hypertension, diabetes, COPD, and cancer all contribute to an increase in mortality. COPD in younger patients is aligned with low mortality rates. The higher mortality rate in rural areas is due to health service accessibility.

Abbreviations

COVID-19 Coronavirus Disease 2019

COPD Chronic Obstructive Pulmonary Disease

CVDs Cerebrovascular diseases

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Characteristics of COVID-19 patients and Risk Factors of Mortality in the early Times of the Pandemic, Herat-Afghanistan.

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