

# COVID-19 Health Care for Afghan Refugees as a Minor Ethnicity in Iran: Clinical Differences and Racial Equality in Health

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**Abstract-** The aim of this research was to look at the clinical differences between Afghan refugees and the Iranian community, as well as the evaluation of healthcare inequalities against Afghan refugees. This was a 1:2 matched case-control study carried out at two tertiary hospitals of Jahrom city, southern Iran, from January 2020 to December 2020. Cases were COVID-19 infected Afghans, and controls were Iranian patients. Demographic data, Self-reported symptoms, disease history, and initial symptom to referral length were extracted from medical records. CT scans being conducted and receiving ICU treatment were assessed for evaluation of racial inequality in health care. In this study, 132 Afghan refugees were compared to 266 Iranian controls. There were multiple self-reported symptoms being statistically differently manifested in Afghan refugees in comparison to Iranian COVID-19 patients. There was no difference in probability of being evaluated by HRCT or receiving ICU treatment ( $P=0.173$ ,  $1$ , respectively) even after being adjusted for symptoms or co-morbidities that were manifesting differently between Afghan vs. Iranian patients ( $P=0.476$ ,  $0.881$ , respectively). Ten (7.57%) subjects died in the case group and 18 (6.76) in the control group. There wasn't any significant difference in the death rate between the groups ( $P=0.766$ ). Our study revealed huge differences in symptoms of Afghan vs. Iranian COVID-19 patients, while these differences did not affect the probability of receiving proper health care. Jahrom city was a case of equality in COVID-19 health care toward the ethnic minorities.

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**Keywords:** Coronavirus disease 2019 (COVID-19); Racial inequality; Afghan refugees; Iran

## Introduction

The COVID-19 is still infecting many people around the world. SARS-CoV-2 is also spreading in Iran, and many people have been infected with COVID-19. The symptoms of COVID-19 are mild and treatable in most cases infected with the virus, but the disease may be more severe in some people and may even lead to death (1). Racial/ethnicity are investigated as predisposing factors for COVID-19 in many pieces of research, while the disease has affected different populations of different races in almost all of the world (2-4). Iran is also one of

the countries that have different ethnic groups in their population composition. In addition to Iranians, Iran has hosted the largest population of foreign immigrants in the past four decades, mostly Afghans, and is now the second-largest host country for Afghan refugees after Pakistan. More than 2.5 million Afghan refugees are living in the Islamic Republic of Iran for about fourteen years. The largest number of Afghan refugees as an ethnic minority in Iran happened after the beginning of the "Democratic Republic of Afghanistan" government in 1978 due to extensive internal conflicts (5-7). With the outbreak of COVID-19, concerns have been raised about

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the health of Afghan refugees in Iran. However, with the announcement of free treatment for Afghan refugees with COVID-19 by Iran, this concern was allayed (8). The present study investigated the case of Afghan refugees with COVID-19 in one of the cities of Iran, Jahrom, Fars province, southern Iran. The aim of this study was to investigate the clinical differences of Afghan refugees compared to the Iranian population and also the presence of inequality in health care. HRCT scan being conducted and receiving ICU treatment were assessed for evaluation of inequality in health care.

## Materials and Methods

This was a matched case control study, considering self-reported ethnicity as exposure variable. This was a 1:2 matched case-control study with the purpose of exploring possible effects of ethnicity on the COVID-19 manifestations and clinical outcomes. The study was conducted in Jahrom, Fars province, south of Iran. The study was carried out at 2 tertiary hospitals of Jahrom University of Medical Sciences from January 2020 to December 2020. Ethical permissions for research were approved by the ethics committee of the Jahrom University of Medical Sciences (IR.JUMS.REC.1398.130). Cases were selected based on the following inclusion criteria: (a) Being infected by SARS-COV-2, confirmed by a Nasopharyngeal swab PCR test ; (b) Self-reported ethnicity of Afghan, confirmed by identification card; (c) Signing consent inform. Controls were selected from Iranian COVID-19 patients (confirmed by a Nasopharyngeal swab PCR test) who were age-sex matched with cases and signed the consent inform. Patients with missing ethnicity data were excluded.

Demographic data, Self-reported symptoms, disease history, and initial symptom to referral length were extracted from medical records that were obtained in the first visit in the medical centers of the Jahrom University of Medical Sciences. Outcomes of interest were in hospital mortality that was confirmed by infectious disease specialist to be COVID-19 related death. CT scan being conducted and receiving ICU treatment were assessed for evaluation of racial inequality in health care.

Chi-square test was used to compare dichotomous variables. T-independent test or Mann–Whitney U test was used to compare continuous data. Logistic Regression analysis was conducted to assess probability of receiving healthcare of interest, displayed as odds ratios, with 95% confidence intervals. *P* under 0.05 was considered significant.

## Results

In this study, 132 Afghan refugees were compared to 266 Iranian controls. There were 79(59.8%) male subjects in the case group and 151(56.8%) in the control group, showing no significant difference ( $P=0.558$ ). The mean age of the participants in the case group was  $51.62\pm 20.91$  years and was  $54.36\pm 17.76$  years in the control group, with no significant difference ( $P=0.115$ ).

There were 58(43.9%) subjects with cough in the case group and 149(56%) in the control group, showing significant difference among the groups ( $P=0.023$ ); 41(31.1%) subjects with myalgia in the case group and 133(50%) in the control group ( $P=0.0001$ ). There were 74(56.1%) subjects with dyspnea in the case group and 179(67.3%) in the control group, showing significant difference among the groups ( $P=0.028$ ); 4(3%) subjects with loss of smell in the case group and 40(15%) in the control group ( $P<0.0001$ ). There were 4(3%) subjects with loss of taste in the case group and 41(15.4%) in the control group, showing a significant difference ( $P<0.0001$ ). There were 8(7%) subjects with headaches in the case group and 82(30.8%) in the control group, showing a significant difference ( $P<0.0001$ ). There were 6(5.2%) subjects with vertigo in the case group and 76(28.6%) in the control group, showing no significant difference ( $P<0.0001$ ). There were 11(9.6%) subjects with chest pain in the case group and 74(27.8%) in the control group, showing a significant difference ( $P<0.0001$ ). There were 7(6%) subjects with nausea in the case group and 74(27.8%) in the control group, showing a significant difference ( $P<0.0001$ ). There were 10(8.6%) subjects with vomiting in the case group and 63(23.7%) in the control group, showing significant differences among the groups ( $P<0.001$ ). There were 5(4.3%) subjects with diarrhea in the case group and 28(10.5%) in the control group, showing a significant difference ( $P<0.0001$ ). There were 10(8.6%) subjects with anorexia in the case group and 69(25.9%) in the control group, showing a significant difference ( $P<0.0001$ ). There were 10(0%) subjects with kidney disease history in the case group and 8(15.8%) in the control group, showing significant differences among the groups ( $P=0.039$ ).

There was no significant difference among the groups in case of the fever ( $P=0.165$ ), and also in the decreased level of consciousness, dermatologic manifestations, Gastrointestinal symptoms, cigarette smoking,  $o_2$  saturation below 93%, cancer history, diabetes mellites history, blood diseases history, immune deficiency, pregnancy, heart disease history, asthma, lung diseases,

psychologic disorder, and HTN ( $P>0.05$ ).

The median initial symptom to referral length was 2 (IQR=4) in the case group and 7 (IQR=6.25) in the control group and case group had significantly lower

length of initial symptom to referral ( $P=0.036$ ). 10 (7.57) subjects died in the case group and 18 (6.76) in the control group. There wasn't any significant difference in the death rate between the groups ( $P=0.766$ ).

**Table 1. Demographic and clinical data**

	Case, n=132		Control, n=164		P
	n	%	n	%	
sex, male	79	59.8%	151	56.8%	0.558
fever	47	35.6%	114	42.9%	0.165
cough	58	43.90%	149	56.00%	0.023
myalgia	41	31.10%	133	50.00%	0.0001
dyspnea	74	56.1%	179	67.3%	0.028
decreased level of consciousness	7	5.30%	17	6.40%	0.668
loss of smell	4	3.00%	40	15.00%	<0.0001
loss of taste	4	3.0%	41	15.4%	<0.0001
headache	8	7.00%	82	30.80%	<0.0001
vertigo	6	5.20%	76	28.60%	<0.0001
chest pain	11	9.60%	74	27.80%	<0.0001
dermatologic manifestations	1	0.90%	1	0.40%	0.54
Gastrointestinal symptoms	8	6.90%	37	13.90%	0.051
nausea	7	6.00%	74	27.80%	<0.0001
vomiting	10	8.60%	63	23.70%	0.001
diarrhea	5	4.30%	28	10.50%	<0.0001
anorexia	10	8.60%	69	25.90%	<0.0001
cigarette	2	1.50%	11	4.10%	0.166
opium addiction	5	3.80%	5	1.90%	0.252
o2 saturation below 93%	53	40.20%	134	50.40%	0.054
cancer history	4	3.0%	5	1.9%	0.467
liver disease history	1	0.80%	2	0.80%	0.995
diabetes mellites	23	--	65	--	0.113
blood diseases history	4	3.00%	5	1.90%	0.467
HIV positivity	1	0.80%	1	0.40%	0.612
immune deficiency	0	0.00%	1	0.40%	0.481
pregnancy	4	3.00%	4	1.50%	0.307
heart disease history	4	3.00%	4	1.50%	0.429
kidney disease history	10	7.57%	8	15.80%	0.039
asthma	3	2.3%	4	1.5%	0.433
lung diseases	6	4.50%	8	3.00%	0.583
psychologic disorder	2	1.50%	5	1.90%	0.794
HTN	26	19.70%	76	28.60%	0.056

HRCT scan was conducted on 99 subjects in the case group and 192 in the control group. There was no difference in probability of being evaluated by HRCT ( $\chi^2(1)=1.99$ ,  $P=0.173$ ) even after being adjusted for symptoms that were manifesting differently between Afghan vs. Iranian (Wald  $\chi^2(1)=0.508$ ,  $P=0.476$ ); Table 2. There were 83 (62.87%) and 186 (69.92%) subjects

with abnormal CT findings in the case and control group, respectively, with a significant difference ( $P<0.001$ ).

There were 15 and 31 subjects receiving ICU treatment in the case and control groups, respectively, with no significant difference. There was no difference in probability of receiving ICU treatment ( $\chi^2(1)=0.07$ ,  $P=1$ ) even after being adjusted for symptoms and co-

morbidities that were different between Afghan vs. Iranian (Wald  $\chi^2$  (1)=0.022,  $P=0.881$ ); Table 3.

**Table 2. Probability of HRCT being conducted for patient**

	Wald	P	OR	Lower	Upper
cough	0.091	0.763	0.9	0.454	1.783
myalgia	1.3	0.254	0.648	0.308	1.366
dyspnea	0.161	0.688	0.872	0.446	1.703
loss of smell	2.713	0.1	15.288	0.596	392.40
loss of taste	1.199	0.274	0.166	0.007	4.139
headache	1.221	0.269	0.567	0.207	1.551
vertigo	3.387	0.066	2.43	0.944	6.257
chest pain	0.014	0.907	0.957	0.46	1.994
nausea	1.195	0.274	0.511	0.153	1.704
vomiting	2.588	0.108	2.59	0.812	8.255
diarrhea	0.566	0.452	1.537	0.502	4.707
anorexia	1.505	0.22	0.593	0.257	1.367
kidney disease history	2.003	0.157	3.321	0.63	17.503
Afghan vs. Iranian	0.508	0.476	0.702	0.266	1.857

**Table 3. Probability of receiving ICU treatment for the patient**

	Wald	P	OR	Lower	Upper
cough	0.365	0.546	1.251	0.605	2.585
myalgia	0.026	0.872	1.066	0.49	2.315
dyspnea	1.814	0.178	1.592	0.809	3.13
loss of smell	2.12	0.145	7.6	0.496	116.514
loss of taste	1.443	0.23	0.236	0.022	2.491
headache	0	0.992	1.006	0.324	3.12
vertigo	0.426	0.514	0.695	0.234	2.07
chest pain	0.219	0.64	1.234	0.512	2.974
nausea	0.574	0.449	1.85	0.377	9.079
vomiting	0.102	0.749	0.789	0.185	3.365
diarrhea	0.964	0.326	0.531	0.15	1.879
anorexia	0.715	0.398	1.565	0.554	4.418
kidney disease history	3.117	0.077	0.332	0.098	1.129
Afghan vs. Iranian	0.022	0.881	1.057	0.509	2.195

## Discussion

The current world is a place made up of different racial, ethnic and linguistic groups, with no difference between developed and underdeveloped countries. Race and ethnicity are two concepts that are a little confusing to distinguish from each other and are often used interchangeably. Although the two concepts are close to each other, they have slight differences, and each belongs to a specific field. Race is related to biological characteristics, and ethnicity is mostly used to describe social groups. In fact, ethnicity refers to a person's culture, customs, and traditions that originate from the environment to which he belongs. Different ethnic groups are identified according to the different areas in which they live, not their physical characteristics (9).

Our study had important results in two general ways. The first aspect, in terms of race, which our study showed that there was a huge difference in the distribution of clinical symptoms of Covid-19 between Afghans and Iranians. These differences can be pointed out in the biological sense of the difference between Afghans and Iranians. We have shown in two previous studies (10,11) that certain genetic differences may influence the course of Covid-19 disease. However, more studies are needed to investigate the cause of these huge differences in the clinical symptoms of Afghans and Iranians. But more important is the quality of health care for Afghan refugees. We adjusted clinical differences and evaluated the probability of receiving proper health care. Jahrom city was a case of equality in COVID-19 health care toward the ethnic minorities. This was also investigated

in Bruce *et al.*, (12) study in Brazil. They showed that racial differences could contribute to inequalities. While we did not find such inequalities against Afghan refugees in Iran. As well as our study, Rohingya refugees were compared with the host population in Bangladesh, showing very different patterns of symptoms between those groups (13). But initial symptoms were not statistically different in various races/ethnicities of Massachusetts. But major races (black vs. white) were evaluated in the Massachusetts study (14); while we focused on an ethnicity minority.

One of our findings was the significantly lower length of initial symptom to referral in Afghan refugees vs. Iranian COVID-19 patients. A factor influencing the search for a cure is fear of stigma of COVID-19 (15), which is a barrier to seeking treatment other cultural factors can also affect a person's referral for treatment, and these factors are intertwined and complex. Investigating the role of these factors requires extensive research (16). Reason behind these differences should be investigated in further studies to avoid late referral in public.

In case of past medical history there was not significant differences among study groups, expect the kidney diseases. While we know some pre-existing medical conditions as well as diabetes (17) and hypertension (18) might affect the COVID-19 outcome; the monitoring of this diseases may be missed in Afghan refugees.

### Limitations

Social and cultural factors have interaction with ethnicity (19) and were not evaluated in our study. Cultural factors can influence a person to refer to health professionals and ask them for help. Vulnerability to COVID-19 was indicated to be associated with difference in communities of UK (20); but we had no official data available about the Afghan population number in Jahrom to evaluate Vulnerability.

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