

Investigating the relationship between occupation and SARS-CoV2

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Abstract.

BACKGROUND: Coronaviruses are a large family of viruses that have symptoms ranging from simple symptoms of colds to severe respiratory syndromes. In December 2019, cases of unknown pneumonia first appeared in Wuhan, China.

OBJECTIVE: The purpose of this study was to investigate the relationship between occupation and COVID-19 in the Ardabil Imam Khomeini hospital.

METHODS: This research was conducted as a cross-sectional and descriptive study. The questionnaires used in this study included demographic information to obtain the required information such as age, sex, clinical symptoms, underlying disease, type of drug used, smoking, occupation, hours of work, number of daily clients, use of mask or shield, type of working hours, weight and height and body mass index, number family, place of residence, role in the family, presence of an infected person in the family, communication with the suspect, observance or non-observance of health protocols. Our sample size consisted of 774 subjects, all patients at the Ardabil Imam Khomeini Hospital. The subjects were selected randomly.

RESULTS: The results of this study showed that the mean age of patients was 56.70 years, with a standard deviation of 18.20 years. Three hundred and sixty participants (46.5%) were female, and 414 (53.5%) were male. In terms of occupation distribution, 317 patients (41%) were housewives. In addition, 57 people (7.4%) were farmers or ranchers.

CONCLUSION: In general, it can be concluded that due to severity of infection and threat posed by Coronavirus and the risk of infections between different occupations like the taxi driver and medical staff, it is very important to find out what jobs are in the big threat.

Keywords: Patients job, coronaviruses, hospital, COVID-19, pandemic

1. Introduction

In recent months, humans have been battling a virus called the corona. Coronaviruses include a large group of identical viruses between humans and some

animals, including bats. Some of these viruses, such as SARS and SARS-CoV-2, also cause respiratory diseases in humans [1, 2]. Symptoms of coronavirus include dry cough, fever, body aches, etc. [3]. So far, methods such as the CT scan of the lung and PCR test have been used to diagnose this disease [3, 4]. According to WHO, there is no vaccine and decisive treatment for 2019 novel coronavirus [5]. As observed in the recent studies, the person-to-person transmission and spreading from dry surfaces contaminated with nose, mouth, and eyes secretions of

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an infected person is the most important way to get SARS-CoV-2 [6, 7]. The transmission of many pathogens through the air has been proven many times and it is believed that SARS-CoV-2 is no exception to this rule [8, 9]. So, wearing a mask can potentially prevent respiratory diseases such as COVID-19 [10]. There are other ways, e.g., washing hands with soap and water for at least 20 seconds, using a disinfectant that contains at least 60% alcohol, and cleaning and disinfecting repeatedly touched surfaces to prevent this infection [11, 12]. Today, industrial health professionals face numerous challenges in industrial environments that have made their role more important and broader. These challenges include the dangers of new technologies, terrorism, emergencies, as well as emerging infectious diseases such as SARS and influenza. Currently, the most important concern of many governments, officials, and decision-makers in the field of health has turned to the outbreak of infectious diseases, especially the COVID-19 pandemic [13]. Therefore, the aim of this study was to analyze the high-risk occupations and controlling them or find ways for prevention.

2. Materials and methods

This is a descriptive cross-sectional study to examine the relationship between people with COVID-19 and their occupations. Random sampling of 774 patients was performed at the Ardabil Imam Khomeini Hospital.

2.1. Statistical community and sampling method

The statistical population of this study includes all patients in the Ardabil Imam Khomeini hospital. In the present study, questionnaires were used that included demographic information such as age, sex, clinical symptoms, underlying disease, type of drug used, smoking, occupation, hours of work, number of daily clients, use of mask or shield, type of working hours, weight and height and body mass index, number of family members, place of residence, role in the family, presence of an infected person in the family, connecting with people suspected of having COVID-19, and observance or non-observance of health protocols. After completing the relevant information, the data were sorted by statistical analysis in SPSS software version 20, and their significance or non-significance were determined. In case of problems in some parts of the questionnaire, such as

being empty or illegible, the patient was contacted by observing ethical protocols, and the desired parts were completed. Inclusion criteria were consent to participate in the study and definitive diagnosis of COVID-19 based on a CT scan or PCR.

3. Results

All questionnaires in which patient information was recorded included items about occupation, age, blood type, underlying disease, platelet count, and lymphocyte count. According to these cases, the relationship between these items and COVID-19 was explored. The results of this study showed that the mean age of patients was 56.70 years, with a standard deviation of 18.20 years. Also, out of the total patients, 360 (46.5%) were female and 414 (53.5%) were male. In terms of occupation distribution, 317 patients (41%) were housewives. In addition, 57 people (7.4%) were farmers or ranchers.

The results related to the occupational frequency of patients with coronavirus disease studied in this research are presented in Table 1. According to the results, the highest percentage of occupations for patients with coronavirus disease are related to housewives (41%) (Table 1). In addition, the results related to the occupations category of patients with coronavirus studied in this research are presented in Fig. 1. According to the results, the highest percentage of occupational category of patients with coronavirus were related to housewife (41%), other occupations (22.99%), unemployed (7.36%), farmer and rancher (7.36%), medical staff (6.33%), manual worker (5.29%), bank employee (3.36%), drivers (2.97%), students (1.8%), and military (1.55%), respectively (Fig. 1).

The results related to the blood type category of patients infected with coronavirus studied in this research are presented in Fig. 2. According to the results, positive blood type A has the highest frequency (30.87%), and AB negative blood group has the lowest frequency (3.35%) (Fig. 2).

The results related to the underlying diseases of patients infected with coronavirus in this study are presented in Fig. 3. According to the results, hypertension has the highest percentage of underlying diseases, and nervous system disease has the lowest percentage. The analyses showed that 464 patients (59.9%) had at least one of the underlying diseases.

The results related to the relationship between occupation and underlying disease of patients

Table 1
Job distribution of patients infected with coronavirus in Imam Khomeini Hospital in Ardabil

Occupation	Frequency	Percentage	Occupation	Frequency	Percentage
Farmer	51	6.6	Pupil or student	14	1.8
Physician	18	2.3	Baker	9	1.2
Housewife	317	41.0	Psychologist	3	0.4
Manual worker	41	5.3	Grilled	3	0.4
Photographer	9	1.2	Tailoring	7	0.9
Unemployed	57	7.2	Education officer	8	1.0
Retired	56	7.2	Shoemaker	2	0.3
Carpenter	11	1.4	Bank employee	22	2.8
Teacher	8	1.0	Seller	4	0.5
Nurse	22	2.8	Blacksmith	3	0.4
Health worker	6	0.8	Building	3	0.4
Bank manager	4	0.5	Real estate advisor	4	0.5
Driver	23	3.0	Hospital clerk	2	0.3
Chef	10	1.3	Lathe	7	0.9
Mechanic	9	1.2	Spiritual	2	0.3
Livestock	6	0.8	Military	12	1.6
Hand selling	6	0.8	Services	5	0.6
Hall staff	4	0.5	Butcher shop	2	0.3
CEO	3	0.4	Treatment staff	1	0.1

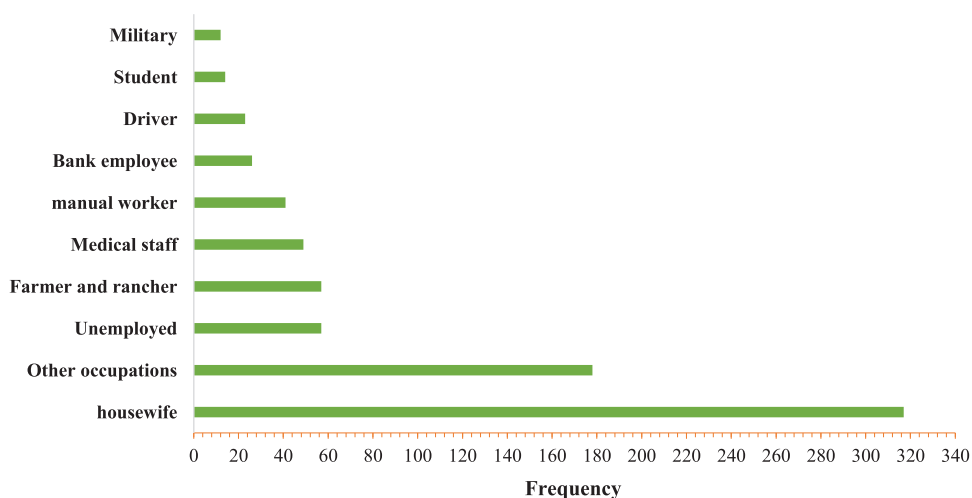


Fig. 1. The occupatinos category of patients infected with COVID-19 at the Imam Khomeini Hospital in Ardabil.

infected with COVID-19 at the Imam Khomeini Hospital in Ardabil are presented in Table 2. According to the results, there is a significant relationship between occupation and the underlying disease of patients infected with coronavirus ($P < 0.05$) (Table 2).

Table 3 shows the difference between the mean lymphocyte and platelet counts in people who had the underlying disease and those who did not. It can be seen that the mean lymphocyte and platelet counts in those with the underlying disease were not significantly different from those without the underlying disease ($P > 0.05$).

4. Discussion

During the epidemic, people in all societies and strata face problems such as lifestyle changes in this period, staying safe, and maintaining social distance. Meanwhile, the lack of awareness and lack of attention of ordinary people make these conditions difficult. Moreover, because the effects of these factors are often severe, it may completely affect the way people work and live. The purpose of this study was to investigate the prevalence of the disease in people with different occupations to gain a clearer

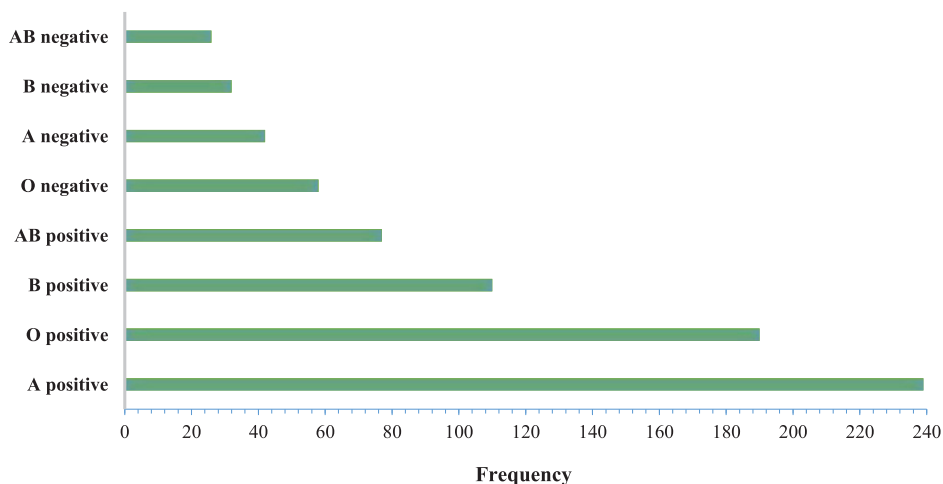


Fig. 2. Blood type category of patients infected with COVID-19 at the Imam Khomeini Hospital in Ardabil.

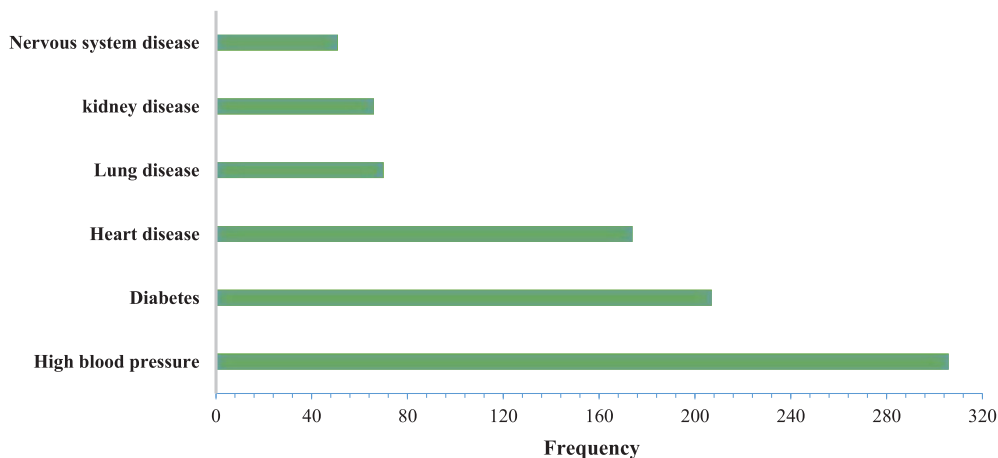


Fig. 3. Underlying diseases of patients infected with COVID-19 at the Imam Khomeini Hospital in Ardabil.

Table 2
Relationship between occupation and underlying illness of patients infected with COVID-19 at the Imam Khomeini Hospital in Ardabil

Disease status	Underlying disease		P-value
	Yes	No	
	Frequency (percent)	Frequency (percent)	
Farmer and rancher	40 (70.2%)	17 (29.8%)	<0.001
Medical staff	26 (53.1%)	23 (46.9%)	
Housewife	216 (68.1%)	101 (31.9%)	
Student	2 (3.14%)	12 (85.7)	
Military	3 (25.0%)	9 (0.75%)	
Manual worker	21 (51.2%)	20 (48.8%)	
Driver	11 (47.8%)	12 (52.2%)	
Unemployed	37 (64.9%)	20 (35.1%)	
Other occupations	98 (55.1%)	80 (44.9%)	
Bank employee	10 (38.5%)	16 (61.5%)	

understanding of the situation of employed people [14, 15]. Due to the fact that the symptoms of the disease are different in different sexes and ages, it is important to study individual factors among different people in society like their occupations [16]. In research studies such as those by Serwaa et al., the relationship between occupation and education and the incidence of COVID-19 is very clear [17]. Knowing that no vaccine is currently available, it is very important to pay attention to actions in the workplace, and according to the results, it is possible to find out which occupations have been successful in observing health measures [18]. In some occupations, it may be difficult to follow health measures such as social; for example, taxi driver are in this group of occupations and are at risk to have contact with sick passengers. Therefore, it is very important to study the disease in such occupations [19]. In reviewing different occupations and given that the number of retirees suffering from this disease has increased significantly the risk of infection in the elderly. So, we have to look for ways to prevent this in society [20]. The psychological impact of this disease, in addition to its general symptoms, is undeniable. Symptoms such as anxiety are quite evident in occupations that are more exposed. It is also necessary to study this case in different professions such as medical staff and health care workers [21]. As can be seen in our data analysis, the housewife had the highest incidence of coronavirus compared to other occupations, and this may reinforce the hypothesis that poor education, as well as financial ability, play a significant role in the incidence of this infection. Furthermore, the results revealed that the highest percentage in terms of underlying diseases was related to hypertension. Unhealthy nutrition and even heredity play a major role in the risk of coronavirus [21]. In addition, as observed in Table 2 the housewife group has the highest underlying disease percent. The A positive blood type is the highest group among the COVID-19 patients, which may be due to the following reasons: 1) the most included subjects have A positive blood type, and 2) people with A positive blood type are more at risk for coronavirus infection.

5. Conclusion

In general, the results showed that the highest number of coronavirus patients among the studied occupational groups was housewives, retirees, and farmers. Also, according to the obtained results,

Table 3

The difference between the mean lymphocyte and platelet of patients infected with COVID-19 at the Imam Khomeini Hospital in Ardabil

Lymphocytes and platelets	Underlying disease		P-value
	Yes	No	
	Average	Average	
Lymphocytes	20.81	22.46	0.050
Platelets	219721.98	211538.71	0.323

a significant relationship was found between the underlying diseases of people with coronavirus and their occupation. The data and results of this study can be used as a baseline project to control job performance as well as help to control the increase in the number of patients with COVID-19. Due to the Corona epidemic, the reduction in observing the social distancing, as well as daily scientific updates on COVID-19, these types of studies can increase people's general attitudes and can reduce health system costs. It is also possible to keep different jobs from getting the disease.

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Conflict of interest

None to report.

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