

Investigation of the Epidemiological Situation and the Incidence of Covid 19 Disease in an Area of Markazi Province in Iran Country

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ABSTRACT: Introduction. Coronavirus is an emerging virus that has caused many casualties. Therefore, the purpose of this descriptive study is to investigate the epidemiological situation of coronavirus in Khomein city in the province of Markazi in Iran. Method. This cross-sectional descriptive study was performed on all people with coronavirus disease from the first date of admission of positive PCR of patients with coronavirus until 21 September 2020. Information on the records of definitively discharged and deceased patients due to coronavirus (having positive PCR) was extracted from 20/2/2020 to 21/9/2020 and demographic characteristics such as age, gender, area of residence, occupation, and past medical history were assessed for each patient with coronavirus disease. Results. The range of age of this study was from 2 months to 95 years old and their mean age was 52.9±19.2 years old. The mean age of men and women in this study was 52.36 and 53.84 years old, respectively, which showed no significant relationship (T=0.966, N=691, P-Value=0.335, df=689). 52.1% of deaths were in rural areas and 47.9% were in urban areas. Conclusion. With observing the protocols by the people as well as traffic restrictions and social distance, we gradually experienced a decreasing trend in positive coronavirus cases and hospitalization cases. Then, due to the decrease in people's sensitivity and false confidence, the second outbreak of the disease began again and reached its peak in May and July.

KEYWORDS: Epidemiology, Coronavirus, Covid-19.

Introduction

Coronavirus is an emerging virus that has caused a great deal of damage and loss of life since its introduction into human societies [with the identification of the first cases in December 2019], which has become a global health concern in general [1-3].

Coronavirus primarily affects a person's respiratory system and leads to the spread of pathogenicity in the person. The prevalence of previous respiratory diseases from the family of coronaviruses was known as Adult Respiratory Distress Syndrome (SARS) and Middle East Respiratory Distress Syndrome (MERS), which led to epidemics in their time [4].

In December 2019, some cases of pneumonia of unknown cause were observed in Wuhan, China. These cases increased in the coming days and leading to the identification of new human coronavirus from patients. The number of cases and deaths in this part of China increased

sharply during July, leading to the introduction of the virus as a disease of global concern and concern for the World Health Organization [5-7].

In humans, primary coronavirus infections affect the upper respiratory tract and gastrointestinal tract and range from mild and self-limiting infections to severe manifestations such as bronchitis and pneumonia, and renal involvement [8].

Other symptoms of this virus include fever, cough, dizziness, hemoptysis, hypoxia, dyspnea, lymphopenia, sore throats, rhinorrhea, ARDS, and even heart damage [4,9].

Ways to confronting the outbreak of Covid-19 focused on identifying the treatment and isolation of infected people, tracking and quarantining their close contacts, reducing travel and avoiding undercooked meat, and promoting public participation in breaking the transmission chain that Has been announced [10,11].

Supportive therapies such as oxygen therapy, plasma therapy, IVIG, antibiotic therapy,

bronchodilator therapy, expectorants, and herbal remedies are also used to treatment of the symptom of this disease [12].

The virus has been found in various countries in Asia and Europe and several studies have examined the characteristics of this virus [13].

The purpose of this study is to investigate the demographic characteristics of the study units such as age, gender, an underlying disease in patients, exposure to risk factors and also understanding the relationships between the variables mentioned in the results of this study, for macro-policies. Used in the future.

Method

This study is a cross-sectional descriptive who was performed on all people with coronavirus disease from the first date of admission until the end of September 2020.

In this way, after receiving the ethical code of Khomein University of Medical Sciences (IR.KHOMEIN.REC.1399.004) the information of patients with positive coronavirus (having positive PCR) received and this information was extracted from 20/2/2020 to 21/9/2020 that include demographic characteristics such as age, gender, area of residence, occupation and past medical history which were assessed for each patient with coronavirus. The range of age in this study included all age groups, each of which was analyzed separately. The information in the file of each patient was recorded in the relevant checklist and finally analyzed. After collecting

information, the data were entered into SPSS software version 23 and analyzed using descriptive statistics (mean, standard deviation, frequency distribution charts, and tables, disease distribution map) and analytical statistics was performed (independent t-test and chi-square test). The value ($p < 0.05$) was considered as a significant level. All patients have signed a written informed consent regarding the participation in this study, and the protocol was approved by the Local Ethics Comities. All patient information was confidential and Helsinki ethics were followed at all stages.

Results

From 20 February 2020 to 21 September 2020, the number of coronavirus cases was reported to be 691 people in Khomein city which 60.2% (416) were women and 39.8% (275) were men. 216 patients (31.3%) were hospitalized and 475 patients (68.7%) were diagnosed as outpatients. The age range of the patients was from 2 months to 95 years and their mean age was 52.9 ± 19.2 years old. The mean age of women and men in this study was 52.36 and 53.84 years, respectively, which showed no significant relationship ($T = 0.966$, $N = 691$, $P\text{-Value} = 0.335$, $df = 689$). The most affected age group in both genders was of 60-69 years old, which included 24.4% of cases (Figure 1).

In general, the gender ratio of women to men is 1.5 to 1, which was the highest in the age group of 10-19 years.

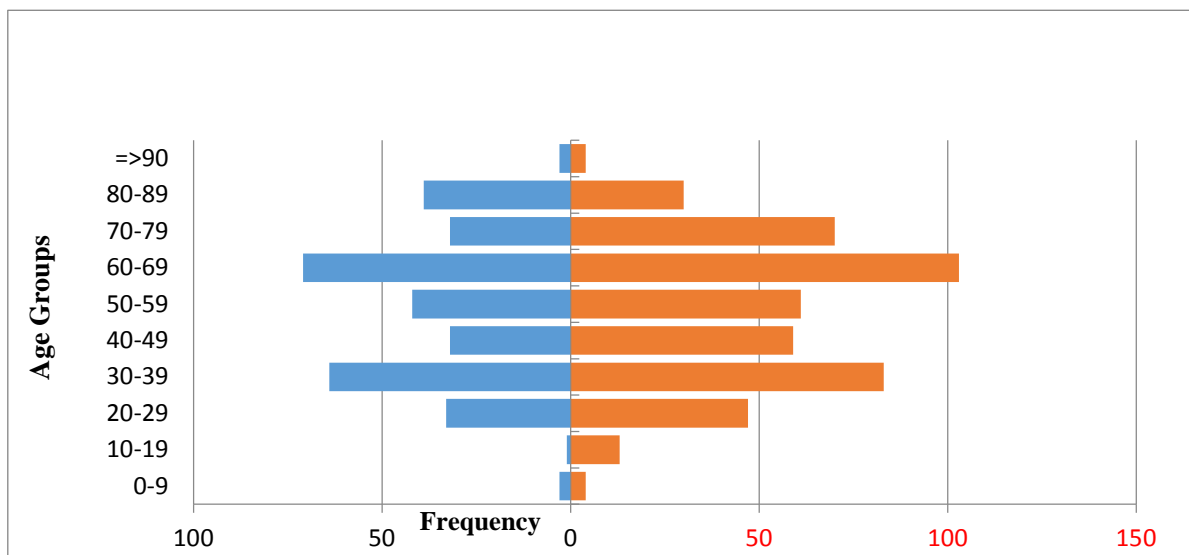


Figure 1. Frequency distribution of definite all cases of coronavirus by gender and age group (PCR+).

According to the results, from all definite, suspected, and probable cases of coronavirus that were hospitalized, most hospitalizations for

coronavirus were in the age group of 80-89 years (Figure 2).

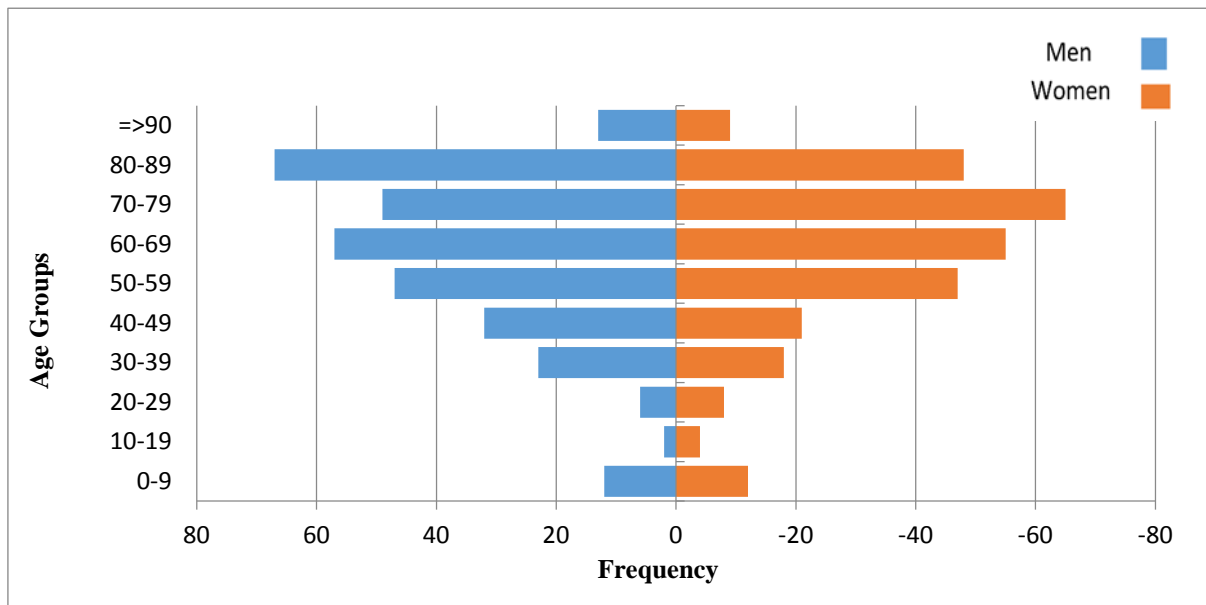


Figure 2. Frequency distribution of coronavirus hospitalization cases by age and gender (definite, suspected, and probable).

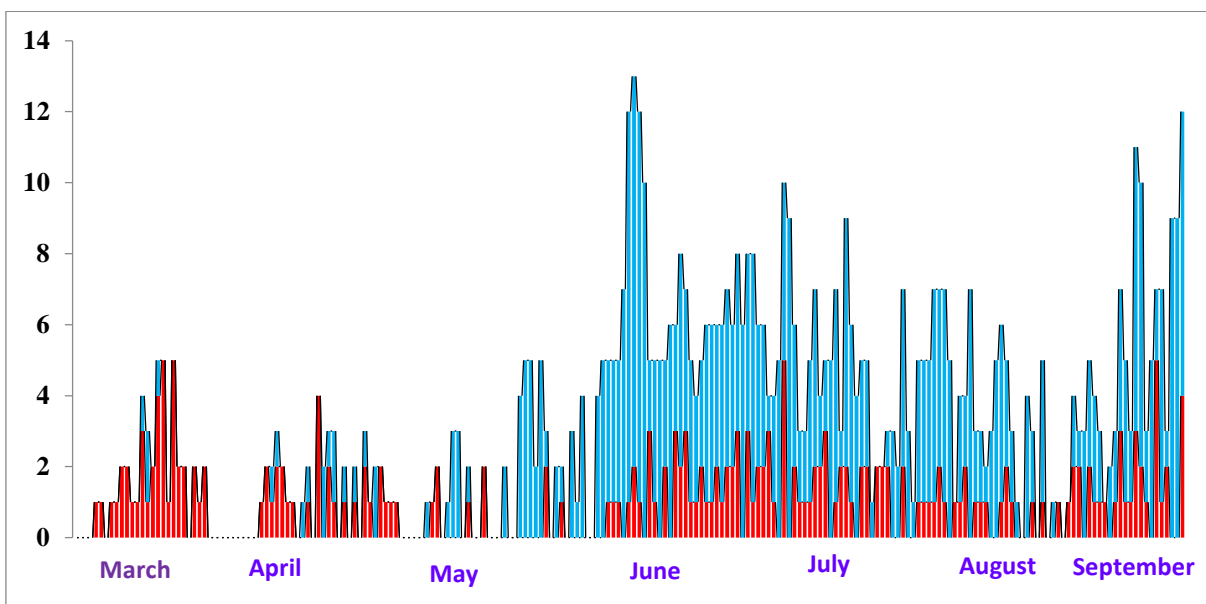


Figure 3. Distribution of daily trend of definite positive cases by clinical outpatient and hospitalization status.

During the study period, most cases occurred from 20 February 2020 to 21 September 2020 (Figure 3).

Based on the area of residence, most patients lived in the city (73.1%).

62.2% of cases have at least one underlying disease or immunodeficiency, which is the most

reported disease by people with cardiovascular disease, hypertension, and diabetes.

The results of this study by occupation showed that 51% of coronavirus cases occurred among housewives (Figure 4).

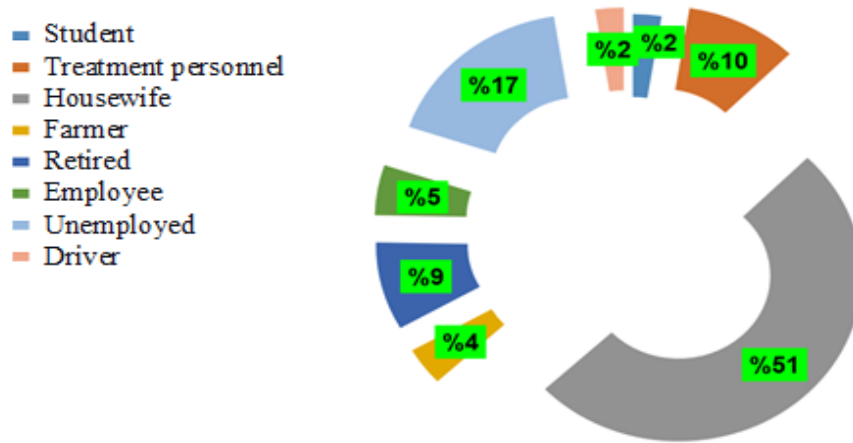


Figure 4. Relative frequency distribution of coronavirus cases by occupation.

During the 7-month period in the present study, 46 definite deaths occurred which 54.3% were men and 45.7% were women.

52.1% of deaths were in rural areas and 47.9% were in urban areas.

The highest number of deaths due to coronavirus occurred in men (54%) and 65.2% of deaths in both genders in the age group of 70-79 and 89-80 years (Figure 5).

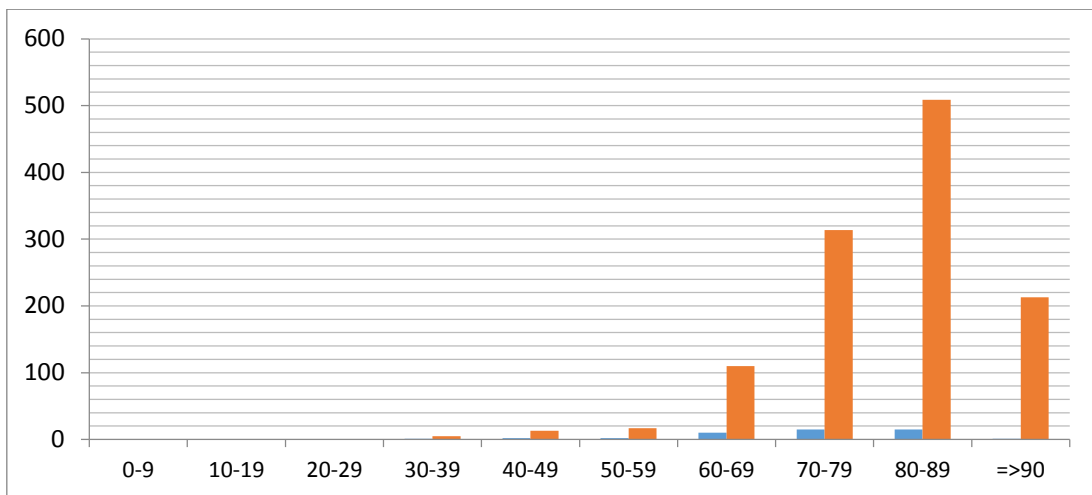


Figure 5. Frequency distribution of coronavirus deaths by age groups and incidence in one hundred thousand people.

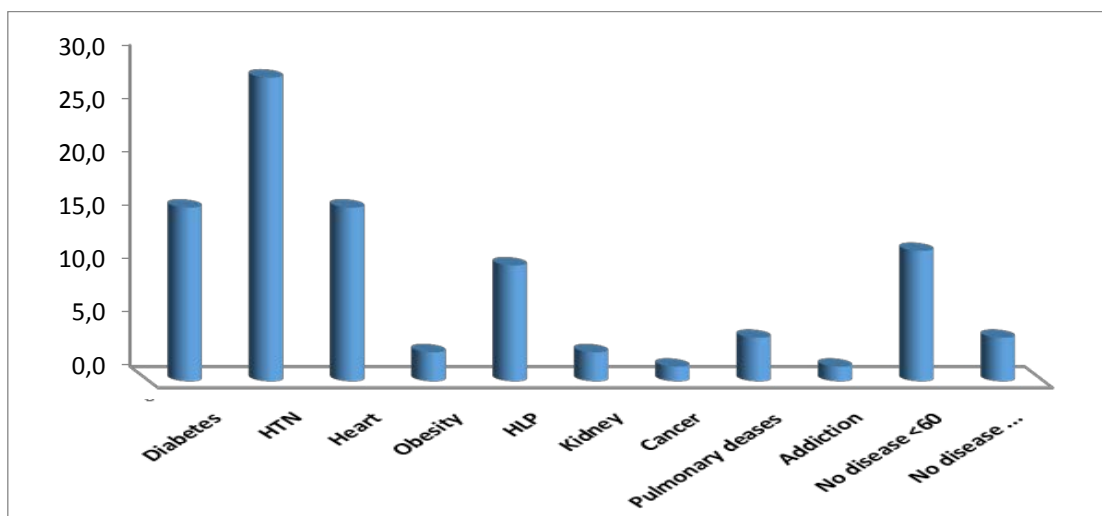


Figure 6. Relative frequency distribution of deaths due to Covid-19 by an underlying disease.

Also, 78.3% of fatalities had at least one underlying disease, of which hypertension was the most common coronavirus deaths (Figure 6).

According to the results, the highest number of deaths occurred among housewives (Figure 7).

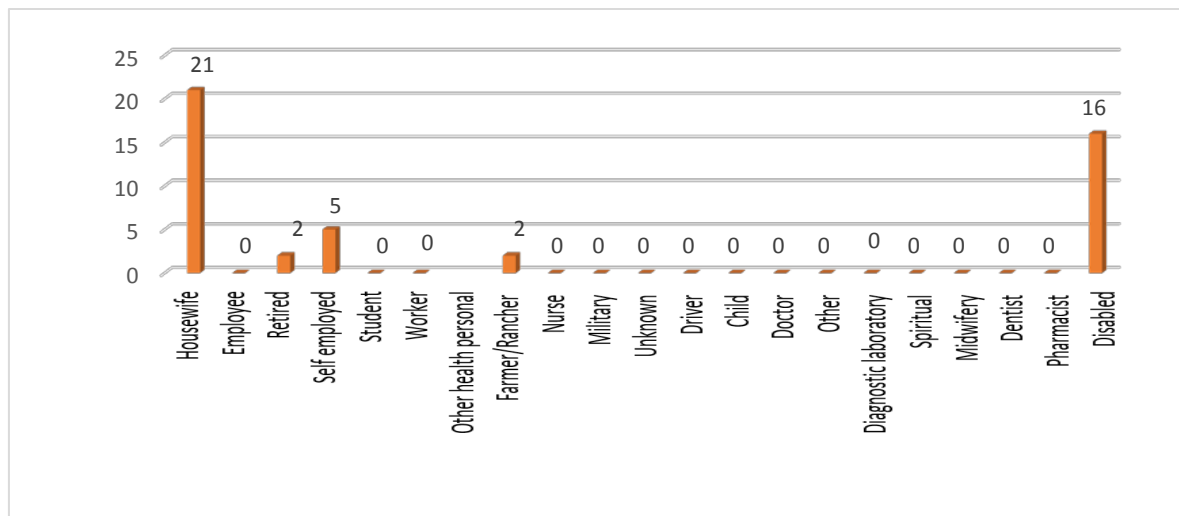


Figure 7. Frequency distribution of coronavirus deaths by occupation.

Discussion

The results of this study showed that during the study period in Khomein city, women had more coronavirus disease than men. In this regard, the results of other studies are sometimes consistent and sometimes contradictory to the results of our study. In the study of Haghdoost and colleagues, despite the slight differences, their results were not consistent and showed that men are more involved in coronavirus disease than women, perhaps this difference being explained by the study of Haghdoost and colleagues in all provinces Iran and as a result, a large sample size has been studied here. In our study, only one of the cities of Markazi province (Khomein city) has been examined. Also, the study of Poor-Ren et al. showed similar results to our study [1].

The mean age of participants in this study was 52.9 years, and this rate is approximately the same as the results of other studies, including the study of Poor-Ren et al., that took place in three cities in China (55 years) [1].

The age range of the patients in our study was 2 months to 95 years, but in other studies, most of their age was not reported, including in the study of Poor-Ren et al. [1].

In other studies, cases of a young age were not reported. The study of Poor-Ren et al. 18 years was also not reported [1].

The results of these studies are very different and perhaps this discrepancy can be explained in terms of time and place of sampling and possible

mutation of the virus in the two studies because the sampling of the study was done in a city in Iran but for the Pour-Ren study, they approached 278 patients with coronavirus from three different cities in China [1], and in a study conducted by Ing et al. on 287 patients with coronavirus disease, the report showed that the minimum age of onset was 28 years that confirms these cases [16].

Also, the results of the study of Haghdoost et al., and the study of Sheikha Garg et al. showed different results from our study, which mostly showed the age range of over 50 years. Of course, this difference can be explained by the fact that Haghdoost and Sheikha Garg both conducted their studies in a much larger sample size than ours. Increasing the sample size would definitely make the results more consistent [14,15].

The results of our study showed that the highest hospitalization rate was in patients aged 80-89 years, which can be conceived to be consistent with other studies, for example, the extensive and valuable study of Sheikha Garg, who conducted his study with 1,482 patients with coronavirus disease. The highest rate of hospitalization was reported in people 85 years and older [15].

Most of the incidence and prevalence of COVID-19 in our study occurred in June and then on 20 February 2020 to 21 September 2020, while other studies have examined the extent and prevalence of coronavirus over several months. According to the results of the study by

Haghdoost and et al., and the study of Poor-Ren et al. results seem were slightly different [1,14].

In our method, the coronavirus prevalence was studied from February to September and in the study of Haghdoost et al. from January to the end of March or in the study of Poor-Ren et al. from March to September. The discrepancy between the results of these studies can be due to many confounding factors, among which we can mention the degree of compliance with health protocols and other related factors [14].

In our study, 62.2% of patients had at least one underlying disease or immunodeficiency, the most reported diseases in patients with hypertension, cardiovascular disease, and diabetes, respectively. These results are completely consistent with the results obtained from Ling Mao's study [17].

According to the results of Poor-Ren et al., the majority of patients with coronavirus disease had diabetes, hypertension, and heart diseases [1], and the results were slightly different in Iran and other countries in the prevalence of the disease, which can be attributed to several factors such as lifestyle, diet, cultural habits, etc. The present study, showing 46 definite coronavirus deaths, had the highest mortality rate occurring in men (54.3%). Among the various studies that are most consistent with the results of the above study, we can mention the study of Haghdoost et al. in which the highest mortality rate occurred in men (58.8%). They have had at least one underlying disease, but in Haghdoost study, the extent of underlying diseases and the most common ones have not been studied separately [14].

Conclusion

During the course of the disease, we witnessed a gradual increase in positive cases until in the first month of coronavirus identification.

Observing the protocols by the people, as well as traffic restrictions and social distance, we gradually experienced a decreasing trend in positive coronavirus cases and hospitalization cases.

Then, due to the decrease in people's sensitivity and false confidence, as well as the reduction of restrictions and the reopening of public places, the second outbreak of the disease began again and reached its peak in June and July, with effective measures to implement intelligent spacing and use of equipment.

Personal protection, including masks by the people, we witnessed the second stop and the process of reducing the disease in the city.

Since the number of sampling and identification of patients in Khomein city is less than the national index due to the limitations and since it is necessary to fully control the epidemic and achieve group safety to an acceptable level and also according to the results of the study.

According to the data, which showed that 51% of coronavirus cases have occurred among housewives, avoiding family gatherings is emphasized.

Social distancing can prevent the spread of this disease in this city.

In connection with the study of fatalities mentioned in the text, 78.3% of deaths are related to people who have had an underlying disease, which requires sensitivity, intensive care, as well as the necessary training for these people.

Conflict of Interests

There were no conflicts of interest in this study.

Acknowledgments

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Ethical Approval

The ethics committee of Khomein University of Medical Sciences, Khomein, Iran, approved this study (IR.KHOMEIN.REC.1399.004).

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