



COVID-19 Telephone Consultation by Iranian Traditional Medicine as an Integrative Medicine: Benefits and Challenges

Maryam Taghavi Shirazi^{1,2}, Mehrdad Karimi³, Seyed Mahmood Fattahi Masoom^{4,5},
Raefeh Mardi³, Mohammad Mohsen Kamyabnezhad⁶, Fatemeh Eghbalian^{2,7*}

¹Student Research Committee, Iran University of Medical Sciences, Tehran, Iran

²School of Persian Medicine, Iran University of Medical Sciences, Tehran, Iran

³Department of Traditional Medicine, School of Persian Medicine, Tehran University of Medical Sciences, Tehran, Iran

⁴Department of Traditional Medicine, School of Traditional Medicine, Student Research Committee, Shahid Beheshti University of Medical Sciences, Tehran, Iran

⁵Management Team, Nobaan Private Corporation, Tehran, Iran

⁶Product Team, Nobaan Private Corporation, Tehran, Iran

⁷Research Institute for Islamic and Complementary Medicine, Iran University of Medical Sciences, Tehran, Iran

Received: 6 Feb 2021

Revised: 4 May 2021

Accepted: 1 Jun 2021

Abstract

The COVID-19 disease started in December 2019 in Wuhan, China, and spread across the world, including the Islamic Republic of Iran. Due to the high prevalence of this disease, it resulted in worry in many people and has led to several unnecessary visits to medical centers which may have increased the risk of infection. Preventive measures are necessary to control outbreaks and decrease disease burdens. Telemedicine such as telephone consultation is an efficient and safe platform to control disease in times of infectious epidemics by reducing the communication between people and the presence of non-infected people in medical centers. Iranian traditional medicine (ITM) as integrated medicine, is a collection of scientific principles and methods for the prevention and treatment of disease. The *Nobaan*'s telephone consultation system was set up by ITM specialists to provide consultations for COVID-19. A total of 43 ITM physicians have been consulting health seekers every day from 6:00 a.m. to 12:00 p.m. based on national guidelines for COVID-19 and a specialized guide from academic resources of ITM. From 18 March to 17 April 2020, the doctors received a total of 2778 calls and provided a total of 11221 minutes of consultation. In total, 50% of physicians answered more than 90% of the calls and the average length of each call was 4.5 minutes. Finally, it seems except few limitations compared with face to face patient visit, this newly consultation by ITM specialist may provide considerable help to prevent and manage COVID-19 outbreak in Iran.

Keywords: Complementary medicine; Persian medicine; COVID-19; Telephone consultation; Telemedicine

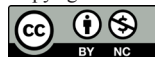
Citation: Taghavi Shirazi M, Karimi M, Fattahi Masoom SM, Mardi R, Kamyabnezhad MM, Eghbalian F. COVID-19 Telephone Consultation by Iranian Traditional Medicine as an Integrative Medicine: Benefits and Challenges. Trad Integr Med 2021; 6(3): 193-203.

*Corresponding Author: Fatemeh Eghbalian

School of Persian Medicine, Iran University of Medical Sciences, Tehran, Iran

Email address: eghbalian.f@iums.ac.ir, dreghbalian@gmail.com

Copyright © 2021 Tehran University of Medical Sciences. Published by Tehran University of Medical Sciences.



This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International license (<https://creativecommons.org/licenses/by-nc/4.0/>). Noncommercial uses of the work are permitted, provided the original work is properly cited.

Introduction

The novel coronavirus disease (COVID-19) started in December 2019 in Wuhan, China, and spread as a pandemic across the world, including Islamic Republic of Iran [1]. The prevalence of the disease in Iran has amounted to 1,372,977 and the death rate to 57,383,000 as to the date of 2021/1/25. Of the COVID-19 infected patients in Iran, 1,64,794 recovered [2].

Because this emerging disease is spreading rapidly with various clinical symptoms, the general population has come into a lot of questions concerning the symptoms of the disease, its warning signs, and measures that can be taken to help prevent, diagnose, and treat it. The prevailing conditions in the society after the spread of the disease and the news of the rates of daily new positive cases and mortality have made many people anxious and worry. This has led, in several cases, to unnecessary visits to hospitals and laboratories, which are found to be major centers for the transmission of the disease. Visits as such have increased both the workload of medical centers and the probability of infliction of healthy individuals [3].

In an epidemic upper respiratory tract infection such as COVID-19, preventive recommendations are required to control outbreaks. In one study, only 11.92% of the patients who referred to the emergency department during the seven days of the study required hospital care [4]. Therefore, minimize face-to-face visits is necessary in this disease [5].

The Coronavirus disease 2019 (COVID-19) is a highly contagious disease. One of the most

important ways to reduce the transmission of the virus is personal and social health education. Physical distancing, isolation and quarantining, and wearing masks besides testing and contact tracing are effective and influential strategies to control the pandemic when implemented early [6].

Also in times of infectious epidemics and natural disasters where the health of a large number of people is threatened, telehealth and telemedicine stand as efficient ways to control and treat diseases [7]. Upon the global dispersion of the new coronavirus, limitations have been exerted on person-to-person contact as a means of the virus transmission. Hence, quarantine or social distancing is recommended worldwide to reduce face-to-face interactions. In light of the social distancing program for the COVID-19 pandemic, triage and self-diagnosis via robots, applications, or telephone consultations have come to fore [8].

During COVID-19 epidemics in Singapore, advanced technological methods such as chatbots were employed to triage patients [9]. In the United States, several applications have been used to care for patients remotely [10]. Telephone consultation is the most common alternative or complement for face-to-face counseling and has many uses, including triage of acute or chronic problems, counseling in psychological depression and smoking cessation, and helping people who have difficulty leaving home or work. In particular, it provides a safe platform for receiving health and treatment consultations by reducing the presence of non-infected people with

underlying disease, risk groups, in medical centers and hospitals. It reduces the physical contact between the physician and the patient during the recovery period, after discharge from the hospital, or during home quarantine [7,11]. Thus, telemedicine can be an effective way to help control COVID-19 by reducing communication between people, including the patient-physician interaction.

In Iran, various systems have been set up to counsel people in the course of the COVID-19 pandemic, one of which is the 4030 telephone system of the Ministry of Health, Care and Medical Education, where experts answer people's questions over the phone and screen for positive cases [12].

As an integrated medicine, traditional medicine is very popular in human societies. By adopting a holistic approach, this type of medicine has always been able, along with conventional medicine, to provide effective recommendations in the prevention and treatment of diseases, even in infectious and pervasive diseases such as cholera and tuberculosis in the past and COVID-19 in the present age [13,14].

In China, only 10 days after the quarantine of Wuhan, an order was issued to use Chinese medicine to treat the new coronavirus respiratory disease [15]. In Iran, with the growth of public interest in natural remedies and the establishment of Persian medicine schools during the past decade, Persian medicine specialists have presented various treatment programs to reduce symptoms and speed up the recovery of these patients [16]. Accordingly, the Nobaan Telephone System was set up by Persian

medicine specialists under the supervision of medical universities to provide consultations in the fields of prevention and treatment of COVID-19 and is currently providing services. This article describes the features and challenges of this communication system and the services it has provided.

Methods

Development of the Persian medicine telephone consultation system

The Persian medicine Telephone Counseling System was launched by Nobaan Startup on the Voice over Internet Protocol (VoIP) platform and Sip Trunk lines with 60 channels. This digital telephone system is designed to be user-friendly and to have high security. Management and adjustment of interactive voice response in this system are internal, which gives the system more strength in designing new changes. This system can be installed and run on the website and Android and IOS operating systems.

Doctors' requests to work in the telephone consultation system are sent to the system via SMS. Then, the expert of the system collects additional information by calling the doctor and designs any doctors' specific page. On the page, each doctor can choose the preferred time on days of the week and can deactivate the specified time for one day or every day.

The website is designed in PHP (Hypertext Preprocessor) language; this website is accessible through the <https://nobaan.com/corona> URL.

The consulting line was designed and launched

only in 72 hours and officially started activity on 18 March 2020.

Access to this system does not require the Internet service and is free of charge. By dialing the number 021-42489090, the user is automatically connected to the active doctor. As several doctors are active at the same time, the system is designed to assign a proportionate number of users to each doctor.

The maximum time per call is 10 minutes. In cases where the time shall not be sufficient, the user can re-dial and enter the doctor's code.

Persian medicine telephone consultation health allies

Forty-three Persian medicine specialists are voluntarily available via the Nobaan Telephone System to answer questions about the prevention and treatment of the coronavirus infection every day from 6:00 a.m. to 12:00 p.m.

Before the official launch of the system, a cyberspace group was formed, consisting of Persian medicine physicians participating in the telephone consultation system. This group is responsible for providing scientific support by compiling clinical guidelines, by exchanging views, and by studying up-to-date articles of COVID-19 for frequently asked questions, so that the system physicians could be supplied with coordinated scientific materials.

To provide written and verbal education to callers, a guide on traditional medicine telephone consultation for coronavirus patients was developed by a group of these physicians based on academic resources of Persian medicine, the opinions of experts, and also on

the latest national guidelines for diagnosis and treatment issued by the Ministry of Health. The traditional medicine guide was developed in the three levels of maintaining general health, dietary measures, and medicinal plants. The contents of its conventional medicine section are regularly reviewed based on new protocols [17-19].

Clinical symptoms, diagnostic criteria, conditions required for the referral of a COVID-19 patient, preventive strategies, ways to strengthen the immune system, and Persian medicine recommendable remedies to improve the symptoms of this disease are explained in this guide. Also, questions related to epidemiology and preventive measures, the need to use masks, and manners of sanitizing and disinfecting (non-)food and home environment constitute the frequently asked questions, the answers to which were based on the results of current articles and are constantly updated [20,21].

The guide file on general health maintenance by lifestyle modification against the coronavirus disease was uploaded on a certain page of the Nobaan website for easy access of users. It was based on the principles of Persian medicine and in line with the educational purpose of the system in written form.

Health seekers (audience)

The system can be used by either male and female individuals, healthy and sick people, or those at risk from all over the country, irrespective of their age group.

By referring to the website, individuals can choose their preferred contact time and desired

doctor based on the special code of each doctor. Assessment of patients and the provision of medical advice

- Recording the data-driven checklist information

An electronic file has been developed based on the checklist developed by Persian medicine specialists and uploaded for health seekers on the website, which can be completed by the doctor either during or at the end of counseling. Age, sex, place of residence, the reason for contact, the presence of underlying disease and the medications taken, and the presence of general, respiratory, and gastrointestinal symptoms of COVID-19 are questioned based on the protocols of the Ministry of Health to assess potential infection. Moreover, the history of contact with an infected person, paraclinical results including the PCR test and CT scans, and cares received are recorded, whereby the person is evaluated for COVID-19.

- Groupings and provision of consultation

After an initial assessment of the callers, they are divided into three groups: prevention, treatment, and recovery. In this system, the written and verbal educational model is used. Thus, this system can provide expert advice by the Persian medicine specialist team on the coronavirus disease at different hours of the day and night, and help substantially to a wide range of age groups and individuals with an underlying disease through reduced face-to-face communication and attendance in medical centers and hospitals.

- Assessment of health seekers' satisfaction

To evaluate satisfaction levels and the Nobaan system feedback, a five-item satisfaction

assessment form was developed and uploaded on the system's website. After a call is finished, a survey link is sent to the health seeker. It should be noted that most of the audience took notes of the traditional medicine recommendations with interest, and some of them contacted on other days to thank and receive advice for other family members.

Results

Since the launch of Persian medicine telephone consultation system on 18 March 2020 up until April 17, 2020, i.e., 31 days, the results of the calls are as follows:

1. The response rate of physicians

A total of 43 Persian medicine physicians have been responding to health seekers' queries. About 93% of incoming calls were answered by physicians. Fifty percent of physicians answered more than 90% of the calls. (Figure 1)

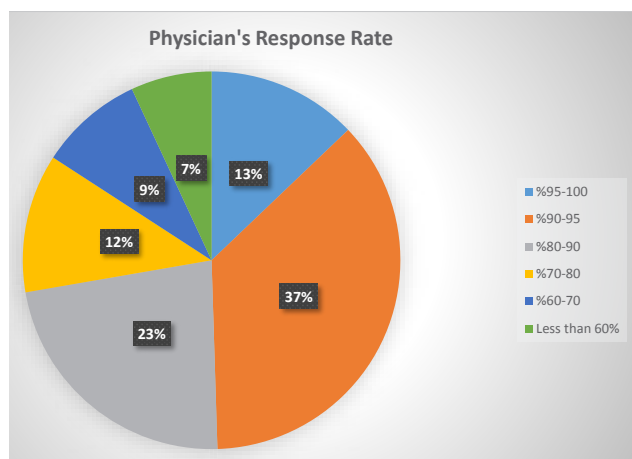


Figure 1. Physician's response rate

In the other hand each doctor answered an average of 64 calls. The lowest response rate was 33%, belonging to a physician who received 6 and responded to 2 calls. Nine percent of physi-

cians (n = 4) answered 100% of the calls. These doctors received a total of 178 calls and provided a total of 698 minutes of consultation. Details are given in Table 1.

Table 1. The response rate of physicians

No	Number of calls	Total calls duration	Number of busy calls	Missed calls	Successful calls	Percentage of answers	Average length of each call
1	6	7	0	4	2	33%	4
2	45	143	0	25	20	44%	7
3	2	11	0	1	1	50%	11
4	6	30	0	2	4	67%	8
5	18	20	3	3	12	67%	2
6	69	147	18	5	46	67%	3
7	98	404	0	31	67	68%	6
8	69	269	0	19	50	72%	5
9	26	54	0	7	19	73%	3
10	26	65	1	6	19	73%	3
11	56	228	1	12	43	77%	5
12	34	99	2	5	27	79%	4
13	26	141	3	2	21	81%	7
14	32	132	4	1	27	84%	5
15	52	161	2	6	44	85%	4
16	176	343	8	17	151	86%	2
17	16	58	0	2	14	88%	4
18	48	157	2	4	42	88%	4
19	8	13	0	1	7	88%	2
20	134	538	0	15	119	89%	5
21	118	495	0	13	105	89%	5
22	103	410	0	11	92	89%	4

23	48	175	0	5	43	90%	4
24	89	404	0	9	80	90%	5
25	100	403	7	3	90	90%	4
26	10	66	0	1	9	90%	7
27	33	256	0	3	30	91%	9
28	112	627	0	10	102	91%	6
29	51	248	0	4	47	92%	5
30	81	399	0	6	75	93%	5
31	126	531	1	8	117	93%	5
32	55	296	0	3	52	95%	6
33	112	581	1	4	107	96%	5
34	213	492	0	7	206	97%	2
35	115	749	0	3	112	97%	7
36	66	280	0	1	65	98%	4
37	102	481	0	1	101	99%	5
38	112	787	0	1	111	99%	7
39	68	38	0	0	68	100%	1
40	43	314	0	0	43	100%	7
41	25	152	0	0	25	100%	6
42	2	1	0	0	2	100%	1
43	42	193	0	0	42	100%	5

2. The number of calls

During 31 days of service, the average number of daily calls was 89. The maximum number of calls per day was 264 and the minimum was 13 calls. (Figure 2)

Also, the number of contacts with the system was raised significantly when the prevalence of the disease increases in the country

3. Duration of responses

The number of calls below five minutes and more than five minutes is given in Table 2. Fifty-eight percent of physicians spent an average of 5 minutes or more (maximum 10 minutes) per conversation. The total duration of successful calls was 11221 minutes, and the average length of each call was 4.5 minutes.

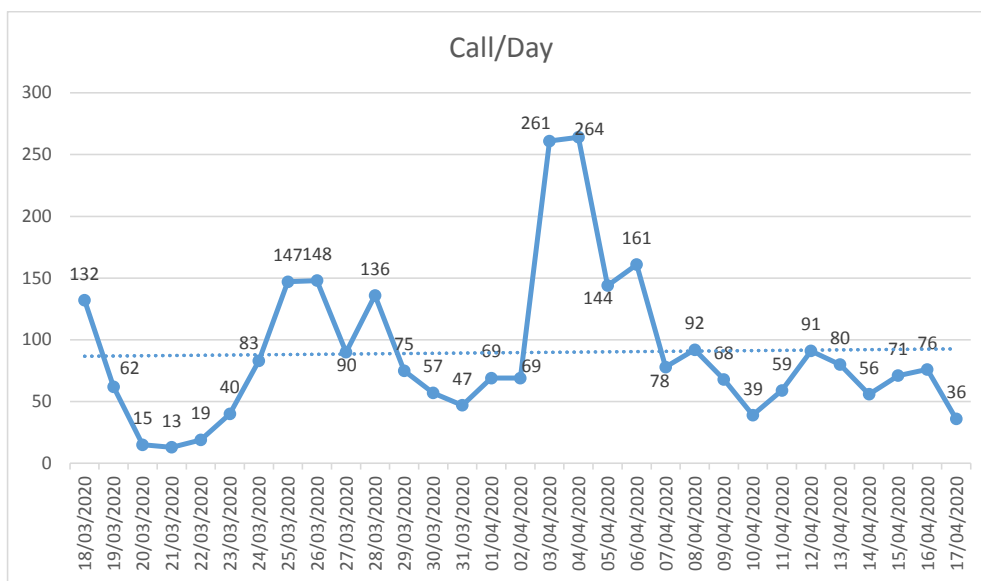


Figure 2. The number of calls per day

Table 2. Duration of calls

Call duration	Number	Percent
Less than 5 minutes	1406	63
More than 5 minutes	796	27
Total	2202	100

4. Response time span
 Nobaan’s consulting physicians responded to health seekers every day from 6 a.m. to 12 p.m.

The earliest call was made at 6:03 a.m., and the latest call was made at 10:51 p.m. (Table 3)

Table 3. Response time span

Response time period	Number of calls	Percent
6:00 to 11:59	636	23
12:00 to 17:59	1402	50
18:00 to 24:00	740	27
Total	2778	100

5. Reasons for calls

Forty seven percent of calls were related to treatment. Health seekers' also received recommendation for other problems except corona. (Figure 3)

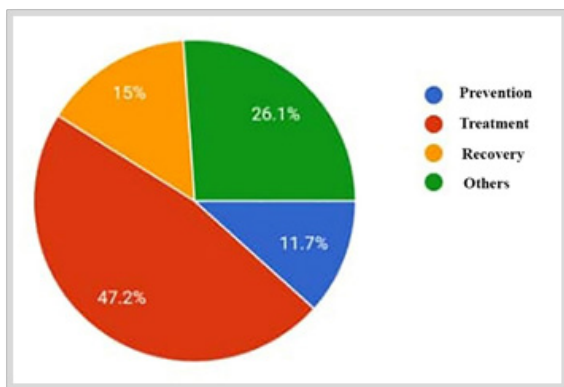


Figure 3. Reasons for calls

More than eighty percent of people called the system had no history of connection to infected patient. (Figure 4)

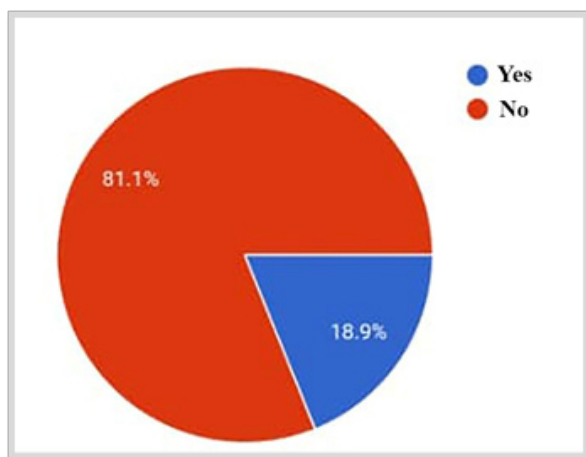


Figure 4. History of virus contact

6- Health seekers' satisfaction

During this study, health seekers expressed their satisfaction and feedback after receiving telephone counseling. More than 75% of physicians answered their questions about corona viruses. They communicated well with health

seekers and about 70% of callers desired to call again. Telephone consultation reduced the need for face to face by 60%. Finally, 80% of people were satisfied with this service.

Discussion

The telephone is a familiar and reliable technology for most people. In the critical circumstances of the COVID-19 pandemic, where there are communication constraints and social distancing regulations, it would be very beneficial to use telemedicine counseling to triage patients, to give preventive recommendations to patients with suspicious symptoms, and to provide them with medical care [22].

In Iran, as other country, from February 2020 until now, The Iranian Ministry of Health and Medical Education set up the 4030 call center nationwide with 2000 hotlines to boost speed in responding to people's queries about COVID-19 [12]. Also, some smaller hospital like Rasoul Akram hospital as a main teaching covers many catchment areas in west and center of capital of Iran, decided to develop Remote electronic consultation for COVID-19 patients [23].

However, telemedicine consultation has its limitations, especially when it comes to emergencies. The reluctance of specialists for participation and financial and insurance-related issues are examples of these limitations. Besides, physicians and staff members who participate in this type of medical care need to receive certain training [11].

Also, in most telecommunication methods set up for the coronavirus disease, applications and robots have been used to record the symptoms

of the disease. Individuals are scored based on the symptoms and may be referred to a care center for diagnosis and treatment if they are found to be in critical and high-risk conditions. In some cases, telephone consultation is done by staff members who are not physicians and respond based on a pre-determined checklist [8]. Taking into consideration the successful experience of other countries, such as China [24], in using traditional medicine treatments to control the symptoms of this disease, Nobaan Persian medicine telephone consultation system has been set up to help people and the health system of Iran in this critical situation.

In this system, Persian medicine physicians who are graduated from Iranian medical universities respond to health seekers. The physicians both screen the callers based on typical symptoms of the disease and diagnose infected or suspected cases with non-typical symptoms by asking for their history. Therefore, it is possible to give warnings and prevention and treatment strategies based on each person's needs. In this way, health seekers can communicate with their preferred specialist by phone at any time. This creates a sense of calmness as well as care benefits. As mentioned above, one of the limitations of telemedicine is the need to train the counseling care staff. In this regard, the Nobaan telephone consultation system tried to minimize the limitation by forming a group consisting of physicians who worked with the system in a virtual group before the system was set up. The necessary training has been given to Persian medicine specialists to provide simple and safe advice. Moreover, an online discussion and exchange of

experiences, as well as continuous updating of treatment programs based on up-to-date national and international protocols and instructions, have improved the scientific level of consulting services of this group.

The inability to physically examine patients and check the results of radiological tests and photographs was another limitation of telephone consultation. In these cases, on-phone training will significantly contribute to patient triage by discussing coronavirus warning signs, including shortness of breath, fever and chills, dry coughs, and severe general weakness [22].

Other limitations of this system are the imbalance of the number of specialists during busy hours, the launch of the system during the official Nowruz (New Year) holiday in Iran, and the unavailability of pharmacies and medical centers of Persian medicine during the holiday. Thus, it seems that Nobaan's telephone consultation system has been able to integrate the teachings of Persian medicine, which has an ancient history, with the instructions and treatment methods of conventional medicine, and hence contribute effectively to reduced person-to-person transmission, prevention, and treatment of the COVID-19.

Conflict of Interest

We confirmed authors have no conflicts of interest and this work is not interventional and therefore didn't need informed consent.

Acknowledgments

The authors are grateful to all the Persian medicine specialist for compassionate cooperation

and consultation, especially during the Nowruz Holidays. Also, we are immensely thankful to *Nobaan* Startup for their endless technical support.

References

- [1] Zareie B, Roshani A, Mansournia MA, Rasouli MA, Moradi G. A model for COVID-19 prediction in Iran based on China parameters. *Arch Iran Med* 2020;23:244-248.
- [2] Health Ministry's Updates on COVID-19 - January 24 2021 Available from: <http://irangov.ir/detail/356342>.
- [3] Sahu KK, Mishra AK, Lal A. Novel coronavirus (2019-nCoV): update on 3rd coronavirus outbreak of 21st century. *QJM: An International Journal of Medicine*. 2020;113:384-386.
- [4] Frid SA, Ratti MFG, Pedretti A, Pollan J, Martinez B et al. Telemedicine for upper respiratory tract infections during 2018 epidemiological outbreak in south america. *Stud Health Technol Inform* 2019;264:586-590.
- [5] Pan X, Ojcius DM, Gao T, Li Z, Pan C et al. Lessons learned from the 2019-nCoV epidemic on prevention of future infectious diseases. *Microbes Infect* 2020;22:86-91.
- [6] Ramirez-Valles J, Breton E, Chae DH, Haardörfer R, Kuhns LM. The COVID-19 pandemic: everything old is new again in public health education. SAGE Publications Sage CA: Los Angeles. CA 2020.
- [7] Smith AC, Thomas E, Snoswell CL, Haydon H, Mehrotra A et al. Telehealth for global emergencies: Implications for coronavirus disease 2019 (COVID-19). *J Telemed Telecare*. 2020;26:309-313.
- [8] Hollander JE, Carr BG. Virtually perfect? Telemedicine for covid-19. *N Engl J Med* 2020;382:1679-1681.
- [9] Priya S. Singapore government launches COVID-19 chatbot. 2020.
- [10] E. R. Robotic medicine may be the weapon the world needs to combat the coronavirus 2020 Available from: <https://www.opengovasia.com/singapore-government-launches-covid-19-chatbot>.
- [11] Aslani N, Garavand A. The Role of Telemedicine to Control CoVID-19. *Arch Clin Infect Dis*. 2020;15:e102949.
- [12] Raofi A, Takian A, Olyaeemanesh A, Haghghi H, Aarabi M. COVID-19 Pandemic and comparative health policy learning in Iran. *Arch Iran Med* 2020;23:220-234.
- [13] Mozaffarpur SA, Shirafkan H, Taghavi M, Mirzapor M. Investigating the difference between principals of Iranian traditional medicine and modern medicine for providing a model for integrated medicine. *Islam and Health Journal*. 2014;1:10-15.
- [14] Nasri Roudsari S, Khodadost M, Babamahmoudi F, Nasiri E. Diagnosis and treatment of Cholera from the viewpoint of Persian medicine physicians. *JITM* 2018;9:25-36.
- [15] Chen JK. How COVID-19 (2019-nCoV) is Currently Treated in China with TCM: Lotus Institute of Integrative Medicine. 2020.
- [16] Persian medical experts have entered the Corona prevention and care area [Internet]. Ministry of Health and Medical Education. 2020. Available from: <https://behdasht.gov.ir/>.
- [17] COVID19 prevention & care for outpatients and inpatients guidelines. Tehran. Deputy of Public Health and Curative Affairs, Ministry of Health and Medical Education 2020.
- [18] Ibn Sina H. *Al-Qanun Fi al-Tibb (The Canon of Medicine)*. Dar ehya alterase al arabi. Beirut 2005.
- [19] Jorjani E. *Zakhireye Kharazmshahi. Ehya-e Teb-e Tabiee* Institute. Qom 2012; p 162.
- [20] Coronavirus disease 2019 (COVID-19): situation report- 87 [Internet]. World Health Organization. 16 April 2020. Available from: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports>.
- [21] Singhal T. A Review of Coronavirus Disease-2019 (COVID-19). *Indian J Pediatr* 2020;87:281-286.
- [22] Greenhalgh T, Koh GCH, Car J. Covid-19: a remote assessment in primary care. *BMJ* 2020;368:m1182.
- [23] Faiz SHR, Riahi T, Rahimzadeh P, Nikoubakht N. Commentary: Remote electronic consultation for COVID-19 patients in teaching hospitals in Tehran, Iran. *Med J Islam Repub Iran*. 2020;34:217-218.
- [24] Ren JI, Zhang AH, Wang XJ. Traditional Chinese medicine for COVID-19 treatment. *Pharmacol Res* 2020;155:104743.