Challenges to Manage Pandemic of Coronavirus Disease (COVID-19) in Iranian Special Situation: A Qualitative Multi-Method Study

Hamidreza Khankeh (Hamid.khankeh@ki.se)  
University of Social Welfare and Rehabilitation Sciences

Mehrdad Farrokhi  
University of Social Welfare and Rehabilitation Sciences

Juliet Roudini  
University of Social Welfare and Rehabilitation Sciences

Negar Pourvakhshoori  
University of Social Welfare and Rehabilitation Sciences

Shokoufeh Ahmadi  
University of Social Welfare and Rehabilitation Sciences

Masoumeh Abbasabadi-Arab  
Tehran University of Medical Sciences

Nader Majidi Bajerge  
University of Social Welfare and Rehabilitation Sciences

Babak Farzinnia  
Qom University of Medical Science and Health Services

Vahid Delshad  
University of Social Welfare and Rehabilitation Sciences

Sadegh Ahmadi Mazhin  
Department of Nursing, Dezful University of Medical Sciences

Ali Sadeghi Moghaddam  
Department of Nursing, Dezful University of Medical Sciences

Saiedeh Bahrampour  
University of Social Welfare and Rehabilitation Sciences

Ulrich Sack  
Institute for Clinic Immunology, Leipzig University

Marcus Stuck  
DPFA Academy of Work and Health, Leipzig

Bernd Domres  
Surgery Department, University of Tubingen
Abstract

Background

With the unprecedented expansion of COVID-19 in the world since December 2019, the Iranian health system like other countries faced various challenges in managing the disease, which led to obtaining numerous experiences and lessons learned. The aim of this study is to identify these challenges, in regard with unique political, economic, and cultural issues which could help to other countries with similar situation.

Methods

The present study was performed using a qualitative multi-method approach with a content analysis method. The data were collected through in-depth and semi-structured interviews and Focused Group Discussions with 60 key persons, policy makers, health care workers and affected people by the disease, and the review of all available national reports between February 21, 2020, and December 22, 2020. The data collection and analysis process took place simultaneously.

Results

In this study, critical challenges related to the management of COVID-19 in the health system were, including; The limited evidence and scientific controversies, Poor social prevention and social inequalities, Burnout and sustained workload among health care workers, Improper management of resources and equipment, Lack of guideline for case contact tracing and patient-flow, Community mental health problem.

Conclusions

According to the study, measurements should be taken to conduct a continuous comprehensive risk assessment and develop a national response plan with an emphasis on exact case contact tracing, active screening, patient flow, paying attention to the psychological and social dimensions of the disease and also transparency of social inequalities in the face of risk factors of the COVID-19. And finally, supporting vulnerable groups using community capacity and cooperating international community to provide vaccine which is difficult to procure due to the sanction.

Background

The pandemic of COVID-19 triggered many morbidities, mortalities and cost billions of dollars (1). How individual countries respond in the coming weeks and months will be critical in influencing the disease's trajectory and having a coordinated international pandemic response.

The rapid spread of the disease with several waves and peaks for around a year imposed a lot of pressure on the health system and the other parts of the community worldwide. Many health care
professionals are on the front lines of battling the COVID-19 public health crisis, and many hospitals are overwhelmed with suspected or infected cases of Covid-19. This global pandemic can be characterized by the complexity of its source, the speed of its spread and the unpredictability of its scale and impact (2).

On February 19, 2020, Iran confirmed two patients that were infected with the Coronavirus in Qom city, and the highest number of cases had been reported in Tehran in a few days after (3). Iran is the third country with the highest number of reported COVID-19 cases after China, and Italy, up to March 16, 2020, being the first in the Middle East region and perhaps becoming a primary source of imported cases in this area (4). The spread of the disease in Iran, like in China, coincided with the Iranian New Year holidays and the relocation of populations from virus-infected cities such as Tehran and Qom to other parts of the country. Thereby, authorities have forced upon some restrictions like; travel banning, and schools and universities closure (3). Therefore, with the occurrence of COVID-19, the Iranian health system faced various challenges in managing the disease with several peaks which has been exacerbated by multiple severe sanctions. This unique situation push government for too early reopening, which caused increasing the number of confirmed cases and the number of deaths since May 2, 2020, and experiencing one of the worst scenarios since September until end of December 2021. Therefore, exploring the experiences of challenges in Iran, with the unique fluctuated situation of the number of infected and death by the disease, can help to effectively manage the pandemic and reduce its burden for health managers both inside the country and abroad. Therefore, this comprehensive study was conducted for the first time in the context of Iran to explore and share the challenges, strategies, and lessons learned from the management of COVID-19 as a global pandemic.

Methods

The present study was carried out with a multi-method approach using qualitative content analysis to explore a deeper understanding of the experiences gained from managing COVID-19 in Iran. The study started with Focus Group Discussion (FGD) by 60 key persons in 5 groups of people with different experiences and backgrounds from various departments to explore the health system’s challenges to manage COVID-19 in Iran. These Focused Group Discussions (FGD) were made in two-time intervals of 3 months, started in August 2020.

Following FGDs and in order to develop the explored concepts, in-depth - individual interviews were conducted. It is noteworthy that according to the rules of social distance at the time of the outbreak of the Coronavirus, the interviews were conducted by telephone or via Skype. A total of 60 people participated in FGD, and 30 of them recruited for in-depth interviews.

Moreover, all the available daily national documents and reports related to the management of COVID-19 were collected by searching the internet and the website of the Ministry of Health and Medical Education (MoHME) between February 21, 2020, and December 22, 2020.
Simultaneously with data collection, qualitative content analysis was performed through Graneheim and Lundman's methods. In addition to the content of the selected documents and reports, the text of the FGDs and interviews were also transcribed and then read several times, and the key points and concepts related to the objectives of the research were identified. Preliminary coding was performed and then the codes were permanently compared in terms of similarity and difference. After this stage, each set of similar codes developed sub-categories and categories and finally challenges have been explored (5-8).

Rigor study power

This study has several strengths. The information has been collected and analyzed since the first time the country formed the Coronavirus Headquarters (February 21, 2020). Also, to improve the study power, the multi-method approach, including individual interviews, FGDs, and document analysis, was used.

To evaluate the trustworthiness of the findings, Guba and Lincoln's criteria, including Credibility, Transferability, Dependability, and Confirmability, were used (9) through constant comparison, triangulation, member check, and peer review.

Results

To explore the challenges to manage Covid 19 in Iran 60 people from different disciplines have been participated (Table 1). The explored challenges were classified into six main categories: the limited evidence and scientific controversies, inadequate attention on political, social, cultural, and economic issue and community involvement, burnout and sustained workload of health care workers, improper management of the resources and equipment, lack of guidelines for case contact tracing and patient-flow, and long-lasting community mental health problem and shortcomings in society's support for vulnerable groups. (Table 1)

Table 1: The main categories of explored challenges and Statements of the interviewees
| Findings | main categories of explored challenges | Statements of the interviewees |
|----------|---------------------------------------|--------------------------------|
| Category 1 | The limited evidence and scientific controversies | "Given that the virus is very new and there is no accurate experience or information about it, for example, in the case of reinfection, I don't think it can be proven that whether it is reinfection or a recurrence of the disease." |
| Category 2 | Poor social prevention and social inequalities | "Some people have to work every day with a small income. they can't follow social distancing rules". |
| Category 3 | Burnout and sustained workload among health care workers | "In the early days, since the doctors themselves were not very familiar with the disease or there were no screening tests ..., and it was the beginning of the work, the patients came to stay [at the hospital] for 3-4 days, and we used to do their treatment and care with ordinary clothes and a simple mask. In fact, we considered them as a regular patient. A few days later, we would find out that the case is infected with Coronavirus; that put a lot of pressure on us and increased stress. We were terrified of all patients, and we took care of each of them with horror." "I do not know if this is the second wave or not, but the number of patients has been sharply increased, and again, we are shocked." |
| Category 4 | Improper management of resources and equipment | "I can say that for the first two weeks, the staff was in a lot of trouble. Gloves, masks, alcohol were not there. These were not available in the market at all. " "Different and sometimes contradicted protocols make hospital staff confused about how they can protect themselves." |
| Category 5 | Lack of guideline for case contact tracing and patient-flow | "If someone suspected to have the disease, there is no trustable and available sources to help him or her. Even Health care workers are completely confused as to where to go? and what should they do?" |
| Category 6 | Community mental health problem | "... everyone gets depressed. Social relationships are limited. People are afraid of one another. You feel like you are the center of infection. [...] It's psychologically problematic. For example, I have become very aggressive. I get angry very quickly and severely. I'm a little bored." |

**The limited evidence and scientific controversies**

There is limited scientific evidence nationally and internationally documented and agreed upon about the clinical manifestations, treatment and course of the disease. People's reactions to the disease appear to
be divergent, resulting in different clinical manifestations, diverse and changing clinical course, and
different prognosis. On the other hand, there is currently limited evidence available on how the disease is
developed and how the disease is spread. Due to the inability to analyze the factors affecting the disease
process and the inability to manage other accompanying and underlying disorders, vulnerable groups
cannot be identified and supported with certainty.

Poor social prevention and social inequalities: inadequate attention on political, social, cultural, and
economic issue and community involvement

Weakness in social prevention was a shortcoming in preventive measures to Coronavirus disease, which
was followed by weakness in risk communication, weakness in community participation, poor economic
situation and livelihood issues, and a lack of appropriate, inequality in exposure to the disease and
access to resources, integrated and enforcement rules and regulations for social distancing. People are
informed and overwhelmed by multiple media in the country 24 hours/7 days. Due to the late notification
of the spread of the disease in the country and the lack of transparency, the ground for reducing people's
trust was provided, which caused inadequate social prevention in the community.

Burnout and sustained workload among health care workers

This challenge included constant psychological pressures, lack of adequate support, inability to manage
human resources, and neglect of their own needs by instilling a sense of heroism. Health system faced
with the workload, reduction of mental strength and physical, emotional, and psychological fatigue of
health care workers due to long-term working hours and increasing the number of hospitalized patients
again and again for several times in particular since September.

Limited knowledge about the nature of the disease, the possibility of transmitting to staff due to late
diagnosis of patients, asymptomatic and pre-symptomatic infected patients and staffs, and finally worry
of the possibility of transmitting the disease to their family makes them nervous. Moreover, being a
witness of many patients and the high mortality rate and the lack of effective treatment for this disease
had created stressful conditions for them. In addition to the constant psychological pressure on
employees, there was not enough support for them. The statistics showed that the country was at the
forefront of the infection and death of hospital staff. Besides, in the first few weeks, there was no proper
protocol to protect infected employees and re-employ them, and even some employees did not have job
security, and they afraid if they lose their job. Furthermore, the general shortage of staff in the health
system, the departure of many staff during the crisis, and increasing the number of hospitalized patients
had led to a massive workload on staff. It is evident that increasing the number of infected and
hospitalized patients has recently frustrated hospital staff and even manages more.

Improper management of resources and equipment

Despite the need for resources and equipment in some areas, request management, Strategic Supply
Chain, and distribution were not well done, resulting in some hospitals and staff did not have enough
resources. Besides, it can be said that sanctions, as a political-economic factor, more than any other aspect, have challenged Iran's ability to provide needed supply and medical equipment. Being unable to procure vaccine because of the sanction put a lot of pressure on health system.

Lack of guideline for case contact tracing and patient-flow

There was no proper protocol for screening, case contact tracing, referral, patient follow-up and call centers, admission, treatment, temporary health centers and rehabilitation of patients. This led to the patients' confusion and the health care system and a lack of adequate and effective care for people in need during the first few weeks.

Community mental health problem: long-lasting community mental health problem and shortcomings in society's support for vulnerable groups

The occurrence of COVID-19 and its management measures were accompanied by many changes in the lifestyle of healthy people, patients, and their families, which in general had increased personal tensions in society. In some people, due to the unknown nature of the disease, fragile economy, the obscure process of its diagnosis and treatment, and receiving too much information about the disease, caused by changes in business and living conditions, social interaction, facing anxiety and fear, and living in uncertainty, people lifestyle has been changed, and they are living in new normality. Besides focusing on treatment and hospital surge capacity and ignoring Non-Pharmaceutics Interventions increased the number of deaths between the older adult and other vulnerable groups with underlying medical conditions such as cardiovascular disease, diabetes, chronic respiratory disease, and cancer.

Discussion

At the beginning of the COVID-19 in Iran, adequate measures were recommended and taken by the health system to control this epidemic. These interventions can be classified into three main parts: 1) Measures to change the health behaviors of the community and improve self-care; 2) Social distance plans; and 3) Active screening, finding patients and isolating COVID-19 cases, which were not wholly fulfilled.

Carrying out these interventions caused Iran to have acceptable success in the relative control of the first wave of the COVID 19 after a period of initial disorder for several weeks [i]. Despite the efforts made, due to the limited evidence and scientific controversies, severe sanctions, the most complex etiologies, most rapid spread, and most unpredictable scale, the lack of preparedness of society and the health system, lack of a plan for risk communication and community engagement, the lack of similar experience in the country and internationally, and after too early reopening, challenges arose in the management of the disease and the number of deaths and hospitalized people has been increased for several times. Assessing these challenges in the health system in response to COVID-19 can improve the knowledge of service providers and serve as a primary framework for the planning of the health system to enhance readiness to manage this long-lasting and devastating event and similar situations.
The nature of COVID-19 and the way(s) it is spread globally were unknown, which led to the rapid spread of the disease in countries. The power of transmission in asymptomatic-symptomatic, mild, and severe cases remains unknown. In some cases of COVID-19, we are faced with inconsistencies in laboratory diagnosis with clinical and radiographic findings. In the line of this part of the study results, some studies focusing on unknown nature of the virus and its complex etiologies (10).

In line with this study’s findings, other countries also had successful experiences in performing disease management interventions. For example, Qatar has conducted free diagnostic and treatment tests for patients, the developed medical staff, and the necessary equipment, including establishing field hospitals to further prepare for the fight against the disease (11). Iceland, with its precision and speed in taking preventive measures, was able to stabilize after 40 days of the outbreak. Testing of all suspected asymptomatic and symptomatic individuals, people who have had suspicious trips or have been in contact with people suspected of having the disease began a month before the discovering of the first case of the disease in the country (12, 13).

Too early reopening public places and reduce social restrictions and isolation is causing a second wave in some countries like the United State of America, Germany, France and Iran. Moreover, scarce resources and funding allocation decisions must aim to reduce inequities rather than exacerbate them (14).

The other countries with similar challenges have some experiences which can be used to manage the disease; for instance, although Vietnam has a common land border with China and has a high population, the incidence rate of this disease has been low in this country (15). After announcing the outbreak of a disease like Hong Kong (16), Vietnam closed its borders to China and, since the first case of the disease was identified in the country, quarantined all travelers from abroad for 14 days. For this purpose, even hotels were used as a place to quarantine travelers without charge. The cancellation of flights and the ban on the entry of all foreign passengers into the country also began about two months after the outbreak of the epidemic in the country. Vietnam is one of the most prosperous countries in the fight against COVID-19 (15).

The announcement of a nationwide home quarantine for three weeks from March 26, 2020, and the help of police forces to prevent people from leaving their homes, closing cultural and religious centers, stopping the Indian tourism industry, and holding some popular Indian sports such as cricket without spectators were other actions to control the disease (17). Egypt also closed its borders and canceled international flights until April 23, 2020, recessed schools, Universities, sports clubs, and restaurants, closed cultural venues and suspended cultural and artistic activities, suspended mosques and churches, banned collective activities and the holding of Iftar ceremonies during the month of Ramadan and released eligible prisoners to prevent the spread of the disease in the country (18). South Africa has so far been successful in controlling COVID-19 and has used its experience in fighting AIDS to combat COVID-19. The implementation of the quarantine program and its extension until the control of the disease, the performance of the social distance plan, home-to-home screening of people by health personnel, and the prohibition of public gatherings have been among the programs of this country (19).
In Malaysia, a day after the start of the epidemic in the country, visas for travelers from Wuhan and other parts of China were revoked. In total, 107 Malaysians were deported from Wuhan, China, and quarantined for 14 days. Home quarantine was also implemented by restricting traffic except for essential services, reducing the working hours of gas stations, supermarkets and shops, and closing public and private offices, as well as religious rites, in addition to not allowing people to leave their homes in high-risk areas for 14 days (20, 21).

The intensive work of health care providers during COVID-19 physically and emotionally destroyed them (22). Adequate, trained, experienced, responsible, and accountable staff plays an essential role in achieving the health system's goals. A recent study in Iran shows that in terms of the subscale score of NASA-TLX, nurses had more scores in mental pressure, physical pressure, time pressure (temporal), and frustration compared to the other jobs. Moreover, nurses had significantly more workloads compared to other jobs (Shoja, 2020).

Health care workers need to be motivated to provide quality services to the community. Sometimes, due to the lack of evidence and unrealistic self-confidence, health care personnel neglect proper personal protection, which requires monitoring staff performance and support. It is necessary to prepare a database of employees of the health system, retirees, and volunteers and organize them in alternative relief teams.

In this regard, Brazil has listed the benefit of official employees and employers from the short-term work program supported by the government and unemployment insurance and payment of salaries for the first 15 days of sick leave to the employees with positive Coronavirus test. India has also allocated medical insurance for health care providers (23). In Germany, DBfK – Bundesverband has a cooperation with the Federal Chamber of Psychotherapists to provide telephone counseling services to nurses free of charge, and in Taiwan, nurses who have taken care of suspected or confirmed cases of COVID-19 may take an additional three-day and 14-day leave, respectively (24).

Equipment such as personal protective equipment (PPE), ventilators, oxygen, and diagnostic kits should be available (25) Providing the necessary equipment in an emergency by making changes to upstream rules, developing guidelines and transparent processes for Strategic Supply Chain is essential to deal with COVID-

Finally, to manage the next wave of disease, it is recommended to making a clear decision on when to reopen educational centers, monitoring the implementation of social distancing protocols, applying more strictness and seriousness in the field of traffic restrictions, quarantine of contacted and vulnerable people, real-time risk communication with establishing a trustable communication with the people to educate and accompany them for quarantine and social distancing is necessary. Providing appropriate and timely social support for vulnerable groups could decrease the number of infected and dying. Supporting the country to procure vaccine at least for vulnerable groups by international community can help the health system to manage next coming waves or peaks.
Conclusion

This study indicated the need for public participation in the whole process of disease management, paying attention to social inequality in the face of the disease, and the need to address various aspects of the disease. Continuous risk assessment, predicting possible scenarios for similar conditions, and the development of a comprehensive national response plan are recommended. Longitudinal studies are needed to fully understand the symptoms, the time of the pathogenesis, and the long-term effects of the disease on health, psychological, social, and other dimensions. Moreover, transparency of social inequalities in the face of risk factors so that sometimes economic resources are not eligible enough to provide adequate support to different society segments, especially vulnerable groups. In Iran, extensive sanctions and insufficient resources reduced the access of vulnerable groups to the vaccine, needed resources and services. We do believe that, the complete transfer of disease management to the health sector has sometimes led to a lack of attention to other influential aspects of the disease, such as economic, social, and cultural dimensions. Countries that took early reopening without the transmission level was reduced are suffering from new spikes of contamination. At the same time, regions that quickly and rigorously fulfilled the quarantine managed to control the virus more effectively.

Finally, a strong risk communication strategy should remind citizens that the pandemic is not over and international collaboration is key to manage this devastating pandemic.

Declarations

Ethics approval and consent to participate

Written informed consent was obtained from all participants in the study and all related ethical codes have been followed. This study has been approved by the Ethical Committee Secretory of the University of Social and Welfare and Rehabilitation with the code IR.USWR.REC.1399.063. All protocols are carried out in accordance with relevant guidelines and regulations.

Consent for publication

Not applicable

Availability of data and materials

The datasets generated and analyzed during the current study are not publicly available, data have been gathering using individual in-depth interview and focus group discussion with different group of people who has been promised that the data would not be available for other sources, based of our ethical approve we are not allowed to share the data, but the data are available from the corresponding author on reasonable request.

Competing interests
The authors declare that they have no competing interests

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Authors' contributions

H.K, has designed the methodology of study, supervised and provided the required resources, and have been responsible for leadership of research activity management and coordination. M.F have designed the main ideas and goals of the research and supervised the study. J.R, N.P, S.A and N.M.B were responsible for Management and coordination responsibility for the research activity planning and execution, they also prepared and created published work. M.A.A, B.F, V.D, S.B, S.A.M and A.S.M have done the data collection. U.S, M.S and B.D wrote and collaborated in editing original draft. All authors reviewed the manuscript.

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Authors' information

Affiliations

- Health in Emergency and Disaster Research Center, the University of Social Welfare and Rehabilitation Sciences, Tehran, Iran.

Hamidreza Khankeh, Mehrdad Farrokhi, Juliet Roudini, Negar Pourvakhshoori, Shokoufeh Ahmadi, Nader Majidi Bajerge, Vahid Delshad, Saiedeh Bahrampouri

- Vice-Chancellor in Treatment Affairs, Tehran University of Medical Sciences, Tehran, Iran.

Masoumeh Abbasabadi-Arab

- School of Public Health, Qom University of Medical Sciences, Qom, Iran.

Babak Farzinnia

- Department of Nursing, Dezful University of Medical Sciences, Dezful, Iran.

Sadegh Ahmadi-Mazhin, Ali Sadeghi-Moghaddam

- Institute for Clinic Immunology, Leipzig University, Germany.

Ulrich Sack
- DPFA Academy of Work and Health, Leipzig.

Marcus Stuck

- Surgery Department, University of Tubingen, Germany.

Bernd Domres

Corresponding author

Hamideza Khankeh

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