

LETTER TO EDITOR

Lessons Learned from COVID-19 Pandemic Management in Iran; a Commentary

Reza Gharebaghi¹, Fatemeh Heidary^{1*}, Ali Asghar Pourezzat²

1. IVORC, Austin, TX, United States

2. Department of Public Administration, Faculty of Management and Faculty of Governance, University of Tehran, Tehran, Iran

*Received: December 2023; Accepted: January 2024; Published online: 7 February 2024***Cite this article as:** Gharebaghi R, Heidary F, Pourezzat AA. Lessons Learned from COVID-19 Pandemic Management in Iran; a Commentary. Arch Acad Emerg Med. 2024; 12(1): e24. <https://doi.org/10.22037/aaem.v12i1.2241>.

1. Introduction

Iran's healthcare system is considered to be one of the most enduring and resilient ones in the Middle East (1). It had successful records in tackling various infectious diseases by producing vaccines at the Pasteur and Razi institutes for several years' duration (2). However, COVID-19 has severely affected the healthcare system in Iran. From the beginning of the pandemic until January 01, 2024, over 146,000 cases lost their lives to COVID-19, with almost nine peaks resurgence (3). In this paper, the challenges regarding the control of COVID-19 in Iran are discussed, while the competences were discussed earlier (1).

Mutations of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and the appearance of vaccine-resistant strains would expose the global community to further challenges (4); therefore, the lessons learned from the COVID-19 pandemic may shed light on the future emergencies. Reflecting on lessons from health and social responses, multiple strategies got the COVID-19 under control. Nevertheless, doubts remain about the long-term effects as well as impending pandemics.

This is a commentary on COVID-19 management in Iran. Data has been collected from published papers regarding pandemic management from the beginning of the pandemic until January 1, 2024 as well as the expert opinion collected from a group of three experts in this field.

2. Challenges in emergency response

The healthcare system in Iran had a response at the start of the COVID-19 crisis (1). However, the country's healthcare system countered a difficult battle against COVID-19 following the subsequent peaks. Several trading partners did not keep their promises to supply COVID-19 vaccines. The crisis regarding basic medical supplies was so intense that there

have even been difficulties in obtaining isotonic sodium chloride solutions for intravenous injections (5). Moreover, because of the open border strategy, combating COVID-19 in the Middle East region became more difficult. According to the latest figures by United Nations High Commissioner for Refugees (UNHCR), Iran is host to one of the leading and most protracted urban refugee situations in the world. Based on the official reports, refugees in Iran have been given access to healthcare facilities, education, and livelihood opportunities. The country hosts almost 4.5 million displaced people mostly from Afghanistan and Iraq (6). A great achievement reported for Iran is vaccinating the refugees during the COVID-19; within a few months of the pandemic almost four million Afghan refugees received COVID-19 vaccine in Iran, based on the WHO report (7, 8). Nevertheless, there is still a long way ahead as the country remains a hub for refugees from neighbouring countries.

2.1. Exhaustion and indifference

Complying with health protocols, such as wearing masks, has gradually declined among the public, and less than 40% of the people adhered to the regulations and restrictions during the pandemic (9). People have either forgotten about or grown indifferent to the more contagious SARS-CoV-2 variants. This may be due to the failures of the mass media, educational agencies, and the government's negligence and contradictory conduct. Slogans such as "we defeat COVID-19" (10), and unfulfilled promises and claims, such as "we will turn into the vaccine exporting hub" along with delayed legislation and poor law enforcement practices, have contributed to people's indifference toward COVID-19 or pseudo-sense making in the process. At the beginning of the COVID-19, there were scenes of solidarity and contribution. However, in the peak, people's compliance reduced to such an extent that, upon mandating a lockdown, many have rushed to tourism or cultural sites, which are considered defiance of lockdown measures.

* **Corresponding Author:** Fatemeh Heidary; International Virtual Ophthalmic Research Center, Austin, Texas, United States; 78731. Email: drfatemehheidari@yahoo.com, Tel: +1 (281) 8990369, ORCID: 0000-0002-6558-6132.

2.2. The necessity of health policy

While enduring crippling sanctions, the healthcare system fought COVID-19 with a low budget and inadequately equipped facilities. The management of COVID-19 during 2020 and early 2021 has been criticized. Health officials have attempted to blame other authorities, even when they have been members of Iran's National Headquarters Against COVID-19 (INHAC). The INHAC was a body with almost unlimited authority to implement laws. Nonetheless, delayed legislation and poor law enforcement encouraged people to disobey the indicated measures. For example, during the first peak of the pandemic, a law banned traveling by private passenger vehicles, and people were instructed to use public transportation, increasing the risk of virus spread. Furthermore, fines and penalties had not been effective deterrents. The academic members of INHAC had several other executive responsibilities and positions and, in some cases, did not expose their financial or academic conflict of interests. In addition, most members of the INHAC were physicians, with modest representation from interdisciplinary sciences, such as sociology, public policy, human resource management, public administration, psychology, and system analysis. Consequently, the INHAC was criticized for implementing a treatment-based strategy rather than using a preventive-based approach. The INHAC had a closed circle of consultants, with little input being accepted from other organizations, such as the medical council. The INHAC included only one member of national parliament, who was the chairman of the parliament's public health committee. Most importantly, the lack of a strategic plan was evident in this circle, even though such a plan could be based on the experience of other countries, allowing rapid response to emergencies.

The healthcare governance faced criticism for its lack of inter- and intra-sectional coordination. These included criticism of procrastination in decision-making, the absence of firm leadership, the existence of multiple spokespersons, internal conflicts, and disharmony in behaviours and interviews. Healthcare officials regularly complained of having limited authority and blamed the many decision-making centres for their slow pace and confusion in directing the response to the pandemic. Nevertheless, none of these reasons was justified, and blaming the negligence of people in following protocols was simply an unacceptable excuse. The guidelines for treating and preventing COVID-19 were not updated for several months. For example, hydroxychloroquine was originally recommended as a promising candidate against COVID-19. However, following negative clinical trial results, hydroxychloroquine was discontinued in several countries due to its ineffectiveness (11), while it remained in Iran's national guidelines until October 2021. A high incidence of mucormycosis among COVID-19 patients had been reported (12), which may associate with the use of high-dose corticosteroids. It seems that adequate attention has not been paid to the capacity of Persian traditional medicine in COVID-19

prevention. However, there was no transparent system for releasing information to the media. When COVID-19 rampaged uncontrolled in the southern and eastern regions, the local health officials blamed the people and a lack of control at the borders, even though they could have managed the situation more dynamically. The lack of full support for vulnerable and the inability to detect and quarantine patients had been another weak point in managing COVID-19 in some instances.

Although it has been claimed that COVID-19 treatment in governmental or public hospitals is free of charge (13), evidence showed that contracting the disease can impose catastrophic health expenditures and push the vulnerable group to fall below the poverty line.

The decisions of the Ministry of Health on the early opening of schools or holding examinations have been criticized by pundits. Several popular social campaigns were held (14), which have demanded postponing the nationwide university entrance exams under high-risk conditions.

Furthermore, inexplicably, the outgoing deputy for the education of the Ministry of Health ordered that the physicians' examinations be held, during which thousands of physicians were packed indoors at the peak of the pandemic. This led to a popular campaign that demanded an investigation of the auditing agencies on administrators of the deputy of education, Ministry of Health (15). The local guidelines banned unnecessary procedures, including cosmetic surgeries and Botox injections for non-therapeutic indications (16). However, the supervisory role of the Ministry of Health had also been criticized. In many cities, plastic and refractive surgeries were still performed in large numbers, and local officials, paying no attention to warnings, did not supervise private medical clinics.

2.3. Healthcare staff; exhausted but hopeful

Although the mental and physical capacities of healthcare personnel, are stretched to the limit, globally, the conditions in Iran are unique.

Statistics have shown that burnout was prevalent in front-line healthcare workers (17, 18); research showed that 53.0% of physicians, residents, interns, and nurses experienced burnout on the frontlines of the pandemic (17). In another study, the burnout level in frontline nurses was significantly higher than in others. Stress and burnout were significantly more prevalent in the COVID-19-exposed group compared with the non-exposed group (18). On the other hand, a decline in people's compliance with health protocols and procrastination, and delay and inertia by some authorities, as well as their contradictory behaviours and incendiary performance, have added to the pressure.

Based on official reports, more than 200 healthcare staff died during this pandemic. The Medical Council of Iran noted the emigration application of over 3,000 physicians within a year, while another report showed that there has been a 300% increase in nurses' emigration (19). Worn-out and out-

dated hospital facilities exacerbate the intensive pressure on healthcare staff caused by the illness or death of colleagues or family members. This situation is worsened by the perplexing decisions of the authorities. The former deputy of education of the Ministry of Health reduced the acceptance capacity of medical specialty programs, which even caused a debate in the parliament (20); this decision was later withdrawn. Considering the emigration rates and COVID-19-associated mortality rates among healthcare personnel (19), this decision could have tragic consequences in the near future, which would affect the quality of service to patients.

2.4. COVID-19 vaccination

The country broke its record of weekly vaccinations (21) by opening 24-hour vaccination sites. Vaccination began late in Iran and proceeded slowly, but it was accelerated significantly.

Medical council officials were alarmed and, while showing their respect for domestic production, noted the urgency of pre-purchasing vaccines from abroad (22). However, the administrative bureaucracy, lack of participation by the private sector, and more importantly, lack of transparency led to a failure of the desired advances in vaccinations.

On the other hand, the scientific documentation and evaluation processes on the emergency use authorization of approved vaccines by the Iranian Food and Drug Administration were proposed to be transparent (23). Fundamentally, the country is one of the few Middle Eastern countries with the capability to develop vaccines, and approximately ten vaccines were undergoing clinical trials (24). The promising effects of some locally-made vaccines, which were regionally approved for emergency use, have been published (25-28). However, those vaccines received no international approval. A paper on the regional COVID-19 vaccination outcome has been retracted, too (29).

2.5. Sanctions during emergency

Iran has been facing crippling sanctions, for several years (1) has lost a large part of its oil revenues and encountered serious problems in transferring its own financial resources to buy vaccines and medications from reliable resources. Almost forty grassroots organisations called to lift boundaries that 'have obstructed the flow' of medicine and medical equipment into Iran amid the devastating toll of the COVID-19 pandemic (30).

Nevertheless, it is necessary to make the healthcare system a priority in the diplomacy network (31), focusing on strategies to battle the current and upcoming potential pandemics as well as supporting the healthcare system during medical and public health emergencies.

2.6. Messages to policy makers

The COVID-19 significantly affected the performance of the primary health care system in a negative way (32). Insights from 'policy learning' on how to augment the use of evidence

by policymakers are fundamental. Iran has made efforts to defeat COVID-19, but further timely, coherent, and efficient strategies are required (33).

Essentially, conflict of interest is a serious scourge in the healthcare system that should be addressed immediately. However, there is no well-defined strategy for determining the potential conflicts of interest in the healthcare management system (34), including in the management of COVID-19 in Iran.

Officials at the medical council believed that policy failures and oversights in the management of COVID-19 should be addressed. Decisions that result in the failure of quarantining and delays in mass vaccination or decision-making should be reported immediately to legal authorities (35). It has been postulated that the successive waves of COVID-19, especially the fifth, were associated with "delay in vaccination administration in due time, the collective overwhelming fallacy toward immunization, the polypharmacy controversy, inadequate community-based participation in risk reduction, and noticeable decrease in the public's resilience". However, the use of unapproved and unsuitable medications against COVID-19 increased death rates in the fifth wave, which could be outcome of a polypharmacy phenomenon (11). Iran experienced a surge of deaths during the fifth wave, with almost 700 daily deaths in August 2021 (3). The absence of effective healthcare policies to respond to COVID-19 and the failure in vaccination coverage in the early phases of COVID-19 management should be addressed.

Vaccine imports accelerated, but there is no evidence to show how much this speed of imports goes back to the mass vaccine production in the world. Additionally, imposed sanctions mean the cash-strapped government has insufficient funds to purchase medicines and vaccines. After all, in low-resource countries with limited medical facilities, infectious diseases, including COVID-19, may cause enormous healthcare complications.

Most importantly, the fight against emerging pandemics like COVID-19 should not become politicized (23). The COVID-19 pandemic has proven that the world today is a single, interconnected community and that the destiny of the whole world is tied to that of each nation.

Capacity building in global public health diplomacy is crucial (36). Pseudoscientific claims and conspiracy theories may cause barriers to fighting pandemics including COVID-19. Rather than waiting for new virulent variants, acting swiftly and dynamically across all management levels is necessary. It is time to shift the treatment-based strategy toward a preventative approach, while think tanks should become broader, and all voices, even those of critics, must be heard. Concrete steps for auditing, evaluating, and monitoring conflicts of interest in this process should be implemented. The national strategy in response to pandemic should be implemented with an emphasis on firm and knowledgeable leadership to improve preparedness for future threats.

While the COVID-19 and upcoming Disease X may bring con-

sideration to the controversies, inadequacies and oversights in the worldwide healthcare systems (37, 38, 39), healthcare workers in Iran fought against this deadly virus with utmost bravery and confidence in spite of sanctions and lack of resources.

3. Declarations

3.1. Acknowledgments

None.

3.2. Conflict of interest

None.

3.3. Funding

None.

3.4. Authors' contribution

All authors played integral roles in the design, execution, and composition of all sections of this commentary. All authors read and approved the final version of manuscript.

References

- Gharebaghi R, Heidary F. COVID-19 and Iran: swimming with hands tied! *Swiss Med Wkly*. 2020;150(1516):20242.
- Nezhad Fard R, Moslemy M, Golshahi H. The history of modern biotechnology in Iran: A medical review. *J Biotechnol Biomater*. 2013;3(159):2.
- Worldometer Iran Available online: <https://www.worldometers.info/coronavirus/country/iran> date of access: January 1, 2024.
- Rella SA, Kulikova YA, Dermitzakis ET, Kondrashov FA. Rates of SARS-CoV-2 transmission and vaccination impact the fate of vaccine-resistant strains. *Sci Rep*. 2021;11(1):15729.
- TCCIM Official Elaborates on Shortage of IV Fluid Bags. Available online: <https://financialtribune.com/articles/domestic-economy/109724/tccim-official-elaborates-on-shortage-of-iv-fluid-bags>. date of access: January 1, 2024.
- Refugees in Iran. United Nations High Commissioner for Refugees, Geneva. 2021. Available online: <https://www.unhcr.org/ir/refugees-in-iran/> date of access: January 1, 2024.
- Four Million Afghan Refugees Received COVID-19 Vaccine in Iran. Available online: <https://8am.media/eng/four-million-afghan-refugees-received-covid-19-vaccine-in-iran-who/> date of access: January 1, 2024.
- Shafaei A, Block K. COVID-19 and Sanctions Affecting Afghans in Iran. *J Immigr Refug Stud*. 2022:1-13.
- Lockdown ineffective as fifth COVID-19 wave peaks in Iran. Available online: <https://www.aa.com.tr/en/middle-east/lockdown-ineffective-as-fifth-covid-19-wave-peaks-in-iran/2313657#> date of access: January 1, 2024.
- Khodayari-Zarnaq R, Yazdi-Feyzabadi V, Hajizadeh A, Azimi Nayebi B. The Comparison of China and Iran Response to COVID-19 Pandemic: Lessons Learn for Health Policy. *Soc Work Public Health*. 2022;37(1):33-44.
- Heidari M, Sayfour N, Jafari H. Consecutive waves of COVID-19 in Iran: various dimensions and probable causes. *Disaster Med Public Health Prep*. 2023;17:e136.
- Avatef Fazeli M, Rezaei L, Javadirad E, Iranfar K, Khosravi A, Amini Saman J, et al. Increased incidence of rhino-orbital mucormycosis in an educational therapeutic hospital during the COVID-19 pandemic in western Iran: an observational study. *Mycoses*. 2021;64(11):1366-77.
- Rassouli M, Ashrafzadeh H, Shirinabadi Farahani A, Akbari ME. COVID-19 management in Iran as one of the most affected countries in the world: advantages and weaknesses. *Front Public Health*. 2020;8:510.
- National campaign to postpone the national entrance exam. Available online: <https://www.farsnews.ir/my/c/73765> date of access: January 1, 2024.
- National campaign in developing reform in Deputy of Education of Ministry of Health. Available online: <https://www.farsnews.ir/my/c/79089> date of access: January 1, 2024.
- Stop cosmetic surgery due to corona Available online: www.irna.ir/news/83842371/ date of access: January 1, 2024.
- Jalili M, Niroomand M, Hadavand F, Zeinali K, Fotouhi A. Burnout among healthcare professionals during COVID-19 pandemic: a cross-sectional study. *Int Arch Occup Environ Health*. 2021;94(6):1345-52.
- Hoseinabadi TS, Kakhki S, Teimori G, Nayyeri S. Burnout and its influencing factors between frontline nurses and nurses from other wards during the outbreak of Coronavirus Disease-COVID-19-in Iran. *Invest Educ Enferm*. 2020; 38(2):e3.
- Covid-19: Mass medic migration leaves Iran in pandemic panic. <https://www.middleeasteye.net/news/covid-iran-doctors-nurses-lost-migration-pandemic>. date of access: January 1, 2024.
- Reducing the capacity of the residency program <http://fna.ir/33w09> date of access: January 1, 2024.
- Iran approves U.S. firm J&J's shot as it fights fifth COVID wave. <https://www.reuters.com/world/middle-east/iran-approves-us-jj-covid-shot-fifth-wave-spreads-2021-09-16/> date of access: January 1, 2024.
- Letter from the medical council officials to the president to buy the COVID-19 vaccine <https://www.isna.ir/news/99102115778/> date of access: January 1, 2024.
- Ghafari M, Rezaee-Zavareh M, Dascalu S, Katzourakis A. Iran's covid-19 vaccination programme: using trans-

- parency to build public trust in immunisation-The BMJ. *BMJ Opinion*. 2021.
24. MAJID A, REUTER N. Iran hopes to defeat COVID with home-grown crop of vaccines. *Nature*. 2021;596(7873):475.
 25. Ghasemi S, Naderi Saffar K, Ebrahimi F, Khatami P, Monazah A, Alizadeh G-A, et al. Development of inactivated FAKHRAVAC® vaccine against SARS-CoV-2 virus: preclinical study in animal models. *Vaccines*. 2021;9(11):1271.
 26. Mirahmadizadeh A, Heiran A, Bagheri Lankarani K, Serati M, Habibi M, Eilami O, Heiran F, Moghadami M. Effectiveness of Coronavirus Disease 2019 Vaccines in Preventing Infection, Hospital Admission, and Death: A Historical Cohort Study Using Iranian Registration Data During Vaccination Program. *Open Forum Infect Dis*. 2022 May 9;9(6):ofac177.
 27. Naderi Sohi A, Kiani J, Arefian E, Khosrojerdi A, Fekrirad Z, Ghaemi S, et al. Development of an mrna-lnp vaccine against sars-cov-2: Evaluation of immune response in mouse and rhesus macaque. *Vaccines*. 2021;9(9):1007.
 28. Tabarsi P, Anjidani N, Shahpari R, Mardani M, Sabzvari A, Yazdani B, et al. Safety and immunogenicity of SpikoGen®, an Advax-CpG55. 2-adjuvanted SARS-CoV-2 spike protein vaccine: a phase 2 randomized placebo-controlled trial in both seropositive and seronegative populations. *Clin Microbiol Infect*. 2022;28(9):1263-71.
 29. Taherian Z, Rezaei M, Haddadpour A, Amini Z. Retraction Note: The Effect of COVID-19 Vaccination on Reducing the Risk of Infection, Hospitalization, and Death in Isfahan Province, Iran. *Iran J Public Health*. 2022;51(2):481.
 30. Biria K. Will Vienna Talks Put an End to the “COVID-19 Plus” in Iran? *Völkerrechtsblog*. 2021. <https://voelkerrechtsblog.org/will-vienna-talks-put-an-end-to-the-covid-19-plus-in-iran>.
 31. Biden urged to lift sanctions 'obstructing' Iran's Covid-19 response. *Middle East Eye*. Available online: <https://www.middleeasteye.net/news/covid-19-iran-biden-urged-lift-sanctions-pandemic-response>. date of access: January 1, 2024.
 32. Rezapour R, Dorosti AA, Farahbakhsh M, Azami-Aghdash S, Iranzad I. The impact of the Covid-19 pandemic on primary health care utilization: an experience from Iran. *BMC Health Serv Res*. 2022;22(1):404.
 33. Raoofi A, Takian A, Sari AA, Olyaeemanesh A, Haghighi H, Aarabi M. COVID-19 pandemic and comparative health policy learning in Iran. *Arch Iran Med*. 2020;23(4):220-34.
 34. Gharebaghi R, Heidary F, Pourezzat AA. Serial Deaths of Young Trainee Physicians in Iran During COVID-19 Pandemic; Messages to Policy Makers. *Front Health Serv*. 2022;2:777065.
 35. COVID-19 showed the weak points of the health sector/wrong decisions should be addressed Available online: <http://www.tehranmc.org/?p=9488> date of access: January 1, 2024.
 36. Chattu VK, Pooransingh S, Allahverdi-pour H. Global health diplomacy at the intersection of trade and health in the COVID-19 era. *Health Promot Perspect*. 2021;11(1):1-4.
 37. Pandey SK, Sharma V. A tribute to frontline corona warriors—Doctors who sacrificed their life while saving patients during the ongoing COVID-19 pandemic. *Indian J Ophthalmol*. 2020;68(5):939.
 38. Gharebaghi R, Heidary F. Social and Academic Responsibility Given COVID-19 Pandemic. *Iran J Public Health*. 2020 Oct;49(Suppl 1):134-135.
 39. Lawrence P, Heung M, Nave J, Henkel C, Escudero-Pérez B. The natural virome and pandemic potential: Disease X. *Curr Opin Virol*. 2023 Dec;63:101377