



Lessons Learned from COVID-19 Epidemic Management from the Perspective of Managers: A Qualitative Study

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Abstract

Background: Coronavirus will not be the first and the last pandemic in the world. Problem-solving and crisis management methods are determined by the ways in which people, statesmen, and experts treat various fields.

Objectives: The present qualitative study was conducted pursuing the goal to illustrate COVID-19 epidemic management learned lessons from the perspective of the managers of the educational and medical centers of Mazandaran University of Medical Sciences, Sari, Iran, in 2022.

Methods: This qualitative study was conducted based on a content analysis type in Mazandaran University of Medical Sciences and its subdivisions (hospitals and educational centers). The data were collected using semi-structured interviews, and interview coding was performed manually by the researcher. To increase the study accuracy, the methods proposed by Lincoln and Goba (1998) were used with such criteria as validity, reliability, verifiability, and transferability.

Results: In total, 15 managers (8 men and 7 women) in the age range of 32-70 years participated in this study and underwent deep and semi-structured interviews. Initially, 1079 semantic units and 85 subcategories were extracted. After reducing, removing, and integrating being conducted at various stages of data analysis, 3 themes and 12 categories were extracted. The present study themes are made up of "Management Challenges", "Personnel Challenges", and "Social Challenges".

Conclusion: One of the factors for promoting quality in planning is benefiting from the prior learned experiences and lessons. Taking advantage of the consulting team, the intra-organizational and extra-organizational coordination, optimally benefitting from the human workforce, paving the ground for virtual training for health system staff, and elevating the quality of public information are critical in the effective management of COVID-19.

Keywords: COVID-19, Learned lessons, Management, Qualitative study

1. Background

On December 31, 2019, the Chinese government officially reported several cases of unexplained pneumonia in Wuhan, China (1-6). Coronavirus Disease 2019 (COVID-19) has been ranked third as the most common case of coronavirus infection in the last two decades after Severe Acute Respiratory Syndrome and the Middle East Respiratory Syndrome (7). As of March 15, 2022, over 458,479 people were infected with this virus, and more than 6 million deaths were registered. In Iran, the first case of COVID-19 was reported on February 19, 2020, in Qom (8,9), and on February 20, 2020, the Ministry of Health and Medical Education reported 2 cases of COVID-19 in Qom as the hub of this disease (10). The occurrence of emergencies and disasters is one of the main challenges for countries. What seems important in this respect is the way senior managers, experts, and also the public deal with this challenge and will determine the future state of the crisis (11). Coronavirus will not be the first and the last pandemic in the world. Problem-solving and crisis management methods are determined by the ways in which people, statesmen, and experts treat various fields. Managing and leading such a crisis is

a crucial issue for society, and experts and senior managers should, over time, be able to gain experience from this and similar crises and develop a behavioral model that suits the people, as well as specialists, and statesmen (12). The most significant challenge posed by this pandemic is the health and endangered lives of people worldwide who get infected with this infectious disease every day and some of them die (13). The global spread of the virus has affected global health systems and the world economy (14) and has resulted in political, social, psychological, and commercial consequences (15). At the moment, all countries have to welcome this challenge and quickly plan to implement the lessons accrued from the experiences of other countries. There is little evidence of international coordination worldwide or in regional blocks against coronavirus since countries close their borders and merely control the domestic status. World Health Organization has called the countries to take up a thorough reaction to COVID-19. Under COVID-19 conditions, getting through this stage requires managing human capital (doctors, nurses, and other health care staff), financial resources, applied equipment, capital resources, and hospital beds.

2. Objectives

This pandemic highlights the need to be equipped with sufficient capacity to deal with the crisis. We need to build on our approaches to tackle this pandemic and other future health and environmental crises based on the lessons learned from COVID-19 management (16,18). Iran has been involved in several peaks of this disease, and the massive effect of recording the learned lessons in promoting crisis management has motivated the present qualitative study to illustrate the COVID-19 pandemic management accrued lessons from the educational and medical center managers' perspective. It is hoped that regarding the pandemic circumstances we are involved in, earning and summarizing the experiences of the frontline medical managers will greatly help future planning.

3. Methods

This qualitative study was conducted based on the content analysis approach, which can be taken as a research method for subjective interpretation of textual data content through systematic classification, coding, and theme writing processes or designing the known patterns. A qualitative content analysis permits the researchers to interpret the data authenticity subjectively but scientifically (19, 20). The study setting was Mazandaran University of Medical Sciences, Sari, Iran, and its subdivisions (hospitals and educational centers of Mazandaran province). The purposeful sampling among the managers lasted from April to November 2021. The researchers employed semi-structured interviews to collect the data. The interview ranged between 40 and 60 m depending on the participant's status and the interview process. All the interviews were performed in a peaceful and befitting atmosphere by arranging it with the participant and their consent in the same center. The semi-structured questions were posed for the interviews, which included "Explain your experiences with COVID-19 pandemic management, What problems have you dealt with? Describe the solutions you devised to come over the crisis". The rest of the follow-up and exploratory questions were asked based on the data provided by the participant to clarify the concept and deepen the interview process. The researchers used goal-based sampling with maximum diversity to acquire the participants' rich experiences. The due diversity was observed in terms of education, work experience, position, type of employment, gender, and workplace. The research samples included the managers who were confirmed as eligible for the study, able to, and interested in expressing their experiences about crisis management during the COVID-19 pandemic. The sampling was kept on until the data saturation or

until no new data were extracted by continuing the interview. The inclusion criteria were the individuals with at least two years of management experience, the ability to share experiences of COVID-19 pandemic management, and willingness to do an interview. On the other hand, those who were reluctant to continue participating were excluded from the study. Graneheim and Lundman's qualitative content analytical approach was used to analyze the content. The researchers transcribed the interviews and surveyed them several times to fully perceive the details. All interviews were considered a unit of analysis. The paragraphs, sentences, or words were considered semantic units and grouped according to their content and meanings. After that, according to the concept embedded in the semantic units, they reached the level of abstraction and conceptualization, were labeled by the codes, compared with each other in terms of their similarities and differences, and classified under more abstract categories with a certain label. Eventually, by comparing the categories with each other and reflecting on them carefully and deeply, the hidden content of the data was introduced as the theme of the study. The coding of the interviews was performed manually by the researcher.

To promote the study accuracy, the methods proposed by Lincoln and Goba (1998) were used with such criteria as validity, reliability, verifiability, and transferability (21). The research team made efforts to raise the research validity by sufficiently interacting with the participants, gathering valid information, and asking the participants to verify the information. The step-by-step repetition, data collection and analysis, and benefitting from the experts' review were carried out to increase the data reliability. In order to promote the verification criteria of the data, the approval of experts and their supplementary opinions were used.

4. Results

A total of 15 managers (8 males and 7 females) in the age range of 32-70 years underwent deep and semi-structured interviews (i.e., the managers were in different positions, such as a member of the crisis management committee, National Headquarters of Administrating COVID-19, staff managers, the president of the training center, specialists, matrons, supervisors, and head nurses of the emergency ward; Table 1). At first, 1079 semantic units and 85 subcategories were extracted. After reducing, removing, and integrating being conducted at various stages of data analysis, 3 themes and 12 categories were extracted. The themes in the present study include "Management Challenges", "Human Workforce Challenges", and "Social Challenges" (Table 2).

Table 1. Demographics Characteristics of the Participants

Participant	Age	Gender	Work Place	Education level	Management Background	Marital Status
1	50	Male	Medical-training center	Nursing bachelor	9	Married
2	42	Male	Medical-educational center	Nursing bachelor	6	Married
3	50	Male	Medical-educational center, School of medicine	Ph.D. in emergency medicine	12	Married
4	51	Female	Medical-educational center, School of medicine	Ph.D. in anesthesia	16	Married
5	52	Female	Medical-educational center	Nursing bachelor	15	Married
6	37	Female	Medical-educational center	Nursing bachelor	2	Single
7	37	Female	Medical-educational center	Health bachelor	4	Single
8	50	Man	University	Ph.D. in disaster and emergency health	12	Married
9	58	Male	University	Physician	14	Married
10	43	Female	University	Physician	11	Married
11	54	Male	University	Master in management	16	Married
12	40	Male	University	Master in nursing	4	Married
13	52	Female	University	Nursing bachelor	8	Married
14	39	Female	Hospital	Master in nursing	10	Married
15	70	Male	University	Ph.D. in infectious diseases	30	Married

Table 2. Extracted Categories

Theme	Categories	Subcategories
	Management challenges	Inappropriate infrastructures
		Poor planning
		Authorities not committed to adopted decisions
		Unfair distribution of financial resources
	Personnel Challenges	Paucity of nursing force
		Nurses' physical and mental problems
		High workload and burnout of medical staff
		Educational problems of medical staff
	Social challenges	Lack of knowledge and awareness
		Livelihood problems
		Social inequality
		Attitudinal problems in society

4.1. Management Challenges

One of the findings of the data analysis resulting from the individual interviews was management challenges. This category consists of 4 subcategories as "inappropriate infrastructures", "poor planning", "lack of commitment on the side of the authorities for the adopted decisions", and "unfair distribution of financial resources".

4.2. Inappropriate Infrastructures:

4.2.1. Lack of preparation

One of the stated management challenges was inadequate infrastructure, which was defined as not being prepared to face the pandemic, as well as lack of medical space, medical devices, protective equipment, and standard medical space. Due to the abrupt outbreak of the pandemic and not believing in the disease spread, the authorities were not prepared to tackle the disease, which itself was associated with the pandemic management challenges.

"...When managers face an unlooked-for phenomenon, they lack the potential to take the necessary measures to properly and optimally manage the incident, such as COVID-19 management" (Participant No. 9).

Although many important university centers have been established for a long time, they did not

have sufficient space for the treatment of suffering patients.

"...We were in the ex-emergency room and you know our ward was tiny and very cramped" (Participant No. 6, Code 4)

4.2.2. Lack of protective equipment and devices

Another infrastructural challenge was the lack of protective equipment and devices which was gradually resolved through people's aid and the support from the relevant organizations and the Ministry of Health.

"...The challenge we faced early in the pandemic was the lack of the necessary equipment (oxygen generator and ventilator) and personal protective equipment (N95 Mask)". (Participant No. 7, Code 3)

4.2.3. Lack of standard treatment space

Of other infrastructural challenges, we can state lack of standard treatment space mostly including lack of standard ventilation in the wards and patients' rooms, lack of standard isolation rooms, lack of a resting room, and no proper self-service in the centers.

"...Some hospitals were not suitable for the treatment of patients because of lacking proper and standard ventilation system, or lack of specially designed beds for COVID-19 patients". (Participant No. 4)

4.3. Lack of Personnel

"Lack of Personnel" in hospitals and medical centers, insufficient beds, and the outbreak of the disease may have caused ICU beds not to be vacant or ICUs not to be responding. "...We occasionally experienced the 911 working personnel wandering how to deliver the patient to an appropriate center". (Participant No. 10)

4.4. Poor Planning:

Among other management challenges, we can refer to poor planning, including lack of benefactors' management and planning management in running the convalescent homes (Inpatient Rehabilitation Facility), where the benefactors autonomously donate to their favorite centers while the donated items could be managed by the University of Medical Sciences. Moreover, the convalescent homes' management, if executed properly, could greatly reduce the workload of medical centers.

"...One of the challenges was the lack of organizing the benefactors, many of whom like to help their own city and we did not come to manage the affairs for them". (Participant No.11)

"...The convalescent homes were not welcoming. In my view, their environment was not appropriate, and people would have preferred to go home if they had considered a convenient place equipped with medical staff, everyone would certainly have welcomed it, but it wasn't organized, either". (Participant No. 2)

4.5. Non-Commitment of Authorities to Adopted Decisions

Another management challenge was related to the authorities not being committed to the adopted decisions that could have been due to the unknown nature of the disease and the haste caused by the lack of preparation to face the disease.

"...Of other inconsistencies in the country based on National Headquarters of Administrating COVID-19 was about mask wearing (first they denied the necessity of wearing a mask, then they stated that wearing a mask plays an important role in controlling the disease) and changed the protocols every day". (Participant No. 7, Code 6)

"...One of the decisions not being put into practice due to the lack of coordination among the organizations was to quarantine the north-bound cities and to ban taking trips, in contrast to which we saw the easy arrival of travelers to the province". (Participant No.12)

4.6. Unfair Distribution of Financial Resources

The management challenge associated with COVID-19 management was the unfair distribution of financial resources. Concerning the high workload and stress behind caring the COVID-19 patients, the nurses looked forward to the financial resources being distributed fairly.

"...The staff were not content with the distribution of COVID-19 payment and said that the support department also received COVID-19 associated payment, which was not fair". (Participant No. 6, Code 5)

4.7. Personnel Challenges

Other extracted themes were workforce challenges that covered the shortage of nursing staff, the medical staff suffering from physical and mental problems, educational problems, high workload, and burnout of medical staff.

4.8. Paucity of Nursing Staff

The paucity of the workforce, especially the nursing staff, was another challenge under the ministry policies, the provincial nursing offices recruited for the 89-day workforce and extended other forces.

"...At first, we suffered from a deficiency of workforce, which was tried to be compensated by recruiting the 89-day corporate forces and extending other forces; however, the paucity of workforce still exists. In the second peak, the personnel's infection got more (about 80 persons within 2 months out of a total of 465 nurses) and around 20% of physicians (anesthesiologists and infectious diseases specialists) got highly infected. One assistant nurse died". (Participant No.1, Code 8)

"...Due to the paucity of the workforce, we hired unprecedented forces along with the veteran forces". (Participant No.6, Code 11)

4.9. Medical Staff's Physical and Mental Problems

Out of other challenges in the human workforce were the physical and mental problems of the medical staff, especially the nurses. Most of the medical staff got infected, and the mental problems were in the form of anxiety and depression out of the fear of getting infected and transmitting it their family, as well as the potential death of themselves and their beloved ones.

"...About the dispatch personnel or the staff members, working indoors collectively led to an increase in the disease incidence, both in the dispatch and paramedics personnel". (Participant No. 10, Code 9).

"...Despite a large number of the personnel suffering from the disease, the staff were also under a lot of psychological distress due to the disease of an unknown nature and the fear of getting infected and transmitting it to their families". (Participant No. 11, Code 1).

4.10. Educational Problems of Medical Staff

Prior to the COVID-19 pandemic, the medical centers had held some training programs for their staff. The universities and faculties had held retraining programs for their affiliates so that to have the staff with sufficient knowledge and good skills;

however, with the pandemic breaking out and paucity of the medical staff and focusing on disease control and preventing gatherings to curb the disease spread, staff training was temporarily suspended until the time online education infrastructure getting provided.

"...During COVID-19 pandemic, most training was canceled due to the possibility of getting infected with the disease". (Participant No. 6, Code 19)

"...Using the devices and equipment was not considered suitable by the staff. For example, 20 BIPAPs were prepared but the staff did not know how to use them". (Participant No. 1, Code 5)

"...We had no information about the disease at all. Most of the time, the physicians did not know about the treatment method. On the other hand, we as the nurses did not know how to protect against this disease". (Participant 11, Code 3)

"...Most of the health workers gained information through their own Instagram page and cyberspace. It may have been a few brochures but there was no special training. Most of them got information through research and in cyberspace and from the infectious disease specialists". (Participant No.6, Code 8)

4.11. High Workload and Burnout of Medical Staff:

During the pandemic of the disease, another problem of the human workforce was related to many personnel leaving the workplace during the disease peak and the increasing number of inpatients, which led to a large workload for the staff. It is obvious that the patients' number increase and hospitalization caused frustration among the medical staff and even among the management.

"...Sometimes, it happened that several patients were concurrently resuscitated. The personnel said they could not forget the pleading looks of the patients. It was as if they were drowning but the personnel could do nothing. The point is when I cannot save them, I don't want to work in this ward". (Participant 14, Code 31).

4.12. Social Challenges

Of other findings, we can mention the social challenges with three subcategories of lack of knowledge and awareness, livelihood problems and social inequality, and attitudinal problems in society. Therefore, its impact cannot be ignored on not controlling the disease and the prevalence of mortality.

4.13. Lack of Knowledge and Society Awareness

Another challenge was the paucity of knowledge and awareness of the people so that most people went on leading their normal life and did not believe that they were prone to get infected by the disease.

"...On the street, we saw people with no mask, or going to parties and throwing celebrations as if there was no such disease. They are not well aware".

(Participant No.6, Code 12)

"...In the city, I saw cars of non-natives or license plates of other cities, which indicated the disease not being taken seriously and people were busy traveling". (Participant No.12, Code 8).

4.14. Livelihood Problems

Another COVID-19 management-related challenge was people's living problems that prevented them from complying with health protocols and quarantine.

"...Once before, the mask was very expensive, during the second wave, it got too expensive, too. The folk could not afford to buy a mask. When one could not wear mask, the consequences would be an increase in the disease infection". (Participant No.1, Code 9)

"...People are forced to open their markets and business venues to be able to support their families, and street vendors are forced to open their stalls, which is an important factor in disease spread in society". (Participant No.2, Code 13).

4.15. Attitudinal Problems of Society

Another challenge refers to the public not trusting the statistics, making fun of the disease, fearing hospitals due to the deaths statistics and trusting traditional medicine.

"...Sometimes, they tease the patient wearing a mask and make fun of them". (Participant 6, Code 14)

"...People do not trust the statistics. They bet the announced statistics are misreported to scare the folk". (Participant No.1, Code 13)

"...As the due deaths rate is high, people are terrified to get to the hospital and be hospitalized". (Participant No.13, Code 10).

"...For distrusting the modern medicine (because of advertisement by the traditional healers), they try to get discharged and refer to the herbalists and traditional healers". (Participant No.1, Code 15).

4.16. Social Inequality

The outbreak of the COVID-19 was associated with many changes in the lifestyle of people in society. Some think that the fragile economy, as well as the changes in business and living conditions have led to feelings like uncertainty, anxiety, and stress. On the other hand, there has been no specific livelihood assistance package for the vulnerable group, and this deteriorated the social inequality at the time of the pandemic.

"...How can a day laborer who lost his job due to Coronavirus induced disease support all his family members with personal protective equipment, such as masks and disinfectants, prepare food and clothing, or use public transportation. Suppose such a family with a disabled child or a cancer-stricken patient. Because of lack of support, such families are more vulnerable". (Participant 9, Code 44)

5. Discussion

COVID-19 is one of the newly-emerged pandemic the symptoms of which range from asymptomatic to severe infection of various organs (22). Every disease in the form of a pandemic imposes damage and double pressure on the health system (23). The main themes of the present qualitative study are "Management Challenges", "Human Workforce Challenges", and "Social Challenges". The subcategories of management challenges include inadequate infrastructure, poor planning, and the officials not being committed to the adopted decisions. Lack of experience and deficiency of information about the patient transfer, treatment method, and accurate diagnosis of COVID-19 have led to several errors in the hospital management of COVID-19. In a review study on the inter-hospital transfer of COVID-19 suffering patients, many challenges, such as the safety of medical staff, infection control in the hospital transfer phase, and equipment disinfection have been stated (24).

One of the subcategories of management challenges is the inappropriate infrastructure of the health system in response to the COVID-19 pandemic. In a study by Rasouli (2020), the lack of diagnostic kits at the onset of the disease in the country, as well as the shortage of beds and equipment for caring for ICU-bound patients in grave conditions were stated as the health system drawbacks in response to the COVID-19 pandemic (25).

One of the current study's extracted findings is dis-coordination among the managers. Of the obvious cases of lack of planning is the disharmony between the organizations and the executive bodies. Etemadi et al. (2015) also reported the weakness of regulations and lack of intra-sectoral and extra-sectoral coordination as the most significant challenge of the health system in response to the COVID-19 pandemic (26). One of the factors for promoting the quality of planning is employing previous experiences and learned lessons. In a study evaluating the response to COVID-19 in the hospitals in the southern region of Kerman province in Iran from April 2020 to March 2021, it was found that less than 50% of the hospitals were ready to take action (27). However, Yazd province-based hospitals' level of readiness in the third wave of COVID-19 was at the desired level, which indicated increasing preparedness and learning from the experiences of the 1st and 2nd peaks of the countrywide rampant disease (28). To overcome the COVID-19 pandemic, all countries have to help each other through intellectual, human, and material sharing to make the health system more prepared and powerful (18).

The challenges related to the human workforce consist of the shortage of nursing staff, the nurses' physical and mental problems, the medical staff's educational problems, high workload, and burnout. In most countries, the shortage of nurses is one of the

most demanding problems for hospitals during the COVID-19 pandemic (16). The studies conducted in Bangladesh and Sri Lanka have revealed that the high workload of nurses, psychological distress, social exclusion/stigma, as well as the educational and information requirements of the nurses have been among the most significant hospital problems in response to the COVID-19 pandemic (17, 29). Of successful experiences in dealing with the shortage of workforce in the hospital, we can point out organizing volunteers to be hired in different parts of the hospital based on the urgent needs and every individual's expertise, including the medical wards, kitchen, cold storage, infection control and environmental health, laboratories, and other departments in Masih Daneshvari Hospital, Tehran, Iran (30).

Considering the paucity of evidence about COVID-19 control, the training requirement of the health system staff is another challenge for COVID-19 management. In a review study targeted to precisely grasp the educational needs of the staff in caring for COVID-19 suffering patients in the ICUs, the findings suggested that developing an effective program requires recruiting multidisciplinary teams and organizational flexibility (31).

Of other findings in the current study, we can state the physical and mental problems of the medical personnel during the present pandemic. In a systematic review of 29 studies with a sample size of 22,380 cases, the findings disclosed the prevalence of stress, anxiety, and depression in frontline health care workers who took care of COVID-19 patients (32). One of the outcomes reported in the systematic review study conducted by De Kock et al. (2021) was the psychological problems among health care workers from COVID-19 (33). The coping approaches can be considered to boost resilience, spiritual attitude, and virtual communication with family members and fellows (34). In order to help nurses cope with job burnout and its psychological consequences, it is necessary to implement local and national policies in this respect (35).

One of the findings of the current study is the COVID-19-related social challenges. The research performed by Imani JH. (2020) indicated that the COVID-19 pandemic has imposed plenty of social consequences on Iran. Many social activities in the economic and educational areas have been suspended in order to implement the code of social distancing in society. The economic and livelihood problems and social inequality in society have immensely escalated (36).

The attitudinal problems and lack of knowledge and awareness in society about COVID-19 are among the social challenges in this research. In a study performed by Nasirzadeh (2020), the results of evaluating the preventive behaviors toward COVID-19 in society showed that the most powerful

predictors of preventive behaviors were the individuals' attitudes and knowledge (37). Health system policymakers are obliged to make continuous efforts to uplift the quality of information and improve public health behaviors (38).

6. Conclusion

The management of the COVID-19 pandemic is exposed to management, workforce, and social challenges. Taking advantage of the learned lessons is highly valuable in promoting the quality of health services to control the disease in society. Benefitting from the consulting team, optimally utilizing human resources, and paving the ground for virtual education for the health system staff are highly critical in effectively managing COVID-19.

6.1. Limitations of the study

The occurrence of the next waves of the COVID-19 and failure to explain the lessons learned by managers in the next waves is among the limitations of this study.

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Footnotes

Conflicts of Interest: The authors declare that they have no competing interests.

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