Original Article

Open Access
Publish Free

Exploring COVID-19 Patients' Experiences of Healthcare System Responsiveness during the Disease Course: A Qualitative Study

Tahereh Toulabi[1] , **Fatemeh Jafari Pour[2]**, **Heshmatolah Heydari[3,4*]**

[1]Department of Critical Care Nursing, School of Nursing and Midwifery, Lorestan University of Medical Sciences, Khorramabad,   Iran

[2]Department of Nursing, School of Nursing, Behbahan Faculty of Medical Sciences, Behbahan, Iran

[3]Social Determinants Of Health Research Center, School of Nursing and Midwifery, Lorestan University of Medical Sciences, Khorramabad, Iran

[4]French Institute of Research and High Education (IFRES-INT), Paris, France

Abstract

Background: One of the basic steps to improve the quality of services provided to patients with COVID-19 is to recognize the dimensions of providing such services from the perspective of recipients. Accordingly, this study aimed to explain the COVID-19 patients' experiences of healthcare system responsiveness during the disease course.

Methods: The present qualitative study was conducted using the conventional content analysis method in Iran from April 2020 to April 2021. Participants in this study included COVID-19 patients who were selected via purposive sampling. Data were collected through 34 telephone and face-to-face interviews and analyzed according to the method proposed by Graneheim and Lundman.

Results: Qualitative analysis of the data led to the identification of impaired health system responsiveness as the main theme. The main theme consisted of two categories including the collapse of hospitals (with the subcategories of lack of resources and defects in process management) and providing low-quality care (with the subcategories of providing low-quality nursing services, lack of comprehensive care, and threats to patient safety).

Conclusion: To provide quality care services to COVID-19 patients, the health system must consider improving its responsiveness to patient needs, expanding the physical space of healthcare centers, equipping hospitals with the accommodations and amenities required by patients, and providing conditions for the staff to be able to immediately respond to patient needs.

Keywords: COVID-19, Patients, Healthcare system, Responsiveness, Qualitative study

Introduction

The COVID-19 is an emerging infectious disease that was first reported on December 31, 2019, in Wuhan, China (1). Until April 14, 2021, the number of people contracting COVID-19 stood at 138 344 571, and the number of deceased reached 2 977 136 worldwide (2). The mortality rate of the disease has been estimated between 1% and 5%, but this rate is variable regarding the patient's age and the presence of comorbidities (3). The results of studies on patients with COVID-19 indicate that these patients need comprehensive care (3-6); however, amid the COVID-19 outbreak, health systems encountered serious challenges in providing care to patients (7,8), leading to the development of psychological disorders and extreme fatigue in healthcare providers (9). The COVID-19 pandemic has exacerbated the imbalance between limited nursing resources and increasing patient

needs (10,11). Despite the release of different guidelines for the clinical management of patients with COVID-19 (12) and making considerable improvements in the infrastructure of health systems (13), there were still many shortcomings in providing patient care during the recent pandemic (14,15). The health-related quality of life of patients with COVID-19 decreased (16), and some degrees of dissatisfaction with the performance of health systems were reported during the pandemic (17).

Iran, similar to other parts of the world, has been suffering from COVID-19 since its emergence in late 2019 and witnessed four waves of the disease so far. Until April 14, 2021, the number of patients with COVID-19 in the country reached 2 143 794, claiming 65 359 lives (2). There are currently 981 hospitals with over 130,000 active beds, delivering health care to more than 80 million people in Iran.

*Corresponding Author: Heshmatolah Heydari, Email: H-hidari@razi.tums.ac.ir

During the COVID-19 outbreak and its sequential waves, the healthcare system of Iran faced various challenges in patient care provision, which were exacerbated by strict sanctions (18,19). Iran is estimated to experience new waves of the COVID-19 epidemic in the future (20). To properly deal with the next waves of the disease, it is necessary to evaluate the current situation and the quality of the services provided to patients. In any country, monitoring the health system provides an opportunity for the system to recognize its new needs, fill the existing gaps by recruiting the capabilities required, and in this way, accomplish its mission and direct itself towards ideal goals (21). For this purpose, there is a need for the health system to constantly evaluate the achievement of goals using appropriate frameworks. A few studies have been conducted to evaluate the quality of the services provided to COVID-19 patients. In this regard, patients' satisfaction with health services can be a proper indicator for evaluating the effectiveness of health systems (22).

One of the most important ways to assess the quality of health services provided during the recent pandemic is to interview service recipients (23). Patients' perceptions of the challenges encountered during the disease course can help identify the sources of problems and subsequently obviate them. Considering that COVID-19 is a new emerging disease, there is inadequate information on the quality of the care services provided to these patients. On the other hand, qualitative studies can help identify the health system's problems during pandemics. Therefore, this study aimed to explain the COVID-19 patients' experiences of the healthcare system responsiveness during the disease course.

Methods

This qualitative study was conducted using the conventional content analysis method (24).

Study participants included patients who contracted the COVID-19 disease selected via the purposive sampling method. Inclusion criteria were confirmed COVID-19 diagnosis based on a positive Reverse transcription polymerase chain reaction (RT-PCR) test, passing at least two weeks from the diagnosis, developing the clinical symptoms of COVID-19, visiting healthcare centers, receiving either outpatient or inpatient therapeutic services, and finally willingness to participate in the study. Those who were either unable or unwilling to participate in the study were excluded. Sampling continued until reaching data saturation (25).

Due to an urgent need to gather information on the subject in order to improve the patient care process and also because of restrictions on conducting face-to-face interviews amid COVID-19 waves (a total of four waves in Iran so far), the data were mainly collected through semi-structured in-depth telephone or in-person interviews

from April 1, 2020 to April 1, 2021.

To collect the data, the researcher went to the infection control offices of hospitals to identify patients with positive PCR test results for COVID-19 and a history of hospitalization. To identify those receiving outpatient healthcare services, the researcher visited clinics and doctors' offices. Patients who had rich information relevant to the aim of the study were purposively selected by visiting healthcare providers (hospitals, clinics, and doctors' offices). After patient identification by the doctors and nurses providing health services, individuals' phone numbers were obtained to contact them and make arrangements (i.e., the time and place of the interview, if applicable). After explaining the objectives of the study and obtaining informed consent from the participants, the duration of the interview was determined based on the individual's desire, patience, and richness of experiences. If the participants preferred, in-person interviews were conducted at either the medical center or the patient's home (somewhere completely quiet and comfortable for the participant). The audios of all interviews were recorded by an electronic device. The main interview questions were "Would you please share with us your experience of the COVID-19 disease?" and "Would you please talk about the healthcare services you received? How was the process? How was the quality?". Based on the participant's responses, the interview then continued with more in-depth questions, such as "Can you share an experience?", "What do you mean?", and "Can you explain more about this?".

Analysis of the data was carried out using the approach proposed by Graneheim and Lundman (26). The collected data were analyzed simultaneously with the conduction of the interviews. Accordingly, the interviews were transcribed verbatim immediately and the written data were read several times to extract primary codes. Then, the related primary codes were identified, and categories and subcategories were formed based on differences and similarities. Finally, the meanings hidden in the data were extracted.

The accuracy of the data was determined according to the method proposed by Lincoln and Guba (27,28). To ensure the acceptability of the data, the authors tried to recruit participants with maximum diversity in terms of demographic variables. For confirmability, after extracting the primary codes, the participants were requested to confirm if the codes matched their opinions; otherwise, essential modifications were considered in the data coding process. Besides, the authors obtained the comments of two researchers who were experts in the field of qualitative research, and an agreement was made on the codes and classifications that emerged. For transferability, the authors tried to provide a comprehensive report on the research process.

The goals and methods of the study were explained to

the participants, and they were assured of the anonymity and confidentiality of the audio files. Informed consent was obtained from all participants. The participants had the right to withdraw from the study at any time.

Results

In this study, 34 patients with a history of contracting COVID-19 were enrolled, 17 of whom were women, and 17 others were men (Table 1). The qualitative analysis of the data revealed *impaired health system responsiveness* as the main theme, which consisted of two categories, including the *collapse of hospitals* and *providing low-quality care* (Table 2).

Impaired health system responsiveness

Data analysis showed that the patients visiting healthcare centers not only paid attention to the clinical dimension of the services but also had non-clinical expectations from healthcare providers. Patients expected that, in addition to physical needs, their psychological and welfare needs be addressed. Data analysis showed during different waves of the COVID-19 pandemic in Iran, medical centers faced a shortage of hospital beds when providing care to patients. Therefore, an imbalance in supply and demand could have impaired the responsiveness of the healthcare system of Iran during the COVID-19 pandemic. Under this main theme, two categories including the *collapse of hospitals*

Table 1. Demographic characteristics of the participants

Participant code	Gender	Age (y)	Marital status	Education level	Job	Type of Interview
1	Female	22	Married	Undergraduate student	Student	Telephone
2	Female	66	Married	Associate degree	Retired	Telephone
3	Male	57	Married	Graduate	Retired	Telephone
4	Male	55	Married	Associate degree	Retired	Telephone
5	Female	47	Married	High school	Housewife	Telephone
6	Female	60	Married	Illiterate	Housewife	Telephone
7	Male	50	Married	Associate degree	Employee	Telephone
8	Male	25	Single	Postgraduate	Employee	Telephone
9	Male	52	Single	Associate degree	Employee	Telephone
10	Male	66	Married	Diploma	Retired	Telephone
11	Female	72	Married	Illiterate	Housewife	Telephone
12	Male	74	Married	Illiterate	Retired	Telephone
13	Male	70	Married	Associate degree	Retired	Telephone
14	Female	66	Married	Illiterate	Housewife	Telephone
15	Male	47	Single	Illiterate	Retired	Telephone
16	Male	56	Married	Postgraduate	Employee	Telephone
17	Male	28	Single	High school	Unemployed	Telephone
18	Male	51	Married	Graduate	Employed	Telephone
19	Male	27	Married	High school	Employed	Telephone
20	Male	42	Single	Graduate	Employee	Telephone
21	Female	38	Single	Graduate	Employee	Face-to-face
22	Female	33	Single	Postgraduate	Employee	Face-to-face
23	Female	72	Married	Illiterate	Housewife	Face-to-face
24	Male	57	Married	Diploma	Retired	Face-to-face
25	Male	43	Married	Graduate	Employee	Face-to-face
26	Male	52	Married	Graduate	Employee	Face-to-face
27	Female	61	Married	Illiterate	Housewife	Face-to-face
28	Female	26	Single	Graduate	Employee	Face-to-face
29	Female	51	Married	Reading and writing	Housewife	Face-to-face
30	Female	26	Single	Graduate	Employee	Face-to-face
31	Female	51	Married	Graduate	Employee	Face-to-face
32	Female	55	Married	Postgraduate	Faculty member	Face-to-face
33	Female	38	Single	Graduate	Employee	Face-to-face
34	Female	57	Married	Illiterate	Housewife	Face-to-face

Table 2. The main theme, categories, and subcategories extracted from the data

Theme	Categories	Subcategories
Impaired health system responsiveness	Collapse of hospitals	Lack of resources
		Defects in process management
	Providing low-quality care	Providing low-quality nursing services
		Lack of comprehensive care
		Threats to patient safety

and *providing low-quality care* were identified.

a. Collapse of hospitals

When healthcare systems face an abrupt increase in the number of referrals, demands for receiving services increase accordingly, disrupting the balance of supply and demand. Thus, healthcare systems will face the shortage of resources such as beds, personal protective equipment, medications, and other equipment. On the other hand, the large volume of referrals disrupts patient management processes from admission to discharge.

Under this category, the two subcategories of *lack of resources* and *defects in process management* were located.

a.1. Lack of resources

Data analysis showed that during different waves of the disease, hospitals were crowded with COVID-19 patients, forcing officials to add new beds, which increased the contamination rate, irregularities, and patient dissatisfaction. One of the patients who was admitted to a hospital addressed crowded wards and patient dissatisfaction, "… There were four patients in each room, some of whom were constantly coughing or vomiting; it was nauseous…" (Participant 16).

Another problem noted by most of the participants was the lack of non-clinical amenities during hospitalization, such as blankets, pillows, sheets, etc. In this regard, one of the participants noted, "…Pillows and sheets were rarely available…" (Participant 18).

Drug shortages and their occasionally high costs were among the problems noted by COVID-19 patients, influencing the quality of the health services provided to these patients. About medicines being only available at hospitals and inaccessible to outpatients, one of the participants mentioned, "…When I was hospitalized, all of my drugs (ReciGen, favipiravir) were provided by the hospital…but for my family members who were not hospitalized… I should have bought favipiravir from outside, for which I had to pay a high price …" (Participant 30).

a.2. Defects in process management

Data analysis showed that due to the lack of pre-approved protocols, the patients were confused at the time of admission to healthcare centers, leading to their dissatisfaction with the management process. One of the

participants expressed his problems during admission to the emergency department, "…They passed us very easily to each other…" (Participant 32). About nurses' being inaccessible, another participant noted, "…They would connect the intravenous fluid and leave us; they would not even come back to disconnect it…" (Participant 16). Some nurses avoided examining patients at the time of admission and during hospitalization and constantly kept a distance from the patient because of the fear of disease transmission. One of the participants remembered not being examined by medical staff at the time of admission, "…They examined patients remotely…" (Participant 16). Moreover, not providing education at the time of discharge was problematic for patients. One of the participants noted the lack of training at the time of discharge that caused him some problems, "…The doctor did not tell me that ReciGen might cause side effects such as body and bone pain…" (Participant 30).

b. Providing low-quality care

The quality of health services reflects the scientific level at which the services are delivered to patients, which can positively change their health status. Data analysis showed that a variety of factors, such as human resources, the type of services provided, availability of medications, paying attention to spiritual needs, negligence, malpractice, and lack of commitment, could affect care dimensions and the quality of the healthcare services provided to COVID-19 patients. Under this category, there were three subcategories, including *providing low-quality nursing services*, *lack of comprehensive care*, and *threats to patient safety*.

b.1. Providing low-quality nursing services

Nurses, as the Achilles' heel of hospitals, play a vital role in providing health services to COVID-19 patients. Data analysis showed that the quality of nursing services could be affected by nurses' working schedules, the number of patients assigned to each nurse, and the number of work shifts per week or month, as well as nurses' experience, commitment, training, and moral beliefs.

Data analysis showed that one of the causes of patient dissatisfaction with the hospital services received was the shortage of nursing staff. In this regard, a participant noted, "…Nurses could not provide all services to patients because there were a few of them…" (Participant 5). The patients mentioned that nurses were physically and mentally engaged, so they would leave patients' expectations unfulfilled. One of the participants clarified, "…I believe that extremely high workloads and compressed work shifts caused nurses to feel physically and mentally exhausted and stressed…" (Participant 22).

Data analysis indicated one of the problems of patients with COVID-19 was deprivation from some care services that they should have received based on

standard guidelines. In this regard, one of the participants complained of nurses' negligence in failing to timely change his mother's urinary catheter, "…They did not pay attention at all and failed to change her catheter in time…" (Participant 26).

b.2. Lack of comprehensive care

Data analysis revealed that during the COVID-19 pandemic, although nurses tried their best to provide good services to patients, inadequate manpower and nurses' chronic fatigue caused them to pay less attention to patients' social, spiritual, and psychological needs. Therefore, according to instructions, nurses were more occupied with patients' physical requirements. Addressing this issue, one of the participants mentioned, "… Nurses were coming robotically void of sentiment…" (Participant 20).

Data analysis indicated that one of the care needs of patients was to be fulfilled in terms of the spiritual dimension. One of the participants addressed this issue as, "… We could not pray at prayer times because of the lack of a prayer hall and rug, and water for ablution..." (Participant 6). One of the problems of patients during hospitalization was the lack of possibility for meeting their family members, relatives, and friends. One of the participants mentioned, "…Being away from my children, especially my younger child, who has an extreme emotional attachment to me, bothered me a lot…" (Participant 31).

a.3. Threats to patient safety

One of the factors that must be considered when providing care to patients with COVID-19 is to ensure their safety. Data analysis showed that the safety of hospitalized COVID-19 patients might be threatened due to the negligence, malpractice, and lack of commitment of some staff. Falling off the bed was one of the threats compromising patient safety during hospitalization. The participants' experiences also showed that injuries due to falling off the bed, secondary to the negligence of staff and overcrowded wards, might remain undetected even long after discharge. Addressing his mother's falling off the bed in the hospital, one of the participants mentioned, "…My mother fell off the ICU bed, hurting her leg…" (Participant 26).

Data analysis showed that hospitalized patients could have been injured due to nurses' either performing a job that they should not have done or not performing a task that they should have done according to standard guidelines and instructions. According to our data, patients with COVID-19 faced problems due to delays in receiving some care services, receiving services by unprofessional staff, the lack of proper drug administration management, and not being informed about the health instructions needed to be observed during hospitalization and after discharge. Among the risks threatening COVID-19 patients in the hospital were medication errors. In this regard, one of the participants mentioned, "…They were supposed to give me ReciGen every other day…but they forgot and gave it to me for two consecutive days…" (Participant 25).

According to the results of this study, COVID-19 patients had to deal with the side effects of the drugs used to treat their disease. The participants reported developing gastrointestinal, cutaneous, and endocrine complications due to COVID-19 medications. One of the participants recalled, "…Kaletra pills were too large, and I was intolerant of them…I developed diarrhea and nausea…" (Participant 21).

Discussion

The findings of the present study showed that patients with COVID-19 experienced many problems when receiving healthcare services, such as poor health system responsiveness, lack of fulfillment of non-clinical needs, receiving poor-quality care services, and facing multiple safety threats.

In line with the findings of this study, the findings of another study showed that the health systems of all countries encountered many problems in meeting the needs of COVID-19 patients (29), and also, some studies reported that health systems in most countries of the world were not ready to deal with this pandemic (30). The factors that can affect the responsiveness of the health system include the adequacy of resources, organizational structure, organizational factors, and demographic characteristics of patients (31-34). It seems necessary for health officials to improve responsiveness to COVID-19 patients by the proper management of financial and human resources and evoking all available capacities to achieve the health system's goals.

The finding of this study showed that the shortage of medications was a major challenge in delivering health services to COVID-19 patients. Consistent with the findings of this study, other studies have warned about medication shortages during the COVID-19 pandemic (35,36), when many pharmaceutical companies were closed due to the lack of supply for raw materials, disrupting the import and export of drugs between producing and consuming countries (37). When a drug shortage episode is anticipated, organizations should consider prior arrangements to avoid the depletion of their reserves. Pharmacies should also try to manage the drug shortage crisis and maintain available resources by purchasing existing products, replacing similar drugs, developing appropriate protocols, and finding creative solutions to save their valuable available inventory.

The findings of this study showed that one of the challenges of providing health services to COVID-19 patients was the lack of delivering high-quality services. In a similar vein, the findings of another study demonstrated a decline in the quality of care services and an increase in

the mortality rate of patients with some chronic diseases during the COVID-19 pandemic (38).

One of the factors affecting patient satisfaction was the manner of providing nursing care. In line with the findings of this study, the results of other studies also showed that nurses, as the Achilles' heel of health systems, experienced various physical and psychological problems during providing care to COVID-19 patients, which along with inefficient resource management, compromised the quality of the services provided to these patients (39). Therefore, it seems necessary to reduce the inflow of patients to hospitals by carrying out appropriate and timely quarantine regulations, as well as implementing preventive and screening programs. On the other hand, the nurses of some hospitals, such as psychiatric and obstetric hospitals that have been designated as non-COVID centers since the beginning of the pandemic, can replace their peers at COVID centers so they can rest for a while and replenish their energy. Besides, at the intervals between COVID-19 waves, when hospitals become somehow depleted from COVID-19 patients, authorities should consider necessary arrangements for rebounding nursing forces to reinforce the front line of fighting against the COVID-19 disease.

The findings of this study highlighted that the spiritual and psychological care needs of COVID-19 patients were neglected amid the pandemic. In line with this observation, another study declared the lack of providing spiritual care to patients with COVID-19 disease (40). This is while spirituality is an important dimension of care provision to COVID-19 patients (41). Therefore, it is recommended that palliative care teams, consisting of psychologists and religious experts, be present in all hospitals to provide comprehensive care to these patients (42,43).

This study also highlighted patient safety as one of the factors that should be considered when providing care to patients with COVID-19. In line with this result, a retrospective study affirmed an increase in the rate of falling off the bed during the COVID-19 pandemic (44), compromising patient safety and causing hip fractures, cerebral hemorrhage, and even death (45). Therefore, the quantity and quality of nursing care should be improved during patient care provision to prevent falls (46,47). This important issue requires nursing supervisors to strengthen their nursing forces to prevent their exhaustion and avoid the occurrence of such events for patients with COVID-19 who already suffer from many psychological problems.

According to the present study, medication errors were among other threats to the safety of COVID-19 patients during hospitalization. In line with this finding, the results of another study showed that medication errors were common among patients with COVID-19, and most of these errors were related to dose administration

and incorrect drug use frequency (48). Furthermore, the findings of another study revealed that factors such as staff fatigue, overcrowded wards, unfavorable physical conditions, high workload, the lack of commitment, errors in drug prescription, and defects in the production and packaging of drugs by pharmaceutical companies were among the most common causes of medication errors (49,50). To minimize medication errors and maximize patient safety, the American Society of Health-System Pharmacists (ASHPs) suggests creating a specialized team to allocate resources, decide on alternative treatments, and resolve ethical problems in allocating limited drug resources (51). A resource allocation committee should establish a framework for rationing medications during drug shortages to avoid making prompt and hasty decisions at the bedside and reduce the likelihood of medication errors (51). Moreover, when a new drug enters the pharmaceutical market, physicians and nurses should be adequately informed about its prescription requirements, side effects, and post-administration care.

As the current study was conducted during the COVID-19 pandemic, some of the interviews were conducted by telephone; this is one of the limitations of this study which could have affected the richness of information. We tried to address this limitation by conducting complementary in-person interviews, as well as by increasing the number of interviewees. Given that the interviews were conducted after the recovery and discharge of the patients, it was difficult to find the key informant. Thus, we tried to minimize the effect of this problem by referring to the healthcare providers who knew the patients and their disease course. All health protocols were observed to reduce the risk of disease transmission during the interviews.

Conclusion
The present study showed patients with COVID-19 faced a variety of challenges during receiving healthcare services, such as inadequate health system responsiveness, low-quality care services, and safety threats. To improve the health system responsiveness to the needs of patients with COVID-19, the system should consider upgrading the physical structure of healthcare facilities, equipping hospitals with amenities, and providing conditions for the staff to pay prompt attention to patients' care needs while keeping respectful behavior. To enhance the quality of the health services provided to COVID-19 patients, it is necessary to implement comprehensive care programs and address these patients' psychological and spiritual needs. With the proper management of the nursing workforce and using appropriate guidelines during care provision to COVID-19 patients, it is possible to improve the quality of nursing services, as well as the safety of hospitalized patients.

Authors' Contribution
Conceptualization: Heshmatolah Heydari, Tahereh Toulabi, Fatemeh Jafari Pour.
Data curation: Tahereh Toulabi, Fatemeh Jafari Pour.
Formal analysis: Heshmatolah Heydari, Tahereh Toulabi.
Funding acquisition: Heshmatolah Heydari, Tahereh Toulabi, Fatemeh Jafari Pour.
Investigation: Heshmatolah Heydari, Tahereh Toulabi, Fatemeh Jafari Pour.
Methodology: Heshmatolah Heydari, Tahereh Toulabi, Fatemeh Jafari Pour.
Project administration: Heshmatolah Heydari.
Supervision: Heshmatolah Heydari.
Validation: Heshmatolah Heydari, Tahereh Toulabi, Fatemeh Jafari Pour.
Writing–original draft: Heshmatolah Heydari.
Writing–review & editing: Heshmatolah Heydari.

Competing Interests
The authors declare that they have no conflict of interest.

Ethical Approval
The Ethics Committee of Lorestan University of Medical Sciences approved the protocol of the study with the code "IR.LUMS.REC.1399.018".

References
1. Hui DS, E IA, Madani TA, Ntoumi F, Kock R, Dar O, et al. The continuing 2019-nCoV epidemic threat of novel coronaviruses to global health - the latest 2019 novel coronavirus outbreak in Wuhan, China. Int J Infect Dis. 2020;91:264-6. doi: 10.1016/j.ijid.2020.01.009.
2. COVID-19 Coronavirus Pandemic. Available from: https://www.worldometers.info/coronavirus/?utm_campaign=homeAdvegas1? Accessed April 4, 2021.
3. Hu Y, Chen Y, Zheng Y, You C, Tan J, Hu L, et al. Factors related to mental health of inpatients with COVID-19 in Wuhan, China. Brain Behav Immun. 2020;89:587-93. doi: 10.1016/j.bbi.2020.07.016.
4. Ambelu A, Birhanu Z, Yitayih Y, Kebede Y, Mecha M, Abafita J, et al. Psychological distress during the COVID-19 pandemic in Ethiopia: an online cross-sectional study to identify the need for equal attention of intervention. Ann Gen Psychiatry. 2021;20(1):22. doi: 10.1186/s12991-021-00344-4.
5. Davis D, Searle SD, Tsui A. The Scottish Intercollegiate Guidelines Network: risk reduction and management of delirium. Age Ageing. 2019;48(4):485-8. doi: 10.1093/ageing/afz036.
6. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet. 2020;395(10223):497-506. doi: 10.1016/s0140-6736(20)30183-5.
7. Makhni MC, Riew GJ, Sumathipala MG. Telemedicine in orthopaedic surgery: challenges and opportunities. J Bone Joint Surg Am. 2020;102(13):1109-15. doi: 10.2106/jbjs.20.00452.
8. Viswanathan VK, Subramanian S, Rao AK. Principles for managing patients with spinal ailments in the coronavirus disease 2019 era: what do we know so far? An evidence-based, narrative review. Asian Spine J. 2020;14(4):572-80. doi: 10.31616/asj.2020.0248.
9. Young KP, Kolcz DL, O'Sullivan DM, Ferrand J, Fried J, Robinson K. Health care workers' mental health and quality of life during COVID-19: results from a mid-pandemic, national survey. Psychiatr Serv. 2021;72(2):122-8. doi: 10.1176/appi.ps.202000424.
10. Palese A, Ambrosi E, Prosperi L, Guarnier A, Barelli P, Zambiasi P, et al. Missed nursing care and predicting factors in the Italian medical care setting. Intern Emerg Med. 2015;10(6):693-702. doi: 10.1007/s11739-015-1232-6.
11. Varasteh S, Esmaeili M, Mazaheri M. Factors affecting Iranian nurses' intention to leave or stay in the profession during the COVID-19 pandemic. Int Nurs Rev. 2022;69(2):139-49. doi: 10.1111/inr.12718.
12. Mølhave M, Agergaard J, Wejse C. Clinical management of COVID-19 patients - an update. Semin Nucl Med. 2022;52(1):4-10. doi: 10.1053/j.semnuclmed.2021.06.004.
13. Coccolini F, Perrone G, Chiarugi M, Di Marzo F, Ansaloni L, Scandroglio I, et al. Surgery in COVID-19 patients: operational directives. World J Emerg Surg. 2020;15(1):25. doi: 10.1186/s13017-020-00307-2.
14. Safdari A, Rassouli M, Jafarizadeh R, Khademi F, Barasteh S. Causes of missed nursing care during COVID-19 pandemic: a qualitative study in Iran. Front Public Health. 2022;10:758156. doi: 10.3389/fpubh.2022.758156.
15. Khansari SM, Arbabi F, Moazen Jamshidi MH, Soleimani M, Ebrahimi P. Health services and patient satisfaction in IRAN during the COVID-19 pandemic: a methodology based on analytic hierarchy process and artificial neural network. J Risk Financial Manag. 2022;15(7):288. doi: 10.3390/jrfm15070288.
16. Alinia C, Yaghmaei S, Abdullah FZ, Ahmadi A, Samadi N, Pourteimour S, et al. The health-related quality of life in Iranian patients with COVID-19. BMC Infect Dis. 2021;21(1):459. doi: 10.1186/s12879-021-06170-z.
17. Deriba BS, Geleta TA, Beyane RS, Mohammed A, Tesema M, Jemal K. Patient satisfaction and associated factors during COVID-19 pandemic in North Shoa health care facilities. Patient Prefer Adherence. 2020;14:1923-34. doi: 10.2147/ppa.s276254.
18. Rassouli M, Ashrafizadeh 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. doi: 10.3389/fpubh.2020.00510.
19. Dodangeh M, Dodangeh M. Iranian healthcare system against COVID-19. Germs. 2020;10(2):112-4. doi: 10.18683/germs.2020.1192.
20. Pourmalek F, Rezaei Hemami M, Janani L, Moradi-Lakeh M. Rapid review of COVID-19 epidemic estimation studies for Iran. BMC Public Health. 2021;21(1):257. doi: 10.1186/s12889-021-10183-3.
21. Manyazewal T. Using the World Health Organization health system building blocks through survey of healthcare professionals to determine the performance of public healthcare facilities. Arch Public Health. 2017;75:50. doi: 10.1186/s13690-017-0221-9.
22. Alosaimi FD, Alsaleh FS, Alsughayer LY, Altamimi LA, Alfurayh IA, Abdel-Aziz NM, et al. Psychosocial and clinical predictors of patient satisfaction with cancer care. Saudi Pharm J. 2022;30(4):414-20. doi: 10.1016/j.jsps.2022.01.020.
23. Sheikhbahaeddinzadeh E, ashktorab t. Qualitative research methodology in nursing: constructivism and structuralism.

J Qual Res Health Sci. 2022;11(1):27-34. doi: 10.22062/jqr.2022.91886.

24. Bengtsson M. How to plan and perform a qualitative study using content analysis. NursingPlus Open. 2016;2:8-14. doi: 10.1016/j.npls.2016.01.001.

25. Willig C, Stainton-Rogers W. The SAGE Handbook of Qualitative Research in Psychology. London: SAGE Publications Ltd; 2008. doi: 10.4135/9781848607927.

26. Graneheim UH, Lundman B. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. Nurse Educ Today. 2004;24(2):105-12. doi: 10.1016/j.nedt.2003.10.001.

27. Lincoln YS, Guba EG. Naturalistic Inquiry. Beverly Hills: SAGE Publications; 1985.

28. Rezapour Nasrabad R. Criteria of validity and reliability in qualitative research. J Qual Res Health Sci. 2020;6(4):493-9.

29. World Health Organization (WHO). Coronavirus Disease 2019 (COVID-19): Situation Report, 86. WHO; 2020.

30. Neogi SB, Preetha GS. Assessing health systems' responsiveness in tackling COVID-19 pandemic. Indian J Public Health. 2020;64(4):S211-S6. doi: 10.4103/ijph.IJPH_471_20.

31. Fu MR, Xu B, Liu Y, Haber J. 'Making the best of it': Chinese women's experiences of adjusting to breast cancer diagnosis and treatment. J Adv Nurs. 2008;63(2):155-65. doi: 10.1111/j.1365-2648.2008.04647.x.

32. Barati O, Khamarni M, Sadeghi A, Siavashi E. Skills, capabilities, and requirements of hospital managers: a qualitative study. J Qual Res Health Sci. 2020;5(1):17-28.

33. Nikbakht Nasrabadi A, Shahsavari H, Almasian M, Heydari H, Hazini A. Designing a process model of home care service delivery in Iran: a mixed methods study. Int J Community Based Nurs Midwifery. 2019;7(4):288-99. doi: 10.30476/ijcbnm.2019.73934.0.

34. Negarandeh R, Kamran A, Heydari H. Iran's health system performance in achieving goals based on the World Health Organization's framework: a scoping review. J Res Health. 2022;12(2):65-74. doi: 10.32598/jrh.12.2.1932.1.

35. Badreldin HA, Atallah B. Global drug shortages due to COVID-19: Impact on patient care and mitigation strategies. Res Social Adm Pharm. 2021;17(1):1946-1949. doi:10.1016/j.sapharm.2020.05.017.

36. Liu S, Luo P, Tang M, Hu Q, Polidoro JP, Sun S, et al. Providing pharmacy services during the coronavirus pandemic. Int J Clin Pharm. 2020;42(2):299-304. doi: 10.1007/s11096-020-01017-0.

37. Bookwalter CM. Drug shortages amid the COVID-19 pandemic. Us Pharm. 2021;46(2):25-8.

38. Golinelli D, Sanmarchi F, Capodici A, Gribaudo G, Altini M, Rosa S, et al. Variations of the quality of care during the COVID-19 pandemic affected the mortality rate of non-COVID-19 patients with hip fracture. PLoS One. 2022;17(2):e0263944. doi: 10.1371/journal.pone.0263944.

39. Galanis P, Vraka I, Fragkou D, Bilali A, Kaitelidou D. Nurses' burnout and associated risk factors during the COVID-19 pandemic: a systematic review and meta-analysis. J Adv Nurs. 2021;77(8):3286-302. doi: 10.1111/jan.14839.

40. Toulabi T, Jafari Pour F, Veiskramian A, Heydari H. Exploring COVID-19 patients' experiences of psychological distress during the disease course: a qualitative study. BMC Psychiatry. 2021;21(1):625. doi: 10.1186/s12888-021-03626-z.

41. de Diego-Cordero R, López-Gómez L, Lucchetti G, Badanta B. Spiritual care in critically ill patients during COVID-19 pandemic. Nurs Outlook. 2022;70(1):64-77. doi: 10.1016/j.outlook.2021.06.017.

42. Hojjat-Assari S, Rassouli M, Kaveh V, Heydari H. Explaining health-care providers' perceptions about the integration of palliative care with primary health care; a qualitative study. BMC Prim Care. 2022;23(1):226. doi: 10.1186/s12875-022-01835-3.

43. Hojjat-Assari S, Rassouli M, Madani M, Heydari H. Developing an integrated model of community-based palliative care into the primary health care (PHC) for terminally ill cancer patients in Iran. BMC Palliat Care. 2021;20(1):100. doi: 10.1186/s12904-021-00795-2.

44. Liang SC, Wei PC, Ma HL, Hsiao SH. Higher fall rate of admitted patients during the ongoing COVID-19 epidemic: is it coincidence or not? J Patient Saf. 2021;17(1):e45-e6. doi: 10.1097/pts.0000000000000794.

45. Burns Z, Khasnabish S, Hurley AC, Lindros ME, Carroll DL, Kurian S, et al. Classification of injurious fall severity in hospitalized adults. J Gerontol A Biol Sci Med Sci. 2020;75(10):e138-e44. doi: 10.1093/gerona/glaa004.

46. Lucero RJ, Lake ET, Aiken LH. Nursing care quality and adverse events in US hospitals. J Clin Nurs. 2010;19(15-16):2185-95. doi: 10.1111/j.1365-2702.2010.03250.x.

47. Sadeghi R, Mortaz Hejri S, Shakibazadeh E, Rahimi Foroushani A, Heshmati H. Barriers of health education in Iran's health system: a qualitative study. J Qual Res Health Sci. 2020;8(3):300-17.

48. Almazrou D, Egunsola O, Ali S, Bagalb A. Medication misadventures among COVID-19 patients in Saudi Arabia. Cureus. 2021;13(6):e15513. doi: 10.7759/cureus.15513.

49. Kazemi S. Structural factors underlying medical malpractice: from the perspective of social science experts and medical specialists. J Qual Res Health Sci. 2021;10(3):168-76. doi: 10.22062/jqr.2021.193596.0.

50. Hay-David AGC, Herron JBT, Gilling P, Miller A, Brennan PA. Reducing medical error during a pandemic. Br J Oral Maxillofac Surg. 2020;58(5):581-4. doi: 10.1016/j.bjoms.2020.04.003.

51. Fox ER, McLaughlin MM. ASHP guidelines on managing drug product shortages. Am J Health Syst Pharm. 2018;75(21):1742-50. doi: 10.2146/ajhp180441.