



## Successful experiences of Hospital Services Quality Resilience during the COVID-19 Pandemic in Iran

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### Abstract

**Background:** Ensuring and maintaining people's health is one of the most important programs in every country. The aim of the present study was to identify successful experiences of hospital service quality resilience during the coronavirus pandemic.

**Methods:** The present qualitative study was conducted using a content analysis method from September 2021 to April 2022. Seventeen senior and middle managers of Shiraz University of Medical Sciences and affiliated hospitals assigned as coronavirus centers were purposefully included. Data were analyzed using Graneheim and Lundman's method and MAXQDA 2020 software. The results of this study identified successful experiences that affected the quality of hospital services during the pandemic.

**Results:** Five main themes were identified: "Supporting University of Medical Sciences, Improving the hospital process, human resource, Medical, and pharmaceutical equipment and Welfare Facilities" and 31 sub-themes.

**Conclusion:** The resilience of hospital service quality was one of the governing indicators of the Ministry of Health during the coronavirus pandemic. Despite the many challenges in pandemic management and control, hospitals have made efforts in this field to create successful experiences that make it even more important to prepare hospitals for new epidemic conditions.

**Keywords:** Successful experiences, Quality, Resilience, Pandemic

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### Introduction

The provision and maintenance of health for all people is one of the most important programs of the healthcare systems in countries and is considered a development priority. Those involved in this field try to use the available resources, provide quality health care, and treat their community in all conditions, even in times of crisis and epidemics (1). Hospitals play an important role in achieving health sector goals, and their main missions are to provide quality care (2).

The quality of health service delivery is a vital issue

because it deals with human lives (3). Quality of health services includes clinical effectiveness, safety, patient, patient-centered care, continuity of care, timely care, efficiency, and justice. However, the resilience of health service quality becomes apparent when the quality of services is subject to challenges, and the conditions are prone to changes (4, 5). The World Health Organization emphasizes the importance of delivering and continuing quality healthcare services (6). Continuity of providing quality services refers to the resilience of service quality; in other

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#### ↑What is "already known" in this topic:

Hospital Services Quality Resilience as the major concern during the COVID-19 global pandemic. The disease demands a major concern for hospitals, to maintain the quality and safety of healthcare services.

#### →What this article adds:

This article explains what experiences of hospitals should learn and prepare during global pandemic. Finding is also known as one of the effective ways to promote resilience in human resources, physical structure and Training hospitals to rapid response in adverse conditions.

words, hospitals should be able to have the best accountability and performance in providing quality health services in stressful situations and adverse conditions, as they do in normal conditions (7).

One of the major crises and major health challenges in Iran and worldwide is the pandemic of epidemic disease (8). The rapid spread of these pandemics around the world has led to an increase in the number of cases, an increase in mortality, and a saturation of the capacity of care systems (9, 10). This phenomenon also caused challenges in hospitals in Iran regarding the supply chain of medicine, equipment, consumables, protective equipment, human resources, job burnout, insufficient medical space, and inadequate control of the transmission chain (11-14). and was the source of confusion and disorder of staff, psychological reactions in patients and staff, disruption of the normal functioning of medical centers, and decline in the quality of services (15).

Most hospitals were unable to maintain normal operations for some time due to the scarcity of resources and the unpredictability of the COVID-19 Pandemic (16), but some hospitals gained much successful experience in controlling diseases and continuing their services (17).

In the United States, the deployment of medical students, use of "volunteers" or retirees, repurposing of units, and "sharing" ventilators and medical equipment expanded the capacity to empower healthcare providers (18). Similarly, in Singapore, some hospitals divided their emergency departments (ED) into "high-risk" and "low-risk" areas with dedicated personnel and equipment, which controlled the traffic flow of staff and patients (19).

Affiliated hospitals should have a well-prepared disaster preparedness plan to know which areas of the hospital should be expanded in a crisis, how to increase their ability to care for incoming patients, and how to immediately access additional staff to increase accountability (20). Following the outbreak of the coronavirus pandemic, over time, and with the increase in knowledge about this disease, hospitals in Iran gained successful experiences in caring for patients with COVID-19. They quickly acted on various guidelines adopted by the Ministry of Health and responded to the Pandemic in accordance with the local population, social impact, political factors, and existing infrastructure.

In order to improve the performance and readiness of hospitals, it is very important to identify factors affecting service quality resilience. In Iran, to the best knowledge of the researchers, no study has been conducted on successful experiences of hospital services quality resilience during the COVID-19 Pandemic; therefore, the present study aimed to identify such experiences for the first time. The results of this study can be used in similar conditions to strengthen hospital resilience.

## Methods

The present qualitative study was conducted through a content analysis method from September 2021 to April 2022.

The study population consisted of senior and middle managers of Shiraz University of Medical Sciences and

affiliated hospitals assigned as coronavirus centers. The university samples included nursing deputies, infection control supervisors, the head of the Accreditation Office, and the personnel of the treatment supervision office. In hospitals, the samples included hospital managers, nursing managers, infection control supervisors, patient safety coordinators, head nurses, hospital quality improvement officers, general practitioners, infectious disease specialists, and internal specialists (Table 1).

Overall, 17 semi-structured interviews were conducted. The participants were selected through purposeful and convenience sampling, which continued until data saturation. The inclusion criteria included having experience of attending coronavirus patients, managing during the COVID-19 pandemic, and being talkative and willing to share their experiences via interviews.

A flexible interview guide was used to collect data. The participants were then interviewed in person and at their workplaces based on their preferences and prior coordination. The interview guide questions started with the following open-ended question: "How was the quality of hospital services during the corona pandemic?" The participants were then asked about their successful experiences of hospital service quality resilience. Each interview lasted 50-80 minutes, prior to which the interviewee was asked for permission to record the conversation. Each interview was coded to maintain the confidentiality of the participant's point of view. At the end of each interview, the key points of the interview were summarized for the interviewee for trustworthiness and member checking.

The data collection and analysis were performed simultaneously based on the method proposed by Graneheim and Lundman, including 1- transcribing the interviews and reviewing them several times in order to find a proper understanding of all the transcribed statements; 2- extracting the semantic units and categorizing them as compact units; 3- summarizing and categorizing the compact units and selecting appropriate labels for them; 4- sorting the subcategories; and 5- selecting an appropriate title that could cover the resulting categories (21).

Immediately after each interview, the recorded information was transcribed word-by-word in the shortest possible time (maximum 24 h after the interview). The scripts were then typed. The analysis process began at the same time as the first interview was transcribed. The transcripts were first to read line-by-line, and the important paragraphs were marked, the entire text of each interview was considered as the analysis unit. Next, the semantic units were determined: they were statements related to the successful experiences of resilience in hospital service quality. The coding was then performed by using MAXQDA 2020 software. Once the data were coded, they were compared based on their conceptual commonalities and differences, and codes that were conceptually similar were classified into more accurate and abstract concept classes. Finally, the classes were continuously compared, and the content embedded in the data was identified as the main theme.

To increase the accuracy and precision of the study, Guba and Lincoln's criteria, including credibility, depend-

ability, confirmability, and transferability, were used (22). To ensure data credibility, sufficient time was allocated for data collection and checking the findings with the participants, and the maximum variety required for the sample selection was considered in the data collection process. Regarding confirmability, the transcripts of some interviews and the extracted codes were provided to two faculty members of the healthcare management department (who were experts in qualitative research analysis but had not participated in the research) to examine the accuracy of the data coding process. The data were confirmed by the participants and research team to check the dependability and accuracy of the coding process. To create data transferability, a full description of the issue along with the participants' characteristics, data collection and analysis methods, and quotations of the participants were provided.

In the present study, the ethical considerations were as follows: 1) the study was approved by the University Research Ethics Committee; 2) All participants signed an informed consent form before the interview, 3) Participation of the experts in the study was on a voluntary basis, 4) For the sake of confidentiality of the participant's information, a code was allocated to each interviewee, 5) the participants received notes of gratitude expression from the researchers.

## Results

Table 1 presents the participants' demographic information. In this study, 17 participants (9 females and 8 males) aged 30-55 years were interviewed. The mean age of the subjects was 40.5 years. The mean work experience of the participants was 14.37 years. Regarding their education level, seven participants hold a bachelors' degree, five hold a masters' degree, and three hold a Ph.D., and

two participants were general practitioners.

According to the analysis of the interviews on identifying the successful experiences of hospital service quality resilience during the corona pandemic, five main themes and 31 sub-themes were extracted (Fig. 1).

Figure 1 shows the Successful experiences of hospital service quality resilience, including 5 main themes as follows: "Supporting University of Medical Sciences, Improving the hospital process, Human resource, Medical and Pharmaceutical equipment and Welfare Facilities.

### The supporting role of medical universities

To combat this disease, medical universities selected public hospitals that were equipped in terms of equipment, manpower, and physical structure and designated them as referral hospitals; therefore, patients could refer to these centers in the shortest possible time. Moreover, private hospitals compensated for the lack of beds in public hospitals. With the support of Medical Universities, an outpatient treatment department was set up to treat patients with COVID-19 on an outpatient basis, which reduced the number of patients referred to hospitals. With the help of donors, the equipment needed by the hospitals was purchased, and with the employment of volunteers, the workload due to the absence of ward attendants was reduced.

*"When dividing the corona center, we considered people's access to hospitals in terms of geographical location..."(Participant 2)*

*"Our hospital set up an outpatient ward to care for patients with COVID-19. We controlled some of the crowds, and another successful experience was the arrival of volunteer forces who came to us like angels..."(Participant 6).*

*"Donors played a very important role in providing monitors and pulse oximeters..." (Participant 8).*

Other successful achievements of the Corona pandemic

Table 1. Demographic information of research participants

Participants	Gender	Age	Occupation	Work experience	Education level
1	Female	55 years	head of Accreditation Office	28 years	Master in midwifery
2	Female	36 years	nursing deputy	11 years	Ph.D. in nursing
3	Female	44 years	infection control supervisor	22 years	Master in nursing
4	Male	53 years	hospital manager	23 years	Master in healthcare services management
5	Male	30 years	corona ward nurse	6 years	Bachelor in nursing
6	Female	53 years	nursing manager	26 years	Bachelor in nursing
7	Female	32 years	Hospital Quality Consultant	10 years	Master in healthcare services management
8	Female	48 years	Hospital Infection Control Supervisor	26 years	Bachelor in nursing
9	Male	30 years	Corona ward doctor	2 years	Internal specialist
10	Female	37 years	Patient safety specialist	15 years	Bachelor in nursing
11	Male	37 years	Corona ward doctor	9 years	General practitioner
12	Male	33 years	Corona ward doctor	5 years	General practitioner
13	Male	37 years	Treatment Supervision Staff at University, and Nursing Deputy of Health Minister	12 years	Master in nursing
14	Male	43 years	Corona center infectious disease specialist	14 years	Infectious disease specialist
15	Male	45 years	Hospital manager	12 years	Ph.D. in healthcare services management
16	Female	34 years	Quality improvement specialist	9 years	Master in healthcare services management
17	Female	37 years	Corona ward head nurse	14 years	Bachelor in nursing

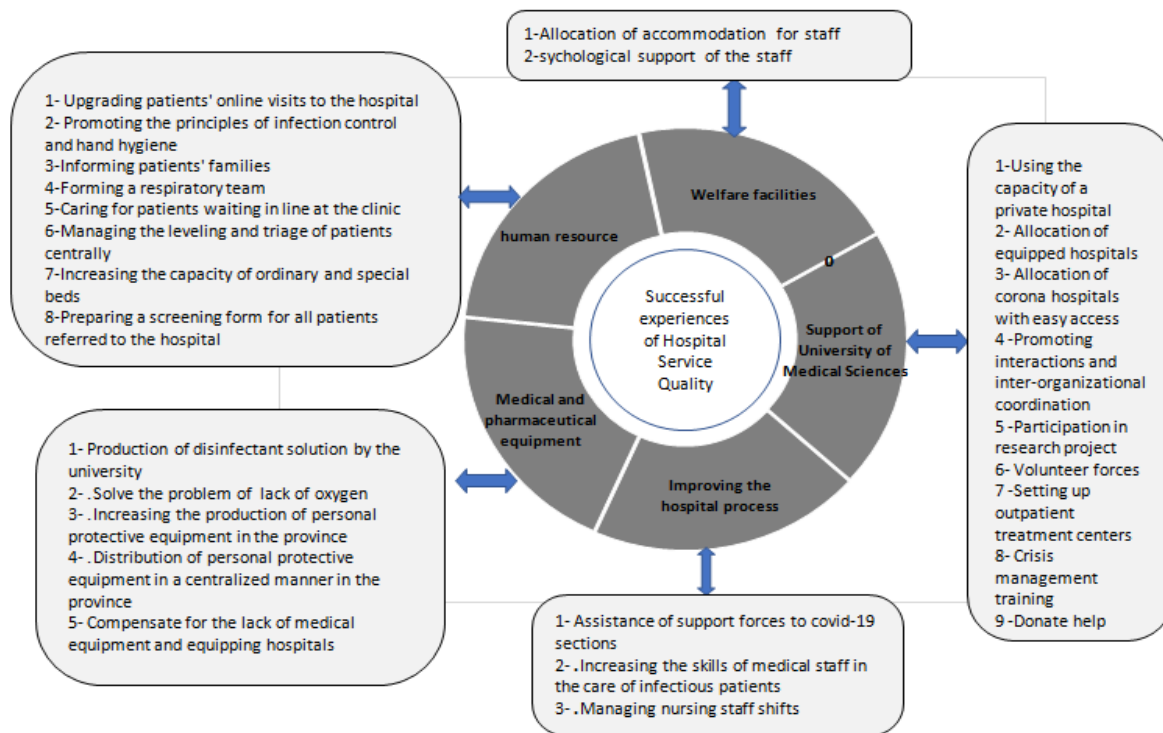


Fig. 1. Main themes and sub-themes on successful experiences of hospital service quality resilience

included coordination between law enforcement agencies, the Crisis Management Headquarters, the Red Crescent, universities, and hospitals to control the disease in the province, and the participation of hospitals in research projects to improve treatment protocols and more scientific treatment methods.

**Improving hospital processes**

Hospitals were upgraded to fight the pandemic. The improvement of processes and service quality in hospitals were key steps in enhancing the resilience of health services, which aimed to increase hospital productivity and customer satisfaction simultaneously.

The implementation of principles of infection control in hospitals improved this indicator, online visits of patients in the hospital; consequently, the patients were continuously monitored. The formation of the respiratory team leads to the optimal use of oxygen and by creating the Soroush Salamat team, the health status of patients was informed to their families.

"ICU wards used electronic services for doctor's prescriptions. Doctors provided video commands remotely. Another experience was the promotion of the hand-washing index. Previously 25% of the staff washed their hands, but now 75% do so." (Participant 4)

"After patients were admitted, their companions were not allowed to enter the hospital. Our hospital was established by Soroush Salamat team. We selected two nurses to prepare reports on patients' health status, and inform their companions by phone." (Participant 6)

"The respiratory teams comprised anesthesiologists and had sufficient information about the amount of oxygen

needed for the patients. (Participant 6)

Effective measures to prevent mortality were to increase the capacity of special beds, care for patients spending a lot of time in the clinic waiting for lines, and a centralized triage system. Screening forms were completed for all patients; consequently, the disease was better identified in patients who were referred to hospitals for reasons other than COVID-19.

"We emptied the clinic hall and put stretchers and administered oxygen inside..." (Participant 6)

**Human resource**

One of the pillars of providing quality services is the management of medical staff. There was a sufficient number of specialized and skillful personnel whose working shifts were properly managed to respond to the coronavirus epidemic in a timely manner. In order to reduce nursing workload, human resources of other hospitals not involved in COVID -19 were used as support teams in referral hospitals for patients with COVID-19. In other successful experiences, staff acquired high skills in caring for infectious patients and expanding knowledge about the disease.

"The elective operation of the hospitals was canceled, and the manpower of the wards was used in the COVID-19 wards." (Participant 3)

"Many nurses are now able to provide ICU care. Nurses learned to work with a ventilator and oxygen equipment" (Participant 9).

**Medical and pharmaceutical equipment**

With the onset of the coronavirus pandemic, in addition



to medical units, support units and paraclinical provided special services.

At the beginning of the outbreak, hospitals encountered some challenges, such as a shortage of ventilators and the problem of oxygen supply, which were then solved by the help of the Ministry of Health and Medical Universities. Other vital items to combat and prevent the disease were personal protective equipment and disinfectant solutions, which due to an increased demand for their use and low production capacity in the country, were in short supply. Production of personal protective equipment was done by manufacturing companies in the province and then distributed centrally in the affiliated hospitals of the University to manage consumption.

*"The Faculty of Pharmacy took alcohol and made its own disinfectant solution and distributed it free of charge among hospitals in Shiraz." (Participant 4).*

*"In Shiraz, manufacturing companies were licensed to produce masks. Personal protective equipment was provided centrally by the university and made available to the hospitals." (Participant 3).*

### Welfare facilities

The high prevalence and duration of the COVID-19 pandemic and other factors, such as providing direct care to patients, excessive workload and fear of infection and the possibility of transmitting the disease to family members, stigmatization as a vector of the virus, and increased number of deaths all caused psychological distress and exhaustion among the staff. Consequently, some staff in the COVID-19 wards left their workplaces. To solve these problems, the university allocated accommodations to prevent the transmission of the disease to family members and provided psychological support to the staff through educational measures and the presence of a psychologist and counselor in hospitals.

*"Those staff in the COVID-19 ward who did not want to go home stayed in accommodations that universities provided to reduce staff stress and anxiety about transmitting the disease to their families." (Participant 3).*

*"The university provided hospital management training packages for anger management and stress management in the form of webinars or podcasts." (Participant 2).*

### Discussion

Hospitals are the main centers for the diagnosis, treatment, and follow-up of patients during COVID-19, and their resilience is affected by the rapid increase in the number of patients in need of hospitalization. The present qualitative study was performed to identify successful resilience experiences of hospital service quality during the COVID-19 pandemic. The results of this study showed that from the perspective of the participants' support of the university, hospital process, human resources, medical and pharmaceutical equipment and welfare were successful experiences regarding health care delivery.

Based on the opinions of the participants in the present study, one of the successful experiences of hospitals in providing quality services is increasing the capacity of

beds and special wards, using the capacity of private hospitals along with public hospitals to compensate for the shortage of special beds. In addition, in their studies Peiffer et al. and Khan et al. showed an increase in the capacity of intensive care units and the number of beds to provide services to critically ill patients (23, 24). Although the number of hospital beds in Iran is lower than the global indicators, they were able to provide safe care with the support of medical universities and effective cooperation and coordination among the health system. Therefore, appropriate programs are needed to be considered in the strategic plan of the Ministry of Health to increase the capacity of beds in critical times so that hospitals can cover the population of the region as quickly as possible.

The present study showed that other successful experiences of hospitals included the recruitment and use of volunteers in providing services. Popular volunteers participated in activities, such as disinfecting the hospital environment and caring for patients. The presence of these forces would reduce the workload of a nurse due to the lack of companions. In accordance with the results of this study, Rafieepour et al. showed that Turkey, Japan, Italy, South Korea, and Germany used nurses, medical volunteers, retired medical staff, and students to provide support in the field of treatment, education, and health services (25). This was also reported in a study by Li et al. The use of volunteer forces during the coronavirus pandemic has led to better management of hospital services and reduced workload (26).

Proper management of nursing staff shifts was identified as another successful experience. One of the effective methods to restore staff strength and maintain their morale was to reduce staff work shifts. In a study, Bai et al. found that physicians in each shift provided services based on the division of workload, which leads to the optimization of shift positions to prevent work-related fatigue (27). These findings are consistent with the results of the present study. It seems that hospitals can reduce the complications caused by nurses' work shifts by compiling special shift work programs, selecting appropriate shift workers, and training shift workers in order to create a proper attitude and adapt to the conditions.

According to the interviewees of the present study, nurses gained high skills in caring for infectious patients and learned a lot about the disease. Sabet et al. stated that training and strengthening the skills of staff led to productivity and improved the performance of all staff, especially nurses (28). McCaffrey stated that, by gaining knowledge and awareness about the epidemic, nurses increased the efficiency of hospitals in promoting public health (29). It is consistent with the results of the present study.

The participants considered hospital service quality resilience in promoting interactions and inter-organizational coordination as another successful experience. In the context of the coronavirus pandemic and crisis in public hospitals, this interaction was strengthened. The Ministry of Health, as the custodian of community health and medical universities, plays the role of supporting staff for the country's hospitals. The study by Demirkol et al. showed that the process of cooperation and communication was

fast and effective; the processes of hospital operations, admissions, medical services, personnel planning, personal protective equipment, and disinfection were successfully managed (30). These findings are consistent with the results of the present study.

In the present study, it was stated that before the Corona pandemic, services such as online doctor visits were not common at all, but after the outbreak and the resulting restrictions, many visits were made online, and led to continuous monitoring and better access to health services. In a study by Penwill et al. physicians and healthcare providers stated that remote health services reduced barriers to access care and improved the coordination of care during an epidemic (31), which is consistent with the results of the present study.

Participants stated that during the Corona pandemic, some equipment needed by hospitals was provided with the help of donors. They also helped provide personal protective equipment in the early days of the corona outbreak in the country where hospitals were facing the problem and donors helped hospitals with their financial issues. According to the results of this finding, Rafieepour's study indicated that all countries used sponsors or donors to diagnose and treat coronavirus disease (25).

Providing welfare facilities for staff to strengthen their morale was recognized as a successful experience. According to the results of the study by Possamai, health workers must feel safe with any policy set by the government or their employer to achieve a positive outcome in the provision of healthcare during coronavirus disease (32). The experiences in other countries may not be exactly applicable in Iran, but it seems that adapting them to the conditions of the country can improve the quality of services and employee satisfaction.

### Limitation

The present study had limitations in terms of its external validity, given the nature of its design (qualitative research). The results can be justified by the technical, social and cultural infrastructure and cannot be generalized to different countries. Another limitation of this study could be the corona pandemic conditions and the reluctance of hospital staff to share their experiences due to the sensitive nature of the epidemic.

### Conclusion

Hospitals are the main centers of care for patients, and reflecting the quality of their services is one of the governing indicators of the Ministry of Health in the coronavirus pandemic. Despite the challenges in pandemic management and control, hospitals have redoubled their efforts to make successful experiences that make it even more important to prepare hospitals for new epidemics. It is suggested that the health policy makers support the Ministry of Health in the annual allocation budget, standardization of human resources and physical structures of hospitals according to the capacity of the geographical region, development of telemedicine infrastructures, and training key managers of the health system through implementing different decision-making scenarios in adverse conditions.

Given that this study was conducted using the content analysis method by means of interviews to collect the data, it is recommended researchers systematically review the issue to extract more successful experiences.

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### Ethics approval

The present study was approved by the Ethics Committee of Iran University of Medical Sciences, IR.IUMS.REC.1400.110.

### Conflict of Interests

The authors declare that they have no competing interests.

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