

Documenting Successful Experiences of Reorganizing the Hospital and Human Resource Management in an Iranian Referral Hospital During the COVID-19 Pandemic

Shahpar Dolati¹, Akram Mojarad², Mansoureh Dimeh Noghani², Marzieh Hedayat², Maliheh Morgan Torqabeh², Zohreh Sezavarmanesh², Hamidreza Jalalzaei², Mohammad-Mehdi Shahabi², Seyed Mahsan Mousavi³, Zohre Pouresmail⁴, Fatemeh Heshmati Nabavi^{4*}

Abstract

Background: Human resource provision in the COVID-19 pandemic crisis is a challenge for nursing managers. The outbreak of the COVID-19 pandemic has made a major challenge of staff for health organizations.

Aim: The present study was conducted with aim to provide managerial methods in crisis management in the field of the COVID-19 pandemic.

Method: This study was conducted during the COVID- 19 pandemic in Shariati Hospital. Facing the crisis was done in two steps: "reorganization of the physical environment of the hospital" and "reorganization and provision of the staff". Step 1: integrating the medical wards from 17 wards to 5 wards and classification of units into three levels of care. Step 2: "Transfer of high-risk staff from the hospital to other centers", "Classification of operational and middle-level managers", "Providing appropriate staff based on levels of patient care needs", "Review of job descriptions of head nurses at the crisis stage", "Working shift scheduling, reviewing the staff planning" and "Rehabilitation of the staff".

Results: Shariati Hospital had 151 beds, 88 of which were used during the COVID crisis. A total of 88 nurses resigned from the hospital because of high risk conditions, and 117 nurses began cooperating with the hospital on permanent shift or voluntary basis.

Implications for Practice: Early response to the crisis in terms of reorganizing medical departments and predicting staff needs in the hospital could lead to staff protection and provision of appropriate staff ratio. Based on this study, crisis management can be done in similar situations.

Keywords: COVID-19, Human resource, Management, Nurse, Staff

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1. Msc in medical-surgical nursing, Shariati Hospital, Mashhad University of Medical Sciences, Mashhad, Iran
 2. monitoring and accreditation expert, Mashhad University of Medical Science, Mashhad, Iran
 3. Master of Medical Equipment, Shariati Hospital, Mashhad University of Medical Sciences, Mashhad, Iran
 4. Assistance professor ,Nursing and Midwifery Care Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

* Corresponding Author Email: Heshmatinf@mums.ac.ir

Introduction

The main problems of hospitals, as the main providers of health services, are rooted in the lack of staff or inappropriate distribution of staff (1). The outbreak of the COVID-19 pandemic during December 2019 has made a major challenge of staffing for health organizations (2-4). However, these organizations had faced staff shortage as a global problem even before the outbreak of this disease (5). During the crisis, some of the staff were among the high-risk cases or were connected with high risk people, some of them were infected, and someone lost their ability to work under mental stress. Eliminating such individuals from the hospital care staff led to provide efficient staff more difficult for managers (6,7). After planning and organizing, staffing is the third task of managers. Since the health care institutions, especially hospitals, need to provide 24-hour services on all days of the year, this task is critical and important in healthcare organizations (8). In addition to providing specialized and professional staff in the necessary positions, managers should pay attention to the health and mental well-being of the medical staff of the front line to continue safe and high-quality care during the crisis. In addition to the risks of infection, nursing staff face problems such as burnout, difficult triage decisions, separation from family, and grief of losing the patients and colleagues (9). These issues can lead to further layoffs and staff loss.

Among the hospital staff, the nursing team is a vital component and consists of approximately 56% of the hospital staff (10). However, the shortage of nursing staff is a global and epidemic problem (11); it becomes more sensitive in the incidence of critical situations, such as COVID-19. At the same time as the outbreak of the COVID-19 pandemic in Iran, some medical centers, such as the main referral centers, specifically provided treatment and care services for patients with COVID-19. In these hospitals, it was necessary to make fundamental changes in the structures of the medical wards and stop normal operations of medical units. The cessation of routine activities along with the lack of clear policies in the supply and employment of staff, the experience of hospitals in providing specialized care and treatment services during the COVID-19 pandemic and sharing it with other centers can develop evidence of the way to deal with similar crises and staff management. Therefore, the present study was conducted with aim to provide managerial methods used in crisis management in the field of the COVID-19 pandemic in Shariati Hospital, as a referral hospital for patients with the disease.

Methods

The present study used a case study design method and was conducted in the field of the COVID-19 pandemic in Shariati Hospital, as a referral hospital of Mashhad University of Medical Sciences in 2020. Case studies provide in-depth exploration of a unit of study, such as an individual, a family, a group, a community, or an institution, or a small number of individuals (12). Data were collected through interview with managers and based on documents (head-nurse and supervisor report, request transfers to other medical centers). The crisis management center (CMC) was created by the hospital principal at the beginning of the crisis. Members of the CMC included nursing managers, environmental health experts, occupational health experts, and physicians.

CMC used the change model reported by Pettigrew et al. (2001). They suggested that the model offers a continuous interplay between ideas about the context of change, the process of change and the content of change. They defined the context as the 'why and when' of change. Content is described as the 'what' of change and is concerned with areas of transformation (what is to be changed). The process covers the 'how' of change and refers to how the change will be made, what actions are needed, who will be responsible for what and how will it be accomplished?.

In this study, the context of change was related to the need for changes in the structure and staff of the hospital in response to the covid-19 outbreak and the selection of this hospital as a referral hospital. The content of the change was related to the design changes in the organization of the physical environment and staff of the hospital.

The process of change included "reorganization of the physical environment of the hospital" and "reorganization and provision of staff".

Ethical Consideration

Considering that this article was done during the Covid-19 pandemic and there was no evidence related to Covid-19, the best available evidence was used. This research was approved by the ethic committee of Mashhad University of Medical Sciences (Ethics code: IR.MUMS.REC.1399.489).

Results

Facing the crisis was done in two steps: "reorganization of the physical environment of the hospital" and "reorganization and provision of the staff" as follows:

Step1: "reorganization of the physical environment of the hospital"

1-1: Integrating the medical wards from 17 wards to 5 wards

Structural changes were made in the medical units as well as the organization of staff along with selection of the hospital as a referral hospital for patients with COVID-19 and creation of the Hospital Crisis Command Center to provide high-quality and timely services to the clients. After reorganization of the hospital, the medical wards included emergency, emergency ICU, surgery, internal and general ICU. Table 1 presents the way of merging the units into 5 main units.

Table 1: List of medical units and number of beds before the crisis and reorganization of the units after the crisis

| Medical units before COVID-19 crisis | Number of beds | Medical units after COVID-19 crisis | Number of beds |
|--|----------------|-------------------------------------|----------------|
| Emergency | 10 | Emergency | 9 |
| | | Emergency ICU | 10 |
| General surgery | 12 | | |
| Obstetric and gynecological diseases 1 | 12 | | |
| Obstetric and gynecological diseases 2, including cesarean section | 4 | Surgery | 48 |
| Gynecological surgery | 2 | | |
| Surgery | 18 | | |
| Central operating room | 4 | Male pavilion | 0 |
| Internal medicine | 12 | Internal medicine | 12 |
| General ICU | 7 | General ICU | 9 |
| LDR | 6 | Female pavilion | 0 |
| Dialysis | 11 | Total: 88 beds | |
| Open heart operating room | 4 | Reconstructing | |
| Cardiac Catheterization Laboratory | 1 | | |
| Post angiography | 11 | | |
| CCU | 13 | | |
| Open heart surgery | 9 | | |
| Open heart ICU | 5 | | |
| Total | 151 | | |

1-2: Classification of units into three levels of care

Based on the decision of the Hospital Crisis Command Center, structural changes were made in the medical units so that the medical units were divided into three categories with three levels of care. 1-Surgery and emergency unit: For hospitalization of patients with level 1 and 2 care needs (independent and semi-independent patients). 2-Internal unit: For hospitalization of patients with level 3 care needs (patients with respiratory distress without need for artificial ventilation). 3-General intensive care and emergency intensive care units: For admission of patient's dependent on the mechanical ventilation.

Step 2: Reorganizing and providing the staff

Since the physical structures of the health care providing units were reorganized, the staff working in the units also needed to be reorganized. New head nurses were selected for the new units and the staffs were assigned to each unit proportional to the number of beds and level of care necessary for the patients. In this study, nurses with bachelor's or master's degree in nursing worked in hospital medical wards. The nurses were not trained for the care of pulmonary patients and only followed the guidelines provided by the infection control supervisor.

2-1. Transfer of high-risk staff from the hospital to other centers not related to COVID-19

The nurses and care workers who were diagnosed as high-risk were first transferred from the hospital to the university to protect them. High-risk staff included those with a history of

corticosteroid therapy, pregnant women, staff with underlying diseases, such as high blood pressure and diabetes, and staff with controlled cancer and immunodeficiency. A total of 88 staff in nursing, assistant nursing and service fields resigned from the hospital.

From the beginning of COVID-19 pandemic on February 25 2021 until now, the Shariati hospital as a referral hospital for patients with COVID-19, 1989 patients have been admitted to the hospital and received the services. Prior to the crisis, the hospital had 169 nurses, 23 anesthetist nurses, 25 operating room nurses, 29 midwives, and 63 assistant nurses. During the crisis, 43 nurses resigned from the hospital, including 33 nurses for underlying disease (77%), 4 for finishing the project (9%), and 6 for non-cooperation (14%) (Table 2). The hospital manager called three times to request transfers to other medical centers. None of the nurses wanted to transfer hospitals and no transfers were recorded in the transfer system of the university.

Table 2 shows the number and jobs of nursing staff with high-risk factors who resigned from the hospital at during the crisis.

Table 2: Relative and absolute frequency of care staff resigned from Shariati Hospital in terms of reason of resigning the hospital

| Job category | Total number of personnel | Reason for resignation | | | |
|-------------------------------|---------------------------|------------------------|-----------------------|----------------|-----------|
| | | Disease | Finishing the project | No cooperation | No need |
| Supervisor | 1 | 1(100%) | 0 | 0 | 0 |
| Nurse | 43 | 33(77%) | 4(9%) | 6(14%) | 0 |
| Operating room and anesthesia | 14 | 5(35%) | 1(7%) | 8(58%) | 0 |
| Midwife | 25 | 0 | 0 | 0 | 25(100%) |
| Secretary | 3 | 2(66%) | 0 | 1(33%) | 0 |
| Assistant nurse | 1 | 1(100%) | 0 | 0 | 0 |
| Service force | 1 | 0 | 0 | 1(100%) | 0 |
| Total | 88 | 42(47.7%) | 5(5.6%) | 16(18.1%) | 25(28.4%) |

2-2. Classification of operational and middle-level managers in terms of risk of coronavirus to determine the place of service

The hospital management team was also examined for risk factors. For the hospital to benefit from the services of experienced operational managers and mid-level managers regarding the crisis management, managers with a moderate level of risk factors of infectious diseases were identified, and supervisors were divided into two groups of staff supervisors who had the role of supporting and performing activities outside the COVID-19 field, and 6 clinical supervisors who did not have risk factors and could directly monitor the field were identified. A total of 6 clinical supervisors and 8 staff supervisors were identified in the hospital. In each shift, a combination of staff and clinical supervisors was used to perform staff activities and direct supervision regarding the COVID-19.

2-3. Provide appropriate staff based on levels of patient care needs in medical units

Since the hospital units were divided according to the level of patient care needs, the remaining staffs in the hospital were classified into three competency classes based on the recognition of supervisors and the crisis team. Nurses with an experience of working in the intensive care units and nurses with more clinical competency were selected for the intensive care units. The nurses with moderate competency and experience were selected for the internal unit where the patients were hospitalized with severe breathing difficulties but without need for mechanical ventilation, and finally nurses with lower competency levels were employed in the surgical unit where the patients were admitted with good status and could self-care. The competent shift managers were selected from the head nurses of previous medical units in all medical wards to maintain the quality of care in all medical units.

2-4. Review of job descriptions of head nurses at the crisis stage

The launch of new wards was accompanied by a wave of staff anxiety, a desire to change hospital, an increase in absenteeism, and leave requests. Furthermore, due to the change in the nursing staff in the medical units, the head nurses were involved in working with new staff in the new physical

environment and in a psychological environment with anxiety and worry. To reduce the workload of head nurses, the hospital's nursing manager reviewed the nurses' job descriptions at the onset of the crisis. Scheduling manpower planning was removed from the head nurses' job descriptions. The manpower program was conducted centrally at the COVID-19 Crisis Command Center in the hospital by a staff supervisor. The head nurses' systemic activities, such as attendance control system, approval of leave, and hourly leave, and registration of electronic requests for warehouses and facilities were eliminated from the list of their duties and responsibilities. The requests were performed as soon as possible by phone outside the COVID-19 field by coordination with support units. These changes continued until May 2020. Labor division and supervising the quality of care continued to be performed by head nurses.

2-5. Working shift scheduling, scheduling short breaks, and reviewing staff planning regulations

At the beginning of the Covid-19 pandemic, it was decided to have 12-hour work shifts due to the lack of personal protective equipment and the care staff's stress while putting on and taking off the personal protective equipment, as well as the severe shortage of staff. After a 12-hour shift, care workers were out of the treatment environment for 36 hours. Wearing personal protective equipment for a long time caused a lot of fatigue for the care staff, so that decision was made to allow employees to choose 6-hour shifts two months after the onset of the crisis. Table 3 shows the working shifts of care staff. As shown in the table, most nurses still chose 12-hour shifts after providing the possibility of choosing 6-hour shifts. In this regard, 50% of emergency ICU nurses, 74% of internal medicine nurses, 50% of emergency department nurses, 48.6% of general ICU nurses, and 85% of surgical nurses chose 12-hour working shifts.

The staff in different categories of care in comparison with the standards set by Mashhad University of Medical Sciences after the crisis included 117 nurses, 5 for operating room and anesthetist nurse, 1 supervisor, and 1 health expert.

Table 3: Relative and absolute frequency of selection of nurses working in the medical units of Shariati Hospital in terms of working shift

| Percentage of presence of personnel in working shifts according to their posts | | | |
|--|----------------------|-----------------------|--------------------------|
| Unit | 6-hour working shift | 12-hour working shift | Integrated working shift |
| Emergency ICU | 16.6% (6) | 50% (18) | 33.3% (12) |
| Internal medicine | 7.5% (2) | 74% (20) | 18.5% (5) |
| Emergency | 13.6% (3) | 50% (11) | 36.4% (8) |
| General ICU | 86% (3) | 48.6% (17) | 42.8% (15) |
| Surgery | 9% (6) | 85% (55) | 6% (4) |
| Secretary forces | | | |
| Emergency ICU | 0 | 20% (1) | 80% (4) |
| Internal medicine | 0 | 0 | 100% (5) |
| Emergency | 16.6% (1) | 50% (3) | 33.3% (2) |
| General ICU | 0 | 0 | 100% (5) |
| Surgery | 0 | 20% (1) | 80% (4) |
| Assistant forces | | | |
| Emergency ICU | 0 | 45% (4) | 55% (5) |
| Internal medicine | 0 | 88% (7) | 13% (1) |
| Emergency | 0 | 100% (8) | 0 |
| General ICU | 0 | 100% (8) | 0 |
| Surgery | 0 | 100% (18) | 0 |

2-6. Rehabilitation of staff through staff support

Resignation of a number of nursing staff at the beginning of the crisis because of risk factors for COVID-19 and also due to the onset of the disease in them caused a drop in staff in the continuation of the crisis. Volunteer nurses, who were introduced to the hospital through the medical deputy of the university, were employed to rehabilitate the staff in the medical units. Eighteen general volunteer nurses cooperate with the hospital from February to March 2021.

After the follow-up of the hospital crisis management staff, the new care staff in volunteers or those for serving at other hospitals, those who were accepted in the recruitment test and were going through the administrative process for starting working, were employed in an 89-day contract until the administrative recruitment process at Shariati hospital was completed. The nursing manager of Shariati hospital decided to employ the nurses, who were working also at private hospitals, in the second shifts in a way that the private hospitals pay their salary (Table 4).

Table 4: Number of care staff added to the hospital during the crisis in terms of job category and gender

| Unit | Number of bed | Approved forces | Current forces | Crews | Secretaries |
|-------------------|---------------|-----------------|----------------|-------|--|
| General ICU | 10 | 30 | 36 | 9 | 5 |
| Internal medicine | 12 | 25 | 27 | 8 | 5 secretaries shared with general ICU |
| Emergency | 9 | 20 | 22 | 8 | 6 |
| General ICU | 9 | 30 | 35 | 8 | 5 secretaries shared with internal medicine unit |
| Surgery | 48 | 65 | - | 18 | 5 |
| Total | 88 | 170 | 120 | 51 | 26 |

Discussion

Dealing with the COVID-19 pandemic crisis needed a rapid response and appropriate changes in the structure and physical environment of hospitals, as well as changes in the organization of the nursing staff. Making changes appropriate to the organizational context and conditions of each hospital determines the success degree of responding to the crisis (13).

As the findings of the present study showed, classifying the units into three levels of care made it possible to allocate qualified nursing staff according to the patients' care needs. Revising the head-nurses job description during the crisis increased their focus on human communications and making morality in the nursing staff, thereby reduced the time devoted to follow-up activities. First the working shifts were scheduled for fixed 12 hours, but fixed shifts of 6 hours and 12 hours were also planned to provide a choice for the care staff. Despite the possibility of selection, most nurses, especially in the units with the stable patients, chose 12-hour shifts. Sets of actions could maintain the status of the care staff at the hospital in favorable conditions according to the standards set by the medical deputy of the university after 6 months from the onset of the crisis, while protecting health care providers at risk of infection with appropriate use of the existing staff and rehabilitation of staff at different stages of the crisis. In this regard, Wu et al. (2020) in their study transformed a general hospital into a designated COVID-19 treatment hospital based on 4 steps; Set up designated COVID-19 wards, Establish a technical support team, Ensure the hospital has ready and available reserve nurses and Prepare training plan to meet all requirements (15). In the current research, at the beginning of the crisis, Shariati Hospital was able to establish regular planning in the management of employment and supply of staff by establishing a hospital command crisis Center in the hospital and making appropriate changes in the physical environment and labor composition.

Marcon et al. (2020) indicated that most critical aspect during the crisis was human resources availability. To overcome this problem, according to ULSS 6 staff redistribution plan, a lot of not urgent services both in Schiavonia Hospital and in other facilities were closed to reallocate health-care workers to COVID-19 units (14).

In the present study, the mental health of employees has not been investigated. However, the statistics related to the lack of cooperation of personnel can be a reflection of their job satisfaction and mental health. Also, the hospital managers called three times to receive transfer requests to other medical centers, none of nurses wanted to change the hospital and no requests were registered in the university's transfer system. Considering that decisions regarding reorganization of the physical environment and staff in the hospital had been made by managers and crisis management team, there was no barrier in the path of implementing the existing changes. The change model of Pettigrew et al. (2001) which was used in this study could effectively mobilize all available staff, provide reliable support for frontline protection equipment, motivate nurses during the crisis, and thereby make a

significant positive contribution to fight against COVID-19 in the Shariati hospital.

Implications for practice

Early response to the crisis in terms of reorganizing medical departments and predicting staffing needs in the hospital could lead to staff protection and provision of appropriate staff ratio. Furthermore, some lessons learnt during the COVID-19 research era should not be dissipated and rendered as a new normality.

Acknowledgments

The authors would like to appreciate the research vice-chancellor of Mashhad University of Medical Sciences and Shariati hospital.

Conflicts of interest

The authors declared no conflict of interest.

Funding

This research receives a grant from Mashhad University of Medical Sciences..

Authors' Contributions

Shahpar Dolati: concept formation, data gathering, writing draft, and approving the final manuscript. Akram Mojarad: gathering and analyzing data. Mansoureh Dimeh Noghani: gathering and analyzing data. Marzieh Hedayat: gathering and analyzing data. Maliheh Morgan Torqabeh: gathering and analyzing data. Zohreh Sezavarmanesh: gathering and analyzing data. Hamidreza Jalalzaei: gathering and analyzing data. Mohammad-Mehdi Shahabi: gathering and analyzing data. Seyed Mahsan Mousavi: gathering and analyzing data. Zohre Pouresmail: analyzing data and approving the final manuscript. Fatemeh Heshmati Nabavi: concept formation, writing draft of the manuscript, and approving the final manuscript. All authors contributed to the writing of the manuscript and discussed on the manuscript.

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