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Original Article

Strategies to Ensure Effective and Safe Patient Care in Intensive Care Units During Biological Events: A Delphi Study

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Abstract

Introduction: Throughout history, humanity has faced numerous biological threats that have resulted in catastrophic epidemics. The challenges (Fear, uncertainties, failure of care, etc) posed by epidemics necessitate the implementation of a variety of strategies to contain them. This study was conducted to identify strategies to ensure effective and safe patient care during biological events.

Methods: This study is phase of a larger research project that used the Delphi method in its third stage. The objective was to address the need for effective and safe care in intensive care units (ICUs) during biological events like the COVID-19 pandemic. The Delphi questionnaire was constructed using insights from the first two phases of the study: the qualitative component and the integrative review phase. The Delphi method was implemented over three rounds, with experts selected through purposive sampling. The Kendall coefficient measured the degree of consensus among the experts' opinions.

Results: The strategies identified for the provision of effective and safe patient care during biological events were categorized into 10 main categories, which were further divided into related subcategories.

Conclusion: Identifying and implementing strategies to improve care in intensive care units can improve patient care during crises, such as new disease outbreaks. By identifying these strategies, biological events similar to the COVID-19 pandemic can be managed more effectively. Further research is warranted to explore strategies to improve patient care in other healthcare sectors.

Introduction

Throughout history, humanity has faced numerous instances of biological threats that have resulted in devastating epidemics. In addition to their economic, political, and demographic ramifications, these threats have caused millions of deaths. Pandemics such as the H1N1, avian flu, and the COVID-19 outbreak have all been global events affecting large regions, continents or even the entire globe.[1] The COVID-19 pandemic, in particular, has placed an unprecedented burden on healthcare systems worldwide, requiring a prompt and effective response from healthcare professionals.[2] As primary healthcare providers, nurses have been at the forefront of managing the challenges posed by this novel virus.[3,4] Studies of nurses caring for patients with COVID-19 highlight a variety of barriers, including physical, psychological, and social dimensions.[5]

During the COVID-19 pandemic, nurses have witnessed the suffering and demise of patients and colleagues caused by this virus. This emotional burden, coupled with extended working hours and increased workloads, can result in burnout and fatigue among nurses. Studies from Iran and abroad have shown that healthcare professionals, including nurses, faced challenges such as excessive workload, fear, anxiety, worry, unpleasant social experiences, and compassion fatigue during the COVID-19 pandemic.[6,7]

To address the challenges posed by the COVID-19 pandemic, several studies have identified different strategies that nurses can adopt. A study in Turkey emphasized the significance of unity among nurses and team work in dealing with the critical situation of COVID-19, with less focus on positions and hierarchy and more emphasis on combating the disease.[8] In another study, strategies such as perceiving challenging situations positively, relying on religious beliefs, using humor, and avoiding confusion were helpful in coping with the challenges nurses faced in caring for patients with

COVID-19.[9] Additionally, nurses found support through incentives provided by government officials, engaging in self-care activities, managing emotions, taking pride in their profession, seeking support from family, colleagues, organization, and community, turning to spirituality, engaging in creative activities, prayer, compassion, meditation, limiting exposure to COVID-19-related news, participating in recreational activities, adhering to personal protective measures, developing effective approaches and plans, pairing experienced and less experienced nurses, and empathizing with patients helpful while caring for patients with COVID-19.[10] Hosseini et al also highlighted the importance of supporting nurses by providing them with sufficient resources and facilities for care, encouraging them, and equipping them with the necessary knowledge and skills.[10-13] Caring for patients with COVID-19 requires nurses to possess a distinct set of skills and knowledge. They must be able to adhere to infection control protocols, use personal protective equipment, and effectively manage respiratory complications associated with the virus.[14] Moreover, nurses must demonstrate the ability to promptly adapt to evolving guidelines and protocols, as the scientific understanding of the virus advances. This dynamic nature of the pandemic places significant pressure on nurses, requiring them to continually update their knowledge and skills.[15] Given the potential for the recurrence and spread of infectious diseases, it is crucial to strengthen support strategies for nurses, ensuring the preservation of their physical and mental well-being, while improving the quality of care provided to patients.[16] This study attempts to integrate experts' opinions to identify appropriate solutions and strategies to promote safe and effective care in critical situations such as COVID-19. A wide range of strategies were identified at the individual, family, societal, and national levels to improve the efficiency and safety of care in critical situations such as the COVID-19 pandemic. These strategic recommendations can be employed to manage crises similar to the COVID-19 situation effectively. Given the limited research available on this topic, the primary objective of this study was to propose solutions and strategies for effective and safe patient care during biological events, specifically in the context of the ongoing COVID-19 pandemic.

Materials and Methods

This study is phase of a larger research project that was conducted from 2020 to 2022 at the Tehran University of Rehabilitation Sciences and Social Health. The objective of the third phase of this project was to employ the Delphi method to attain effective and safe care in intensive care units (ICUs) during biological events, such as the COVID-19 pandemic.

Two preliminary steps were taken to develop the Delphi questionnaire for this study. The first stage involved a grounded theory approach, while the second stage utilized an integrative review methodology based on the concepts formed in the first stage. In the initial phase of the grounded theory study, a total of 22 interviews were conducted with participants. In addition to interviews, observations were also used to collect data. To analyze the collected data, the Corbin and Strauss method was utilized.[17] This particular method involved concurrent data collection and analysis, and continuous comparison. The data analysis procedure for attaining a grounded theory includes five steps: (1) Open coding to identify concepts, (2) Developing concepts in terms of their properties and dimensions, (3) Analyzing data for context, (4) Bringing the process into the data analysis, and (5) Integrating categories.

A search of databases including PubMed, Scopus, Elsevier, Web of Science, Magiran, and SID was conducted to identify strategies to improve the quality and safety of care for COVID-19 patients in the ICU. The search was performed using the keywords such as "nurses" or "nursing", "care" or "caring", "effective care", "safe care", "critical care units" or "intensive care unit", and "COVID-19" or "SARS-CoV-2" or "coronavirus infection". The search was limited to articles published between 2019 and 2023.

The inclusion criteria for articles were quantitative and qualitative studies focusing on nursing care strategies for hospitalized patients diagnosed with COVID-19, care of patients in ICUs, publication in English or Persian, and publication between 2019 and 2023. Articles were excluded if they focused on other hospital departments, were published as letters, were not available in full text, or were deemed low quality based on the CASP criteria were excluded. The CASP criteria,[18] consisting of 10 questions for qualitative studies and 12 questions for quantitative studies, were used to assess the quality of the articles. The first two questions served as screening questions, and if both were answered affirmatively, the remaining questions were addressed. This tool employed a three-part response format of "yes", "no", or "cannot say". Weak studies were excluded, while quantitative and qualitative studies deemed appropriate or of good quality were included in the review. A total of 30 articles were selected to review strategies for effective and safe care. These articles were subjected to direct content analysis. The analysis yielded nine main categories with 79 subcategories. These categories and subcategories were subsequently used to construct a Delphi questionnaire for expert panel evaluation. The questionnaire employed a 10-point Likert scale and consisted of three parts. The first part collected demographic information, including gender, age, educational background, professional experience, and history of activities in the field of COVID-19 (Table 1). The second phase focused on the nine main categories and their corresponding subcategories related to strategies. These areas encompassed various aspects such as health system preparation, health personnel empowerment, organizational support, effective management, workforce

Table 1. Expert panel's demographic information

Years of professional experience	Activity in the field of COVID-19 by year	Field of study	Education	Gender	Age	No. of experts
10	2	Nursing	PhD	Male	40	1
18	2	Nursing	PhD	Male	45	2
25	2	Nursing	PhD	Male	55	3
18	2	Nursing	PhD	Male	47	4
10	2	Nursing	PhD	Male	35	5
13	2	Nursing	PhD	Male	40	6
15	2	Nursing	PhD candidate	Male	50	7
8	2	Nursing	PhD	Male	35	8
28	2	Nursing	MSc	Female	55	9
25	2	Nursing	PhD	Female	50	10
18	2	Nursing	PhD	Female	45	11
20	2	Physician	Infectious disease specialist	Female	50	12
15	2	Physician	Specialist in respiratory diseases	Male		13
17	2	Nursing	PhD candidate	Female		14
23	2	Nursing	MSc	Male		15

management, teamwork, individual strategies, positive managerial behavior, and strengthening philanthropic tendencies among managers. The third part of the questionnaire included an open-ended question to solicit additional suggestions for providing effective and safe care.

The Delphi questionnaire was administered to a panel of experts to achieve consensus on strategies for effective and safe care. The expert panel was selected using purposive sampling. A list of 20 experts, primarily consisting of academic staff, was compiled based on inclusion criteria, including (expertise in nursing and medicine, management experience, clinical practice, teaching and research background, possession of a master's degree or specialized doctorate, and a willingness to participate in the study). Ultimately, 15 experts volunteered to participate.[19] The questionnaire, along with scoring instructions was emailed to the participants. Additionally, participants were given the opportunity to provide additional suggestions via email. Measures were taken to ensure anonymity, protect the identity of the participants, and mitigate potential bias in their responses.

Results

This study was conducted in three rounds. The panel of experts was asked to rate the questionnaire items on a 10-point Likert scale, ranging from 1 to 10. After the first round of the study, the collected data were entered into Excel software for descriptive analysis, including the calculation of the mean and standard deviation of the scores. Item that received an average score below 6 was removed from the questionnaire. Then, new suggestions recommended by the expert panel were incorporated into the questionnaire and the modified questionnaire, now consisting of 11 categories and 90 sub-categories, was provided to the panelists for the second round (Table 2). This modified questionnaire also presented the panelists each item's average scores from the first stage. At the second round the panelists only ranked the items but made no amendments. In the third round, the questionnaire with the average scores from the second round was once again provided to the panelists. According to Meshaikhi et al consensus is indicated when panelists do not submit new amendments.[19] The Kendall coefficient can then be calculated. The round can be terminated if the difference between the Kendall coefficients of the two rounds is insignificant. The Kendall coefficients of the second and third rounds were 0.199 and 0.234, respectively. With a difference of 0.035, which was considered insignificant. In the third round of the Delphi, at least 90% of the experts gave scores between 9 and 10 for the subcategories, with an average score above 8. In addition, the standard deviation of the experts' responses regarding the importance of the subcategories was significantly lower compared to the previous rounds. Therefore, the researcher achieved consensus within the expert group.

Discussion

Improving the quality of patient care during biological events such as COVID-19 can be achieved through a variety of strategies. These include ensuring health system preparedness, empowering healthcare workers, providing organizational support, implementing effective management techniques, fostering teamwork and intra-organizational collaboration, adopting individual strategies, demonstrating positive leadership behavior, enhancing managerial compassion, strengthening human resources, and adjusting the organization's approach in times of disasters and crises. These efforts contribute to providing effective and safe care.

Table 2. Effective and safe care strategies and their corresponding subcategories

A potential strategy to improve the delivery of effective and safe care in intensive care units.	Mean (SD)
Health system preparedness	
Predicting crisis conditions before they occur.	9.07 (1.97)
To effectively address crises, it is crucial to anticipate them before their manifestation occurs. This can be achieved by accurately identifying the underlying causes and promptly implementing appropriate measures, such as the application of quarantine protocols.	8 (2.38)
Drawing upon past experiences and lessons learned from effectively managed diseases.	9.21 (1.52)
Increasing collaboration among hospitals (hospital network).	9.21 (1.57)
Effective dissemination of the appropriate protocols through legitimate channels (support training).	9.28 (0.99)
Establishment of robust advisory teams.	8.92 (1.85)
Formation of specialized multidisciplinary teams within the department and linking it to a consultant think tank, composed of professionals from various fields such as epidemiology, medicine, nursing management, mental health, etc.	9.35 (1.85)
Empowering healthcare professionals	
Teaching the preemptive management of emergencies.	9.21 (1)
Educating managers and health service providers in the principles and fundamentals of crisis management based on regular needs assessments.	9 (0.97)
Providing instructions on working with equipment during crises and in virtual environments.	8.92 (1.10)
Exercises and training for dealing with emerging diseases.	8.85 (1.14)
Instruction in teamwork skills.	9.14 (1.46)
Enhancing stress and anxiety management training for health service providers.	9 (1.29)
Conducting simulated exercises to better prepare health service providers.	8.92 (1.35)
Implementing simulated maneuvers to enhance preparedness.	8.14 (1.07)
Providing hands-on training in the use of personal protective equipment before and during crises.	9.21 (0.86)
Implementing continuous training programs in the field of accident and disaster risk management.	9.21 (0.89)
Utilizing experienced personnel to mentor and transfer skills to less experienced personnel during accidents and disasters.	9.07 (1.05)
Facilitating interprofessional communication through joint workshops, classes, and maneuvers.	9 (1.26)
Training on effective risk communication.	9.21 (1.10)
Providing self-care training for healthcare providers to adapt to accident and disaster conditions.	8.78 (0.75)
Teaching effective communication strategies with patients and their companions.	8.92 (1.35)
Delivering post-discharge education to patients and families.	8.14 (1.07)
Organizational support	
Supporting middle- and lower-level managers on the front line of care by delegating authority to them (hospital managers, supervisors).	9 (1.25)
Providing necessary health services.	8.92 (1.10)
Facilitating career advancement for health service providers.	8.5 (1.32)
Providing financial incentives from the organization to frontline medical staff in case of accidents and emergencies.	8.5 (1.65)
Acknowledging the contributions of medical staff through media recognition.	1.28 (8.78)
Offering financial incentives from the organization to frontline medical staff.	1.25 (8.85)
Providing welfare facilities such as meals, transportation, appropriate rest areas, and childcare and family support.	9.42 (1.16)
Ensuring the availability of infrastructure (equipment, funding, and power) for proper care.	9.14 (0.85)
Ensuring fairness in the payment of wages and benefits.	9.28 (1.35)
Ensuring prompt payment of claims with priority given to frontline personnel.	8.85 (1.20)
Involving nurses in decisions about patient care and staff welfare.	9.07 (1.29)
Supporting nurses in work-related legal matters.	9.28
Providing psychological support to medical staff (e.g., through webinars) during illness and on an ongoing basis.	8.85
Monitoring employee mental health using standardized assessment tools.	9.14
Promoting and supporting clinical research, particularly during accidents and disasters.	9.28
Having a departmental action plan based on needs.	9.35
Prioritizing the vaccination of health service providers and their families.	9
Efficient management	
Selection of managers based on predetermined indicators, individuals' experiences, and their areas of specialization.	9
Defining and establishing criteria for qualifying managerial positions during times of crisis, including the utilization of experts (such as those with a doctorate in health in disasters and emergencies).	8.85
Leveraging personnel experiences to enhance management processes.	9.28
Drawing from insights gained through management practices and the expertise of seasoned managers.	9.14
Force management within organizations	

Table 2. Continued.

A potential strategy to improve the delivery of effective and safe care in intensive care units.	Mean (SD)
Increasing the nurse-to-patient ratio according to established standards.	8.64
Delegating staffing authority to medical centers.	8.5
Anticipating and preparing for capacity augmentation in advance.	8.78
Developing a management model to safeguard human resources while maintaining confidentiality.	8.64
Providing specialized departmental training for volunteers and ensuring their replacement when needed.	7.71
Implementing fluid shifts through rotating schedules.	8.5
Leveraging volunteer forces, including students, retired personnel, and individuals with relevant training.	8.5
Strengthening teamwork and intra-organizational cooperation	
Strengthening interdisciplinary cooperation.	9
Enhancing interprofessional collaboration.	8.82
Formulating teamwork guidelines before the crisis.	9.07
Leveraging the skills and experiences of fellow care team members.	8.92
Augmenting communication and coordination among team members.	9
Facilitating knowledge sharing among team members.	8.92
Establishing the responsibilities of healthcare providers.	8.78
Adopting individual strategies	
Facilitating the expression of emotions among colleagues.	8.21
Managing news and media effectively.	8.85
Disregarding workplace rumors.	8.21
Promoting the enjoyment of reading preferred literature.	7.75
Eliminating negative stimuli in the workplace.	7.85
Adopting a positive perspective when faced with challenges.	8.78
Avoiding unfavorable influences in the workplace.	8.21
Acknowledging and accepting the global pandemic as a reality.	8.85
Utilizing relaxation techniques.	8.21
Prioritizing sufficient rest and a balanced diet.	7.57
Adhering to personal protective measures.	7.85
Incorporating meditation practices.	7.5
Embracing a religious or spiritual outlook within the nursing profession that emphasizes performing work for a higher purpose.	7.21
Fostering a supportive family environment and cultivating a harmonious atmosphere at home.	7.92
Enhancing the dissemination of and access to professional knowledge.	8.64
Applying Positive Management Behavior	
Utilizing legal incentives to enhance personnel motivation.	8.5
Conducting formal discussions for managers and nurses to exchange opinions while maintaining a respectful atmosphere.	8.78
Acknowledging nurses and their exemplary performance while expressing trust in their capabilities.	8.85
Promoting a culture of respect towards nurses.	8.85
Providing support to nurses in exercising their decision-making and judgment skills at the patient's bedside.	8.92
Enhancing the philanthropic inclinations of managers	
Promoting humanitarian behavior.	8.64
Organizing professional training courses.	8.92
Conducting meetings to honor exemplars of philanthropy	8.64
Supporting human resources and their families	
Attention to the mental well-being of employees and their families	8.92
Attention to the basic needs of sustenance for employees and their families.	9.21
Implementation of a support program for department personnel.	8.5
Implementation of a support program for the families of deceased employees.	8.28
Modifying the organization's strategy in response to events and disasters	
Managing patient admissions during accidents and disasters.	8.35
Offering remote telephone consultation services encompassing nursing, medical, and rehabilitation.	8.42
Formulating a service continuity plan for unforeseen accidents.	8.5
Preparing for virtual visits with patients through video calls using mobile devices and, if feasible, facilitating in-person visits by providing necessary equipment to the patient.	9.42

One of the recommendations made by the experts was the need for the healthcare system to be adequately prepared. Khankeh et al have demonstrated that preparedness is crucial and a key component of emergency management.[20] This includes developing staff and community training strategies, and conducting exercises and evaluations. Preparedness occurs at different levels, namely the individual, local, and national levels. At the individual level, it involves acquiring knowledge, improving attitudes, and gaining necessary skills. At the local level, it is necessary to develop plans, allocate resources, and establish local management structures. At the national level, policies, guidelines, and operational directives must be developed. Since most natural disasters cannot be prevented, it is essential to enhance the preparedness of the healthcare systems, especially hospitals, to minimize casualties and injuries. Preparedness involves having plans, facilities, and personnel in place to respond effectively. Kamran et al also emphasized the importance of integrating clinical and non-clinical approaches, careful planning, implementing preparatory programs, implementing appropriate infection control measures, and ensuring sustainable management to successfully manage infectious disease outbreaks.[21] It is important to increase knowledge and implement effective crisis management strategies. A comprehensive pre-disaster management plan is indispensable to manage a crisis skillfully and mitigate the extent of damage. Strategic planning for crisis management in healthcare centers, along with collaboration and training, can improve disaster preparedness. Medical centers should prioritize crisis management initiatives. In this study, experts highlighted the importance of prevention and prediction, fostering greater collaboration among hospitals, and learning from past experiences. These factors underscore the need to prepare and plan for accidents in advance to provide safe and cost-effective care.

The expert panel agreed on the importance of empowering healthcare professionals. They recognized the need to provide these professionals with the necessary tools and training to ensure the provision of safe and effective care in the ICU. Effective measures, such as implementing training programs that teach staff how to work together to manage emerging diseases, were discussed. Simulated drills were also emphasized, as they have been shown to be very effective in preparing healthcare staff for accidents and disasters. In a study by Aliakbari et al training and empowering nurses could significantly improve their ability to respond to disasters.[22] Similarly, another study found that educating nurses can significantly improve their professional competence in health promotion, risk reduction, disease prevention, and response to the crisis. Nurses should also have a thorough understanding of emergency triage and management methods.[23]

Experts also agreed on the importance of organizational support. This support encompasses a wide range of aspects, including legal and psychological support for healthcare providers. Çetin et al highlighted the positive impact of organizational support on the job security of nurses and doctors during the pandemic.[24] Studies have also shown that organizational support, training in the use of personal protective equipment, and reducing work stress can significantly increase ICU nurses' willingness to provide direct and indirect care to patients with COVID-19.[25,26]

Ineffective management and lack of specialized staff can jeopardize the quality of care and diminish patient safety during crises. Therefore, all experts had a consensus on the importance of effective organizational and workforce management to provide effective and safe care to patients with COVID-19. Reviewing studies of nurse managers during the COVID-19 pandemic, Aydogdu concluded that most healthcare providers were not fully satisfied with the performance of managers during the pandemic.[27] In a study from Iran, nurse managers attempted to recruit volunteers from other hospitals and departments and to extend contracts with contractual workforces to alleviate nursing shortages during the pandemic. However, they rated their efforts as moderately effective.[28]

One of the strategies agreed upon by the panelists was to enhance teamwork and intra-organizational collaboration. The findings of this study indicate that teamwork in the care of patients with COVID-19 and intra-organizational collaboration contribute to improved patient care during hospitalization. The study conducted by Belarmino et al highlights the significance of collaborative actions, cooperation, and effective communication between nursing and medical teams in managing mild and complicated COVID-19 cases and taking appropriate actions when required.[29] Similarly, analyzing the experiences of emergency nurses, Bahrami et al emphasized the importance of obeying the commander, avoiding parallel work, coordinating skills, teamwork, and collaboration with leaders in crisis management.[30]

During the COVID-19 era, nurses had to adapt patient care to their individual strategies. These strategies varied and aimed to provide effective and appropriate care in different ways. A study by Rony et al identified seven categories of nurses' strategies for dealing with COVID-19. These included maintaining a positive attitude, seeking support from friends and partners, and avoiding negativity. Nurses were also motivated by professional commitments, religious beliefs, emotional control, and engaging in recreational activities.[9] Another study by Sehularo et al also highlighted various coping strategies for nurses during the COVID-19 epidemic. These strategies involved using protective measures, adopting avoidance tactics, seeking social and religious support, receiving psychological support, and benefiting from managerial assistance.[31]

Positive management behavior was a subject

thoroughly examined and unanimously agreed upon by our expert panel. In the context of the COVID-19 era, managers were required to establish specific elements to enhance motivation, provide support, and cultivate an environment conducive to respect for healthcare providers. Such measures would facilitate their adjustment to the arduous circumstances and enable them to provide high-quality care. Organizational support, justice, and transformational leadership have been shown to significantly increase positivity and improve quality of care among healthcare providers.[32]

To enhance motivation and morale, managers need to offer encouragement and recognition to employees. Despite the challenges they faced during the COVID-19 pandemic, nurses demonstrated unwavering dedication to their duties and provided compassionate care to patients and their families. To sustain this spirit, organizations must prioritize the philanthropic tendencies of managers. Herzberg's Two-Factor Theory of motivation and mental health is a theory that can be applied in this context. This theory underscores the significance of the work environment in developing motivation. Managers should possess a profound comprehension of the health-related factors that contribute to a positive work environment, such as relationships with the company and administrative supervision, interpersonal connections, job position, working conditions, job security, and salaries and benefits. Additionally, motivational factors like growth, the nature of the work, responsibility, achievement, progress, and recognition are equally important. If health-related factors are deficient, employee satisfaction may diminish. However, by establishing a satisfactory work environment, managers can prioritize the enrichment of motivational factors. This can be accomplished through delegating more responsibility to employees, expressing appreciation for their accomplishments, and fostering positive morale among healthcare providers. Such efforts can result in empowerment and enhanced creativity in the workplace.[33]

In this study, we sought to identify and develop strategies to support healthcare providers and their families so that care providers can deliver effective and safe care in the ICU. During the COVID-19 pandemic, a significant challenge arose when healthcare providers had to limit their contact with their families. To ensure the provision of beneficial and safe care, healthcare providers and their families need support. Attention to the families of healthcare providers would support and enable them to provide effective care to patients. Souadka et al highlighted the importance of implementing additional measures, such as providing childcare support for spouses and offering psychological assistance, to protect the families of healthcare providers.[34]

During times of crisis, when large numbers of patients are admitted to the hospitals, hospitals face a shortage of beds and some patients have to receive essential care at home. Then, there is a risk of transmitting the disease to family members. This has led to a change in the approach of organizations during accidents and disasters. As a result, telenursing such as remote consultations using video calls for patients to connect virtually with their families, has become increasingly common. However, this study focused only on providing solutions for the special care department and did not address the needs of other departments, such as emergency and infectious diseases.

Conclusion

To ensure effective and safe health care during the emergence of novel diseases, particularly in ICUs, it is imperative to recognize and use innovative and functional strategies effectively. By facilitating the provision of such strategies and solutions, healthcare providers can offer beneficial care to patients before, during, and after the onset of illness, while concurrently supporting the well-being of healthcare professionals. Moreover, the utilization of pertinent strategies enables the effective management of conditions akin to COVID-19, thereby significantly mitigating its adverse repercussions. Consequently, further research is advised to identify and implement strategies that will optimize patient care in other healthcare settings affected by COVID-19.

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Authors' Contribution

Conceptualization: Mojtaba Rad.
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Competing Interests

The authors declared no conflict of interest.

Data Availability Statement

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request. The data are not openly available to maintain the confidentiality and privacy of SCI research participants.

Ethical Approval

This study received approval from the Ethics Committee of the University of Social Welfare and Rehabilitation Sciences (Ethics

Research Highlights

What is the current knowledge?

- The COVID-19 pandemic presented an unprecedented challenge to healthcare professionals, particularly those working in the ICUs, including nurses.
- Addressing the fears and anxieties associated with this novel disease proved to be a complex issue, with no definitive solution readily available.
- The strategies employed varied widely and were primarily individualized, taking into consideration their unique circumstances and personal preferences.

What is new here?

- This study was conducted for the first time in Iran.
- The proposed strategies are based on the consolidated opinions of experts in this field.
- Various solutions, encompassing individual, familial, social, and national aspects, have been identified to improve the provision of effective and safe care during crisis periods such as the COVID-19 pandemic.

Code: IR.USWR.REC.1400.265). The study participants were provided with a clear explanation of the study's purpose and the data collection process was clearly explained to the participants. Also, informed consent was obtained from all participants before interviews were conducted. Additionally, Participants were also assured that the audio recordings of the interviews and the transcripts of the interviews would be kept confidential and that their data would be managed anonymously.

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