

## Original Article



# Intuitive Decision-making by Iranian Nurses of Patients with COVID-19: A Qualitative Study

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**Abstract****Introduction:** Clinical decision-making related to coronavirus disease 2019 (COVID-19) is a new experience; thus, there is a lack in knowledge in this area. The aim of this study is to explore critical care nurses' experience of intuitive decision-making in patients diagnosed with COVID-19.**Methods:** In this qualitative descriptive study, 16 nurses who had the experience of providing care for patients diagnosed with COVID-19 were selected through purposive sampling and participated in semi-structured interviews. The interviews were transcribed and finally analyzed through the conventional content analysis approach.**Results:** 62.5% of participants were females and the mean (SD) of the participant's age and working experience were 36.56 (6.58) and 12.62 (5.59) years, respectively. Three main themes emerged out of the experiences of the nurses, including (a) inner revolution, (b) holistic awareness and (c) clinical wisdom.**Conclusion:** Critical care nurses use intuition in novel, complex situations where they often have to make quick and independent decisions. Understanding the phenomenon of intuition in clinical decision making increases the professional practice of nursing and leads to better quality care for patients, especially in acute, critical situations and pandemic diseases.**Introduction**

The coronavirus disease 2019 (COVID-19) pandemic is the current health crisis in the world.<sup>1</sup> In Iran, the first official announcement of death due to COVID-19 was released on February 19, 2020. By March 31, 2021, approximately 1793805 patients in Iran were affected by severe acute respiratory syndrome. About 21357 nationwide deaths had been reported due to COVID-19.<sup>2</sup> Despite worldwide preventive measures, as well as individual and public precautions, significant numbers of people were still infected, hospitalized, and dying around the world. The global COVID-19 mortality rate is between 3%-15%.<sup>1</sup> Early diagnosis, patient isolation and quarantine, and medical interventions are pivotal means of controlling the spread of the virus and the infection. However, there is still no specific treatment or vaccine for the disease.<sup>3</sup>

Nurses comprise the main part of the healthcare workforce in the world. They are the frontline of care, and their quality of practice is a meaningful indicator of quality of care across healthcare systems.<sup>4</sup> In the field of infectious diseases such as COVID-19, nurses play a key role in

health promotion and disease prevention and control. Clinical decision making in nursing is frequently based on two styles of thinking: analytical and intuitive thinking. Analytical thinking is a logical style of thinking based on objective data. Intuitive thinking is driven by intuition and experience.<sup>5</sup> Researchers have indicated that relying on intuition in decision making can be more effective, reliable, and trustworthy compared to using objective data and logical thinking. They believe that the outcomes of intuitive thinking are comparable with analytical thinking, but information processing and cognitive efforts in intuitive thinking are faster and more efficient.<sup>6,7</sup> Nurses use intuition in their decision making in life-threatening conditions and crises, as well as situations that require creativity and innovation. Evidence also indicates that in complicated clinical situations due to ethical conflicts, nurses use from intuition for moral decision making and best practices.<sup>8</sup> Therefore, in critical health conditions, intuition is essential for nurses to improve quality of care, manage crises, and diagnose patients' conditions, as well as to help reduce mortality rates.<sup>9</sup> Currently, nurses around the world are dealing with COVID-19, a disease

that continuously demonstrates a variety of unknown and newly-known features. In this condition, because of a lack of knowledge and specialized clinical guidelines in these patients, nurses' clinical decision making and use of intuition in their decision making play an important role in management of the disease outcomes and community health. Clinical decision-making method is especially important among nurses of intensive care units (ICUs). Nurses' clinical practice and decision making are influenced by multiple factors. These factors include nurses' cultural context, educational background, working environment, job expectations, and relationship with patients and the healthcare team.<sup>10</sup> Nursing practice related to COVID-19 is a new experience; thus, there is a lack in knowledge in this area. There is a need for related studies to integrate a new body of knowledge into nursing science. Therefore, a qualitative research approach is appropriate to explore nurses' lived experiences and to provide in-depth descriptions of experiences of nurses working with patients diagnosed with COVID-19. Taking all the statements into account, in the case of the novel COVID-19, nurses may have issues in making clinical decisions based on the current evidence and analytical thinking.<sup>5</sup> Therefore, a study of nurses' experiences regarding intuitive decision making is important for improving clinical decision making and nursing practice.

Currently, studies about the COVID-19 pandemic frequently address epidemiological investigations, prevention and control, diagnosis, and treatment. To our knowledge, there is no published study in terms of nurses' experiences of intuitive clinical decision-making regarding patients diagnosed with COVID-19. The purpose of this study is to explore critical care nurses' experiences of intuitive decision-making in patients' care with COVID-19 during the COVID-19 crisis in Iran.

## Materials and Methods

The present study was a qualitative descriptive study which was done by using the conventional content analysis in Iran. Content analysis is a systematic approach to detailed explorations and description of poorly-known phenomena and is appropriate for exploring people's experiences of certain subject matters.<sup>11</sup> Qualitative content analysis as a research method provides an instrument for making inferences from data to their context, and in this process, the textual data explored and interpreted using the systematic coding process.<sup>12</sup>

The purposeful sampling was used to recruit participants from nurses who were providing care for patients diagnosed with COVID-19 in ICUs of four hospitals dedicated to these patients in four major cities of Esfahan province, Iran. Inclusion criteria included: the nurses working in the ICUs including ICU, coronary care unit (CCU) and emergency department (ED), providing care for patients diagnosed with COVID-19 for more than one week, agreeing to voluntary participation in

the study, and working experience in ICUs at least for two years. Age, gender, and total nursing experience were factors considered in recruiting the participants. Sampling continued until data saturation. Data saturation was identified through repetition of the participants' responses in the interviews and that no new information is obtained.<sup>13</sup> In our study saturation occurred during interview 14, after which we carried out two additional interviews for assurance. This process was under supervision of two experts in qualitative research. A total of 16 participants completed the study.

Data collection was performed using semi-structured interviews with intensive care nurses during the outbreak of the disease from February to April 2020. The research team prepared a primary guiding questions. At first, the researcher described the aims of the study and explained the content of the consent form and answering the questions as well as analytical and intuitive decision making and described an example of nurse's experiences of using intuition in practice and then obtained a verbal agreement and signing the consent form. The interviews were initiated using open-ended questions based on the purpose of the study such as, "*How do you make a clinical decision making in a critical situation? How was your experience of clinical decision making in the care of patients diagnosed with COVID-19? What conditions have you encountered that has caused you to use intuition? Please explain*". Also researcher using probing questions such as "*Please tell me more about that. What else can you remember about that situation?*" Also we applied some other probing questions such as "what," "how," "why," and "when." Finally researcher summarized the interview such as "*It sounds like you are saying. Is that a fair summary?*" The participants were asked to talk freely and to describe their experiences about clinical decision making in practice. The participants were encouraged and guided to talk and tell experiences about intuition in clinical practices.

The interviews were performed in places where the participants could feel comfortable speaking about their experiences in the room with calm atmosphere in wards, the school of nursing by observing privacy and confidentiality. The room was disinfected before and after each interview. The interviewer and the participant wore masks and gloves, and at least one meter separated the interviewer and the participant to observe social distancing.

The interviews were completed in 40-80 minutes. The interviews were conducted by the third author who is trained in qualitative research and interview techniques. The researcher has history of teaching and researching in the ICUs, which was very effective in relation to the participants. On the other hand, researchers tried to put outside their repertoires of knowledge, beliefs and experiences in order to bracketing.<sup>14</sup> The researchers had no experience in caring for patients with COVID-19, therefore at the beginning of the study they wrote down

the experiences of using of the intuition in caring of other patients so that they could investigate people's experiences without interfering with the interpretation of the meanings. The interviews were recorded and transcribed verbatim shortly after the interviews by the researcher. He listened to the recorded interviews several times before the transcription. All data collection and analysis processes were performed in Persian and at last the final manuscript was translated into English.

The transcribed interviews were analyzed through qualitative content analysis method following an inferential approach. The process of organizing the qualitative data in inferential content analysis included open coding, abstraction, and creating categories.<sup>15</sup> Elo and Kyngäs pictured inferential categorization plan in qualitative content analysis.<sup>16</sup> We were analyzed three times units of analysis. The researchers read a description of each person participating in the study to gain familiarity with the participants then extracts statements that are significant in relation with the research question. In order to reflect the research data accurately, the significant statements should be direct quotations from the participants. To analyze the significant statements, the researcher focuses on meanings of the statements, articulates the statements based on meanings, and creates themes. The researcher classifies similar themes into categories. Finally, the researcher integrates the results into a comprehensive description of the topic and returns to each participant to verify the results. The coding process of the phrases was done by all three authors, and afterward, they were compared to each other, and any disagreement was addressed. Data analysis and data gathering were conducted simultaneously.

To ensure the trustworthiness of this qualitative research, confirmability, credibility, dependability, and transferability were established.<sup>13</sup> To increase credibility, the researchers analyzed the first-level data and then performed member checks with participants. Final member checking conducted as participants were asked to review the findings, comment on the accuracy of interpretations, and confirm descriptions. Credibility was also assessed through peer debriefing; the researchers shared the text summaries, identification of themes, constitutive processes, and final drafts of the findings with the knowledgeable colleagues in nursing and qualitative researches. To support its dependability, the researcher used an adequate amount of time to collect comprehensive data. The researchers strengthened the conformability of the study by suspending their previous ideas while extracting themes from participants' descriptions.

The researchers believe that transferability of the findings is possible because the sampling was purposive and informational redundancy was achieved. Also, the descriptions were evaluated by three expert qualitative researchers apart from the study participants, and the results offer enough congruency with their experiences to support transferability. We employed the MAXQDA 10

software for data management.

To participate in the study, all participants gave written informed consent. At the beginning of the interviews, the participants were informed about the study's objectives and methods and were asked for give permission for recording of the interview, and the time and place of the interview were coordinated with them. They were assured of the confidentiality of their information and the voluntary nature of participation.

## Results

The participants were 16 critical care nurses. Ten participants were female. Their nursing experience ranged from 4 to 25 years, and their academic degrees consisted of bachelors, masters, and PhD (Table 1). Based on data analysis, 652 primary codes, 9 subcategories, and three categories emerged (Table 2). Three categories included inner revolution, holistic awareness, and clinical wisdom.

### Inner Revolution

Nurses' experiences in using intuition in clinical decision making was prompted by an inner revolution related to the confrontation with challenges posed by the COVID-19 crisis. The participants indicated that when

**Table 1.** Characteristics of participants (n=16)

Characteristics (range)	No. (%)	Median
Gender		
Male	6 (37.5)	
Female	10 (62.5)	
Age <sup>a</sup> (year) (26-52)	36.56 (6.58)	37.5
Working experience <sup>a</sup> (4-25)	12.62 (5.59)	13.5
Education		
BSC	12 (75)	
MSC	3 (18.8)	
PhD student	1 (6.2)	
Marriage		
Married	11 (68.8)	
single	5 (31.2)	
Current ward		
ICU	9 (56.2)	
CCU	7 (43.8)	
Duty		
General nurse	14 (87.5)	
Head nurse	1 (6.2)	
Clinical supervisor	1 (6.2)	
Shift type		
Fixed	2 (12.5)	
Rotation	14 (87.5)	
Type of employment		
Permanent	8 (50)	
Contractual	8 (50)	

<sup>a</sup> Mean (SD) was reported.

**Table 2.** The themes and subthemes of nurses caring for COVID-19 patients

Themes	Subthemes
Inner revolution	Inner perception
	Internal prediction
	Integration of inner and outer senses
Holistic awareness	Physical awareness
	Psychological awareness
	Situational awareness
Clinical wisdom	Clinical experience
	Clinical proficiency
	Clinical confidence

confronting the patients diagnosed with COVID-19, they used to make intuitive decision making based on their inner sense. These decisions mostly were not compatible with patients' objective data. A participant (P3) stated, "In a night shift, there was a 30-year-old patient in respiratory distress. I had an inner sense indicating that the patient's health condition would quickly deteriorate. I begged the physician... we must intubate the patient right now. Unfortunately, we did not have the chance to intubate the patient and start mechanical ventilation on time. Later, the physician told me I was right...we should have intubated the patient sooner." A participant (P5) indicated that her inner revolution necessitated the patient's resuscitation because the patient was almost same age. "I imagined myself in his place and felt his condition internally."

Indeed, we see the perception of the inner sense, followed by anticipation and pursuit, and the inner revolution in the intuitive decision making of participants.

### Inner Perception

Nine participants indicated that inner perception was important in their intuitive decision-making and patients' care. A participant (P16) specified that caring for patients diagnosed with COVID-19 is time-sensitive, and, without intuition, patient's death is unavoidable in many cases.

"For instance, sometimes you have an inner sense that an acute respiratory distress syndrome is about to occur...you must make a quick decision and do something."

Another participant stated that she internally perceived negative changes in the patient's clinical condition when she was working in the nursing station outside the patient's room.

"I was working in the nursing station when I saw the patient in the distance. Something from inside told me that she had a fever and was shivering. To assess and treat the patient, I quickly took a fever-reducing medicine to her bedside and found out that she actually did have a fever and was shivering." (P1)

Another participant pointed to a patient's cardiac symptoms.

"I felt that something was about to happen for my patient. Immediately, I brought the emergency trolley in her room. Suddenly, her heart rate dropped. Because I had brought the trolley, we were ready to do medical interventions at the right time." (P12)

### Internal Prediction

About half of the participants reported that when caring for COVID-10 patients, based on their inner sense, they projected a negative change was about to happen for their patients diagnosed with COVID-19. A participant indicated that an inner sense frequently prevented them from taking a break in their working shifts.

"It was time to take a break after hours of working, but I had an inner sense that if I went to have a break, something bad would happen to my patient." (P5)

Most of the participants reported an internal prediction of their patients diagnosed with COVID-19' imminent deaths, even when the patients did not have any acute symptoms.

"There was a young patient sitting on a chair in emergency department. Based on an internal prediction and inner sense, I told my colleague that I felt the patient would die after an acute attack. The patient was looking good after an hour when a sudden cardiac arrest actually happened, and he died." (P10)

According to the participants' experiences, there were several cases in which nurses experienced intuition and insight regarding patients diagnosed with COVID-19' sudden deaths, which happened within a short while. One participant (P4) believed that unpleasant events were inspired to her.

"Every moment, I thought something bad was about to happen for my patient. It was like a sense of inspiration from inside."

This participant noted that there were frequent occasions that ICU nurses experienced similar inspirations or premonitions, and after a while, bad events happened without any clinical indication. She emphasized that this intuition is also a regular experience among expert physicians in the ward. Another participant indicated that she used the intuition to get prepared for possible medical interventions, especially to prepare medical supplies and equipment at patients' bedsides.

"I felt the patient might need some supplies due to a change in his condition. So, I brought some equipment, such as an emergency trolley, an electrocardiogram (EKG) machine, and oxygen therapy equipment, to his bedside." (P2)

### Integration of Inner and Outer Senses

Almost all the participants expressed that they integrated objective and intuitive information to make decisions for patient care. A participant No.8 stated, "You might feel like something is about to happen for the patient...you would assess the patient and check his past medical history to make a decision. In general, when you work with multiple cases of novel patients diagnosed with COVID-19, you would use both inner and outer senses to make an inclusive decision for clinical practice." Another participant believed that this integration of senses could be a combination of intuitive perception about patients' conditions and her own hormone changes.

“Something happens inside you...something like cortisol secretion. At the same time, when you feel a change in patients’ conditions, you integrate all these inputs and perceptions and feel like it is an emergency, and you must do something.” (P14)

### Holistic Awareness

Almost all the participants expressed physical, psychological, and situational awareness in caring for patients diagnosed with COVID-19. This awareness directed them to use intuition in their clinical decision making. This awareness was developed immediately and holistically.

### Physical Awareness

The participants reported that before intuitive decision making, they found specific physical symptoms and changes in patients. The reported physical symptoms were common among the participants and included appearance changes, certain smells, skin color changes, respiratory symptoms, temperature changes, and heart rate changes. A participant stated, “In MI patients, I have seen that their skin color changes to whitish and blackish colors. Many patients diagnosed with COVID-19 also show these changes before a heart attack.” (P10)

Another participant (P7) believed, “In a patient who is about to die, everything is subject to change... his face and general appearance change and show that he is about to go... You might have seen, if you touch their skin, the skin is white, but it turns to greenish white after you remove your finger.” Another participant (P15) indicated, “When a patient is about to die, we notice certain smells at his bedside. We ask each other if his body is smelling or he is about to go.”

### Psychological Awareness

The participants also reported that they made intuitive decisions based on tension, anxiety and concern related with patients’ clinical conditions, personality and role of working environment. One participant stated, “In our ward, all staff have a heavy workload because of acutely-ill patients.” (P6) Another participant considered the heavy workload and the related tensions that factors into relying on intuitive decisions. “Everything was novel. The whole staff was feeling the same and were stressed. You felt extremely concerned about worsening your patients’ conditions. In these conditions, you feel like you have to trust your intuitions and inspirations.” (P5)

Another participant believed that her anxiety and concern about COVID-19 influenced her to rely on intuition in her clinical decision making. “I was anxious and concerned... Many colleagues and physicians were hospitalized with a COVID-19 diagnosis. You could be a COVID-19 vector without realizing it.” (P16)

Another participant (P7) recognized her personality as an important factor in having intuitive perceptions about patients’ conditions. “Well, your personality is important

to rely on intuition. I myself feel very concerned about my patients, and their conditions really inspire me in my nursing practice.” Another participant (P8) considered anxiety and concern conveyed by a department head indicative of her intuitive decisions making. “The physician who is the department head has high expectations from experienced nurses. This anxiety leads me, as an experienced nurse, to pay attention towards my colleagues’ patients as well as my own.”

### Situational Awareness

Fourteen out of 16 participants reported a situational awareness indicating their sense of responsibility and conscience toward their profession, which lead them use intuition in their clinical practice. “A sense of responsibility did not leave me alone. Based on your conscience, you feel responsible to do your best for your patient.” (P14)

“To some extent, it is a kind of feeling of responsibility... About the COVID-19 crisis, we feel we are responsible for patients in all aspects.” (P3)

Another participant (P7) believed that patients benefit from nurses’ intuitive decision making. “I felt like it was better for the patient to get discharged and go home. A hospital environment in this situation is not safe for the patient.”

Some participants compared the COVID-19 condition to a battlefield. “I feel like I’m in a battlefield. When you have seven cases of death in just a few hours, you believe whatever you do, even if not necessary, might save your patient’s life.” (P4)

One participant (P9) considered the public’s perspectives toward nurses as important in terms of nurses’ intuitive practice. “We are a representation of hope for the community. People trust us, and we are responsible to do everything we can for our patients.”

### Clinical Wisdom

Most participants who reported intuitive decision making expressed clinical experience, clinical proficiency, and clinical confidence.

### Clinical Experience

Eleven out of 16 participants believed that their intuition was positively related to their clinical experience. They highlighted the importance of experience in intuitive decision making and perceptions.

“Your perception about the patient is highly related to your work experience. That’s how you can imagine what will happen to the patient.” (P3)

Another participant (P2) stated, “Your intuition about the patient is tightly related to your experience of working with multiple and different patients.”

A participant who reported that they intubated a COVID-19 patient based on intuition stated, “Based on our experience with multiple patients diagnosed with COVID-19 who were intubated, we found preliminary and

*similar symptoms and decided to intubate the patient.”* (P9)

Another participant (P14) emphasized the substantial impact of working with experienced physicians on their own intuition. *“Working with experienced physicians and hearing their discussions is imperative in our thinking and practice.”* Another participant indicated, *“My experience of working with patients diagnosed with COVID-19 directed me to ponder that patients who have underlying conditions, such as diabetes and hypertension, would not have a good prognosis.”* (P6)

However, two participants (P3 & P5) noted that they used intuition even when they were not experienced in nursing.

### Clinical Proficiency

The participants indicated that clinical proficiency and skill are important for intuitive decision making. The skill helps the nurse to feel confidence in making intuitive decisions.

*“Due to experience and expertise in working with ventilators and modes of mechanical ventilation, I have the ability to set the ventilators based on the patient’s condition.”* (P12)

Nurses specified that clinical experience and expertise help nurses to recognize the patients’ conditions and to trust their own intuitive decisions. *“Because of my experience of working in different wards, I can trust my inner sense and intuition. I can tackle it... I know what to do.”* (P2)

*“After caring for a few patients diagnosed with COVID-19, we figured out what to do. I’m experienced in nursing practice, so I do my best for my patients based on my intuition.”* (P9)

### Clinical Confidence

Seven participants reported that they applied intuition in their clinical practice because of a sense of self-confidence that was related to their clinical practice, expertise, and colleagues’ feedback. One participant (P10) believed that clinical confidence causes physicians to trust nurses, and that trust helps nurses to use their intuition in their practice.

*“Because of my clinical expertise, the physician trusts me. We both know I have the ability to take action when the patient needs it.”*

The participants also emphasized the role of nurse managers and head nurses in their intuitive decision making and practice. *“The nurse manager trusts you to supervise and oversee inexperienced nurses in their practice...”* (P1)

On the other hand, some participants highlighted the importance of a setting’s hierarchical structures and management styles in intuitive decision making. *“Nurse managers and head nurses are important. You might confidently make intuitive decisions and do proper interventions for the patient; however, the nurse manager*

*may resist doing something without a physician’s order... because of a break in the ward’s hierarchical structure. In fact, some of them are just managers, and some are perfect leaders. Leadership is more favorable and effective. A leader engages in the action to show you the right way rather than just having you take action, which is common among managers.”* (P5)

Regardless of the disagreements and hierarchical structures, some participants believed that the use of intuition is commonly inspired by an inner confidence. *“For me, the patient’s life is the priority. If I feel confident something is critical for the patient’s life and health, I will definitely do it.”* (P3)

### Discussion

Clinical decision making is a main part of professional nursing practice. Evidence indicated that there were relationships between quality and outcomes of care and nurses’ clinical decision making.<sup>17</sup> In novel and complex conditions, such as the COVID-19 crisis, where there is a lack in knowledge, intuition can be used to improve clinical decision making. In this study, we addressed experiences of nurses in terms of using intuition in caring for patients diagnosed with COVID-19. The findings indicated that, during this crisis, nurses offer clinical interventions and care for patients based on clinical wisdom and intuitive decisions. Nurses’ clinical wisdom and decision making can be related to nurses’ internal revolution, holistic awareness about patients, clinical experience and skills, and clinical confidence. Experience, expertise, integration of inner and outer senses, and holistic awareness toward patients are all effective factors for intuitive decision making. In other words, an effective decision-making needs integration of knowledge and skill, as well as close relationship with the patient for deep comprehension of the patient’s condition. This deep comprehension is defined as deep perception of a clinical picture or seeing the big picture of a clinical condition.<sup>18</sup>

Since a COVID-19 treatment and vaccine have still not been found, and new features of the disease are continuously discovered, the role of nurses as a main feature of healthcare providers in caring for patients is highlighted. Our findings showed that intuition occurs with inner revolution, which is consistent with Lyneham et al, researchers recognized three themes of affection, syncretism, and spiritual connection and interaction as bases for intuition in EDs. It was shown that intuition comprises of cognitive awareness, unconscious assessment, justification via rethinking, transitional intuition, and incorporation of physical senses and behaviors into self-consciousness.<sup>18</sup> This category of studies, including our study, has been mostly conducted on ED nurses. Related studies on nurses who are working in other wards are recommended.

Holistic awareness was another theme found in this study. In a study about the concept of intuition, Hassani et

al specified several themes, including patient conditions and clinical symptoms, nurse preparedness, and integrity in perception.<sup>19</sup> The present study's participants indicated that changes in patients' and even nurses' physical conditions were important factors in the use of intuition in nursing clinical practice. Payne stated that Damasio's theory of physical symptom can explain the use of intuition. Damasio believed that when a nurse uses intuition in her practice, a change in the nurse's physical condition occurs, which is measurable with physiological signals.<sup>20</sup> Also, in the present study, the participants expressed that feeling anxiety and concern about patients, conscience and personal religious beliefs were all associated with intuitive decision making and practice. Other factors, such as self-confidence and job satisfaction, also can influence nurses' decision making. In Iran, nurses have multiple workplace concerns, such as consistently late paychecks and benefits, staff shortage, heavy workload, and long working hours. These concerns can prevent nurses from clinical decision making. Consistent with this statement, Ghafourian-Abadi and Kamrani indicated that feeling submissive and experiencing a reduced sense of personal value can decrease self-confidence, job satisfaction, and motivation and can cause a sense of disappointment and anger among nurses.<sup>21</sup> Another study showed that a poor workplace collaboration between physicians and nurses and nurses' sense of powerlessness prevent nurses from taking part in clinical decision making.<sup>18</sup> In our study, most participants emphasized the value of saving patients' lives. In this regard, some participants reported that this value was inspired by their religions and beliefs. This finding represents the role of religion and spirituality in nurses' intuitive decision making.

Benner et al stated that expert nurses can use intuition in their clinical judgments and decision making because they have the ability to comprehend the clinical problems and patients' underlying issues.<sup>22</sup> In a study of nurses' intuition and clinical competence in surgical and critical care units, King and Clark reported that expert nurses frequently use intuition in their decision making.<sup>23</sup> Their findings highlight the importance of experience in intuitive decision making. In the current study, the participants addressed the importance of clinical wisdom, including clinical experience and competence, in using intuition in their practice. However, other studies reported contradictory results. Pretz and Folsie believed that experience is only effective in specialized aspects of intuition, such as creativity and self-reliance. They denied the role of experience in general aspects of intuition, such as spiritual connections.<sup>24</sup> Also in regard to denying the role of experience, Smith believed that registered nurses and nurse students are similar in their use of intuition.<sup>25</sup>

In general, nurses do not acquire skills related to intuition immediately. Intuition is related to knowledge, experience, personal characteristics, and the nurse-patient relationship. Additionally, the workplace environment

is effective in acceptance, perception, and the use of intuition.<sup>26</sup> Taking all the studies into account, there is a need for further studies to assess the role of experience and clinical skills in the use of intuition in practice. In the current study, the participants addressed the role of workplace, nurse managers, and physicians in the use of intuition by nurses. The participants were confident about their intuitive decision making and practice even with barriers, such as hierarchical structures. Other research teams also addressed the importance of environmental factors, clinical experiences, and nurse/manager interactions in clinical decision making.<sup>17</sup> Lyneham et al study also showed that in a stage of intuition, nurses feel confident in their intuitive thinking.<sup>18</sup> Although evidence showed the importance of managers' support of nurses' clinical decision making, our findings indicated that nurses' confidence towards their own intuition is more substantial in their decision making. Future studies are needed to verify these results.

In general, intuition is not a phenomenon that occurs in a moment; rather it is a result of complex interactions of individuals' internal characteristics, experience, knowledge, skill, personality, conscience, and environment. Acknowledging intuition as an authentic method of decision making could influence the patient/nurse relationship, the healthcare team, and the organization's atmosphere. Intuition is an integral part of nurses' clinical decision making, especially in crisis conditions, and is a key element of clinical reasoning. Currently, organizations encourage their staffs to make effective and prompt decisions; intuition is a pivotal factor to make those effective and prompt decisions.

One limitation in this study was nurses' physical and mental exhaustion during the COVID-19 crisis. We recommend further studies to explore related factors, as well as barriers preventing the use of intuition in nurses' clinical decision making. The processes, strategies, and outcomes of intuitive decision making in patient care are also valuable concepts to be investigated. Due to subjective nature of qualitative inquiry, further participants may provide more information. By providing in-depth information from various individuals representing diverse and valuable experiences, perceptions and perspectives, these strengthen our findings considerably.

To realize and apply intuition in nursing decision making and practice, there is a need for integration of lived experiences into the body of nursing knowledge and theories and for acknowledging intuition in students' clinical education, educational curriculum, and the nursing process. Intuitive decision making among healthcare professionals, especially nurses, has a key role in their clinical practice for patients in crises care units, especially the COVID-19 crisis. Understanding the phenomenon of intuition in clinical decision making increases the professional practice of nursing and leads to better quality care for patients, especially in acute, critical

situations and pandemic diseases. It seems that the role of intuition in the decisions of experienced nurses in ICUs is significant. Therefore we will achieve good outcomes in clinical practice by sharing the experiences of nurses' intuitive decisions in appropriate clinical situations and supporting these decisions. Studies on intuitive decision making can help increase the knowledge base to reduce error rates in clinical decision making and nursing practice during crises. Healthcare policy makers need to address barriers and facilitators of the use of intuition in decision making, especially in crisis conditions.

### Conclusion

In this study results, we described the phenomenon of intuition in clinical decision making among caring nurses of patients diagnosed with COVID-19. Based on the findings, the participants used intuition in order to save their patients' lives and to improve patients' health. The participants believed that the novel COVID-19 crisis created an effective environment for their decision-making method. Hence, it seems that critical nurses used intuition in novel; complex situations where they had made quick and independent decisions. However currently, there is an emphasis on evidence-based practice in nursing.

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### Authors' Contributions

MA: Study conception and design, data collection; MA, MT, NMA: Data analysis and interpretation; MA, MT, NMA: Drafting of the article.

### Conflict of Interests

The authors declare no potential conflicts of interest with respect to the research, authorship, and publication of this article.

## Research Highlights

### What is the current knowledge?

- Clinical decision making in nursing is frequently based on two styles of thinking: analytical and intuitive thinking.
- Clinical decision making method is especially important among nurses of ICUs.

### What is new here?

- Nurses use intuition in order to save their patients' lives and to improve patients' health.
- During COVID-19 crisis, nurses offer clinical interventions and care for patients based on clinical wisdom and intuitive decisions.
- The participants believed that the novel COVID-19 crisis caused an effective environment for their decision-making method.

### Data Accessibility

Data not available due to the nature of this research, participants of this study did not agree for their data to be shared publicly, so supporting data is not available. Study analysis plan will be available by contact with corresponding author by email for two years following publication.

### Ethical Issues

This study research was approved from the Ethics Committee of Kashan University of Medical Science with the ethics code: IR.KAUMS.MEDNT.REC.1398.068.

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### References

1. Liao X, Wang B, Kang Y. Novel coronavirus infection during the 2019-2020 epidemic: preparing intensive care units-the experience in Sichuan province, China. *Intensive Care Med.* 2020; 46(2): 357-60. doi: [10.1007/s00134-020-05954-2](https://doi.org/10.1007/s00134-020-05954-2)
2. WHO. Coronavirus disease 2019 (COVID-19). Geneva: Who; 2021. Available from: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>. Accessed September 10, 2021.
3. Nikpeyma N, Abed-Saeedi J, Azargashb E, Alavi Majd H. A review of nurses 'performance appraisal in Iran. *Journal of Health Promotion Management.* 2014; 3(1): 74-83. [Persian]
4. Mo Y, Deng L, Zhang L, Lang Q, Liao C, Wang N, et al. Work stress among Chinese nurses to support Wuhan in fighting against COVID-19 epidemic. *J Nurs Manag.* 2020; 28(5): 1002-9. doi: [10.1111/jonm.13014](https://doi.org/10.1111/jonm.13014)
5. Chilcote DR. Intuition: a concept analysis. *Nurs Forum.* 2017; 52(1): 62-7. doi: [10.1111/nuf.12162](https://doi.org/10.1111/nuf.12162)
6. Kahneman D, Klein G. Conditions for intuitive expertise: a failure to disagree. *Am Psychol.* 2009; 64(6): 515-26. doi: [10.1037/a0016755](https://doi.org/10.1037/a0016755)
7. Waks LJ. Intuition in education: teaching and learning without thinking. *Philosophy of Education Archive;* 2006. Available from: <https://www.semanticscholar.org/paper/Intuition-in-Education%3A-Teaching-and-Learning-Waks/5fa9773bafa557dca82af3ecb4852ad1b3157319>.
8. Sofaer B. Enhancing humanistic skills: an experiential approach to learning about ethical issues in health care. *J Med Ethics.* 1995; 21(1): 31-4. doi: [10.1136/jme.21.1.31](https://doi.org/10.1136/jme.21.1.31)
9. Demir Y, Denat Y, Khorshid L, Eser I. Cultural validation of the "use of intuition by nursing students scale - Turkish version". *J Transcult Nurs.* 2012; 23(4): 369-76. doi: [10.1177/1043659612451257](https://doi.org/10.1177/1043659612451257)
10. Nibbelink CW, Brewer BB. Decision-making in nursing practice: an integrative literature review. *J Clin Nurs.* 2018; 27(5-6): 917-28. doi: [10.1111/jocn.14151](https://doi.org/10.1111/jocn.14151)
11. Elo S, Kyngäs H. The qualitative content analysis process. *J Adv Nurs.* 2008; 62(1): 107-15. doi: [10.1111/j.1365-2648.2007.04569.x](https://doi.org/10.1111/j.1365-2648.2007.04569.x)
12. Assarroudi A, Heshmati Nabavi F, Armat MR, Ebadi A, Vaismoradi M. Directed qualitative content analysis: the description and elaboration of its underpinning methods and data analysis process. *J Res Nurs.* 2018; 23(1): 42-55. doi: [10.1177/1744987117741667](https://doi.org/10.1177/1744987117741667)
13. Polit DF, Beck CT. *Nursing Research: Generating and Assessing Evidence for Nursing Practice.* 10th ed. Philadelphia: Lippincott Williams & Wilkins; 2017.
14. Chan ZC, Fung YL, Chien WT. Bracketing in phenomenology: only undertaken in the data collection and analysis process. *Qual Rep.* 2013; 18(30): 1-9. doi: [10.46743/2160-3715/2013.1486](https://doi.org/10.46743/2160-3715/2013.1486)



15. Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. *Qual Health Res.* 2005; 15(9): 1277-88. doi: [10.1177/1049732305276687](https://doi.org/10.1177/1049732305276687)
16. Krairiksh M, Anthony MK. Benefits and outcomes of staff nurses' participation in decision making. *J Nurs Adm.* 2001; 31(1): 16-23. doi: [10.1097/00005110-200101000-00005](https://doi.org/10.1097/00005110-200101000-00005)
17. Movafegh N, Mohamadzade Zarankesh S, Naeeni MK. Investigating the factors affecting participation in clinical decision-making from viewpoint of physicians and nurses of educational hospitals of Qazvin [Persian]. *Medical Sciences Journal of Islamic Azad University-Tehran Medical Branch.* 2019; 29(3): 249-57. doi: [10.29252/iau.29.3.249](https://doi.org/10.29252/iau.29.3.249)
18. Lyneham J, Parkinson C, Denholm C. Explicating Benner's concept of expert practice: intuition in emergency nursing. *J Adv Nurs.* 2008; 64(4): 380-7. doi: [10.1111/j.1365-2648.2008.04799.x](https://doi.org/10.1111/j.1365-2648.2008.04799.x)
19. Hassani P, Abdi A, Jalali R, Salari N. Use of intuition by critical care nurses: a phenomenological study. *Adv Med Educ Pract.* 2016; 7: 65-71. doi: [10.2147/amep.s100324](https://doi.org/10.2147/amep.s100324)
20. Payne LK. Toward a theory of intuitive decision-making in nursing. *Nurs Sci Q.* 2015; 28(3): 223-8. doi: [10.1177/0894318415585618](https://doi.org/10.1177/0894318415585618)
21. Ghafourian-Abadi S, Kamrani F. Critical care nurses' participation in clinical decision making with physicians. *Iranian Journal of Cardiovascular Nursing.* 2016; 5(2): 22-9. [Persian]
22. Benner P, Tanner CA, Chesla CA. *Expertise in Nursing Practice: Caring, Clinical Judgment, and Ethics.* 2nd ed. USA: Springer Publishing Company; 2009. doi: [10.1891/9780826125453](https://doi.org/10.1891/9780826125453)
23. King L, Clark JM. Intuition and the development of expertise in surgical ward and intensive care nurses. *J Adv Nurs.* 2002; 37(4): 322-9. doi: [10.1046/j.1365-2648.2002.02105.x](https://doi.org/10.1046/j.1365-2648.2002.02105.x)
24. Pretz JE, Folse VN. Nursing experience and preference for intuition in decision making. *J Clin Nurs.* 2011; 20(19-20): 2878-89. doi: [10.1111/j.1365-2702.2011.03705.x](https://doi.org/10.1111/j.1365-2702.2011.03705.x)
25. Smith A. Measuring the use of intuition by registered nurses in clinical practice. *Nurs Stand.* 2007; 21(47): 35-41. doi: [10.7748/ns2007.08.21.47.35.c4591](https://doi.org/10.7748/ns2007.08.21.47.35.c4591)
26. McCutcheon HH, Pincombe J. Intuition: an important tool in the practice of nursing. *J Adv Nurs.* 2001; 35(3): 342-8. doi: [10.1046/j.1365-2648.2001.01882.x](https://doi.org/10.1046/j.1365-2648.2001.01882.x)