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# The impact of the Kermanshah earthquake experiences of Iranian nurses as rescuers: a qualitative study

Amirhossein Naghibzadeh<sup>1</sup>, Keivan Moradi<sup>2</sup>, Hamid Saidi<sup>3</sup>, Jalal Karimi<sup>2</sup> and Khalil Moradi<sup>2\*</sup>

## Abstract

**Background** Over the past few years, Iran has experienced several earthquakes. The literature has highlighted the significant role played by Iranian nurses in the Kermanshah earthquake. However, few studies have been conducted to investigate nurses' responses to disasters. This study aimed to explore the impacts of rescue experiences on nurses who cared for the injured following the Kermanshah earthquake.

**Method** This is a qualitative study utilizing a conventional content analysis approach, following the Granheim and Landman framework. Sixteen nurses with experience in caring for earthquake survivors in Kermanshah were selected using a purposeful sampling method. Data were collected through in-depth semi-structured interviews, with ethical considerations applied at all stages of the research. MAXQDA software (version 10) was employed to assist in managing the data.

**Results** The study included 16 nurses: nine females (56.25%) and seven males (43.75%). The mean age of the participants was  $34.13 \pm 5.78$  years, and the mean work experience was  $10.75 \pm 5.3$  years. Following the coding of the interviews, 274 initial codes were extracted. These codes were merged to form 17 subcategories, five categories, and two main themes. The main themes were (i) Positive impacts (professional maturity, and the emergence of a new horizon in the meaning of life) and (ii) Negative impacts (psychological trauma, a decline in professional performance, and spiritual despair).

**Conclusion** In the context of this type of care, nurses experience dual impacts: on one hand, it uplifts their personal lives and professional performance, while on the other hand, it poses significant threats to them.

**Keywords** Disaster medicine, Earthquake, Experiences, Nurses, Qualitative study, Disaster victims

\*Correspondence:

Khalil Moradi  
moradi.khalil12@gmail.com

<sup>1</sup>Kermanshah University of Medical Sciences, Kermanshah, Iran

<sup>2</sup>Department of Emergency and Critical Care Nursing, School of Nursing and Midwifery, Kermanshah University of Medical Sciences, Kermanshah, Iran

<sup>3</sup>School of Nursing and Midwifery, West Azerbaijan University of Medical Sciences, Urmia, Iran



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## Introduction

As a natural hazard, an earthquake occurs an average of 16 times per year worldwide, resulting in significant human fatalities and economic losses [1]. Iran is among the top 10 countries prone to disasters, with 90% of its population at risk of earthquake exposure [2]. On November 12, 2017, at 21:48 local time, a devastating earthquake with a magnitude of 7.3 struck the border of Iran and Iraq in Kermanshah province, Iran [3]. This event caused 620 deaths, left 8,000 people injured, and affected 4,700,000 individuals [4]. Following a disaster, there is a surge in demand for health and therapeutic services [5]. Nurses are on-site whenever and wherever a disaster occurs [6]. They are the largest group of committed health system personnel working in difficult conditions with restricted resources [7, 8]. They have also played a significant role in all phases of disasters, including response and disaster relief, recovery, rehabilitation, and mitigation [6].

An investigation has found that employees involved in rescue and recovery during disaster relief are at a higher risk of developing mental health problems, such as anxiety, post-traumatic stress disorder, and depression [9]. They are also more likely to experience burnout, empathy exhaustion, vicarious traumatization, and compassion fatigue [10]. In contrast to the overwhelming evidence of adverse outcomes of traumatic incident exposure, several studies have revealed that engaging in disaster relief work has a positive impact on the mental health of rescue employees. Stated areas of post-traumatic growth include self-perceptions, relationships with others, spirituality, and appreciation of life [11, 12]. Many studies have examined the psychological impact of natural disasters on police officers and firefighters, but there is limited information about nurses' experiences in the aftermath of earthquakes [13]. Because of the numerous challenges in providing care for the injured in disasters, nurses may experience Post-Traumatic Stress Disorder (PTSD) [14, 15], or, conversely, it may help nurses find some positivity instead. Thus, understanding the accuracy of the nurses' emotional responses to the disaster is crucial in providing quality care. Aside from this, the presence of nurses working in a disaster is often overlooked [16], as most studies primarily focus on disaster nursing practice [17–19] or pay extensive attention to the survivors [20, 21]. Considering the high earthquake risk in many parts of Iran, it's essential to gain fundamental insights based on nurses' perceptions.

Qualitative research employs immersive and prolonged engagement within naturalistic settings to investigate the complexities of human experiences and social realities. This methodological approach prioritizes the generation of rich, descriptive data, facilitating a nuanced and

contextually grounded understanding of the phenomena under study [22].

Qualitative research can provide valuable information that can be used to develop programs and policies within the medical system to address critical conditions based on these perceptions. While studies have recognized the crucial role of nurses, few have specifically examined their responses to disasters [23]. This study aimed to address this gap by examining the impact of rescue experiences on Iranian nurses after the recent Kermanshah earthquake, utilizing a qualitative approach and conventional content analysis.

## Methods

### Study design

This study employed a conventional qualitative content analysis approach. This methodology is recognized as an effective means of deriving valid insights from textual data, facilitating the generation of new knowledge, innovative ideas, factual presentations, and actionable guidance. The primary objective of this method is to categorize and comprehensively describe the phenomenon under investigation [24].

### Participants and setting

Nurses with experience providing care to Kermanshah earthquake victims were recruited using purposive sampling. The study was approved by Urmia Medical Science University (UMSU) before data collection. A total of 16 participants were interviewed, 5 of whom had second interviews due to additional questions that arose after the initial analysis, necessitating further discussions to address them. Data saturation determined the sample size. To ensure maximum variety, we recruited nurses from various teaching hospitals affiliated with Kermanshah and other provinces (Tehran, Isfahan, Tabriz, Shiraz, and Kurdistan) Universities of Medical Sciences in Iran. The inclusion criteria were as follows: providing direct care for the earthquake victims for at least 24 h in the earthquake-stricken areas, having at least one year of work experience in clinical nursing practice, and participating in the study voluntarily.

### Data collection

Data collection was performed from February to June 2022 through individual, face-to-face, in-depth, semi-structured interviews. The interviews were conducted by KHM, the correspondence author, who holds a Ph.D. in nursing and has previous training in interviewing techniques and ethical communication practices. Persian was used as the interview language, and the duration of each interview ranged from 30 to 82 min, with an average duration of 61 min.

The interviews were recorded and then transcribed verbatim. Participants were not informed about the study, the interviewer, or the objectives. We used a brief questionnaire to gather participants' demographic information (age, sex, marital status, education level, and work experience) as well as their contact details (phone number and email). The interviews started with a general question, for example: "Could you please share your experiences of providing care to the victims of the Kermanshah earthquake?" The interviews then progressed with semi-structured questions, such as "What were the effects of providing care to the injured individuals in the Kermanshah earthquake on you?" Additionally, probing questions like "Can you provide an example of...? Could you elaborate on that further? How?" were asked to gather more comprehensive and detailed information. Despite using guiding questions in the present study, the questions were not asked in a fixed order. (supplementary1). All participants preferred to be interviewed at the hospital where they worked. An interview setting with a quiet, well-lit room was chosen, and the interviews were scheduled to take place at the end of the participants' work shifts, based on their preferences.

#### Data analysis

The interviews and data analysis were conducted concurrently, following the five-step methodology outlined by Lundman and Graneheim. These steps included: (1) Conducting a detailed analysis of each interview immediately after its completion, (2) Repeatedly reviewing the entire transcript to achieve a comprehensive understanding of its content, (3) Identifying semantic units and extracting basic codes, (4) Categorizing the primary codes into broader, more comprehensive categories, and (5) Establishing the main theme underpinning these categories [25]. After each session, the researcher carefully listened to the recorded interviews, transcribed them on paper, and typed them using Microsoft Word. Subsequently, data classification and analysis were performed using MAXQDA software version 10.0R250412. After a comprehensive analysis of the transcriptions, semantic units were identified in alignment with the study objectives, and primary codes were subsequently extracted. These codes were organized based on their similarities and differences, resulting in the formation of subcategories. Through continuous comparison, the subcategories were evaluated for suitability and resemblance, ultimately being grouped into main categories that reflected the main themes of the research.

#### Data trustworthiness

The trustworthiness of the findings was established using Lincoln and Guba's four criteria: credibility, dependability, conformability, and transferability [26]. To ensure

credibility, researchers used the member check technique concurrently with data collection and analysis and made adjustments as necessary. Additionally, the credibility of the findings was bolstered by the peer review process, extensive and consistent analysis of the data, and maximum diversity among participants in terms of demographic variables. To ensure dependability, auditing was conducted to guarantee the accuracy and transparency of data collection and interpretation, allowing future researchers to replicate the process and evaluate the decisions made throughout the study. Transferability was established by providing detailed descriptions of the sampling process, data collection, and analysis, enabling readers to assess the applicability of the results to other contexts.

#### Ethical considerations

The study was approved by the Research Council and Ethics Committee of Urmia University of Medical Science (IR.UMSU.REC.1398.042). Both written and verbal information about the study was provided before conducting interviews. Subsequently, written informed consent was obtained from all participants. Participants were assured of their voluntary participation and their right to withdraw at any time.

#### Findings

The study included 16 nurses, comprising nine females (56.25%) and seven males (43.75%). The mean age was  $34.13 \pm 5.78$  years, and the mean work experience was  $10.75 \pm 5.3$  years (Table 1). Following the coding of the interviews, 274 initial codes were extracted. These codes were consolidated into 17 subcategories, five categories, and two main themes (Table 2).

#### Main theme 1: Positive impacts

Based on the participants' experiences, the provision of care to earthquake victims has led to professional growth, the emergence of a new perspective on the meaning of life, and the strengthening of spirituality among nurses. From the researcher's perspective, the experience of participating in earthquake relief provided an opportunity for nurses to review and reassess their professional and personal frameworks. These changes ranged from minimal and superficial effects to profound and decisive impacts. Ultimately, they resulted in positive transformations in their attitudes, insights, and professional performance.

#### Professional maturity

The majority of the participants felt that the opportunity to be present and care for earthquake victims was a valuable experience that helped them develop professionally. It also gave them the confidence to participate in future

**Table 1** Demographic characteristics of the study participants

Participant no.	Gender	Education level	Ward	Working experience (Years)	Lengths of stay (Days)
N1	Male	BSc	Emergency	7	8
N2	Female	MSc	Internal	16	5
N3	Female	BSc	Emergency	9	7
N4	Male	BSc	ICU	5	11
N5	Female	BSc	Surgical	12	5
N6	Female	MSc	Emergency	9	13
N7	Male	BSc	Surgical	12	14
N8	Female	MSc	CCU	18	3
N9	Female	BSc	Internal	11	7
N10	Male	BSc	ICU	16	14
N11	Female	BSc	Emergency	4	9
N12	Male	BSc	Surgical	13	10
N13	Male	BSc	offices	22	15
N14	Male	MSc	ICU	8	7
N15	Female	BSc	Emergency	3	7
N16	Female	MSc	Emergency	7	12

BSc: Bachelor of Science; MSc: Master of Science; ICU: Intensive Care Unit; CCU: Cardiac Care Unit

**Table 2** Themes, categories, and Sub-categories extracted from qualitative content analysis

Themes	Categories	Sub-categories
Positive impacts	Professional maturity	Motivation to learn
		Gaining new experience
		Improving skills
		Gaining job satisfaction
Negative impacts	The emergence of a new horizon in the meaning of life	Improving family relationships
		New perception of the concept of wealth
		Understanding the concept of world instability
		A decline in professional performance
Negative impacts	Psychological trauma	Fear and anxiety
		Getting shocked
		Feeling guilty
		Depression
Negative impacts	A decline in professional performance	Social isolation
		Accelerated burnout
		Job Dissatisfaction
		A deviation in professional standards
Negative impacts	Spiritual despair	Hesitation over beliefs about God
		Developing a nihilistic view of life

events to assist others in need, resulting in the following sub-categories:

#### **Motivation to learn**

Most nurses emphasized that facing such a critical situation motivated them to re-evaluate their caring behaviors in their experiences. The nurses expressed a strong desire to improve their knowledge and skills and a need for workshops to enhance their sensitivity and awareness in providing care for victims in critical situations. This finding is highlighted in the following statement:

*After the earthquake, we gained a better understanding of the care required in critical situations and are now fully aware of the consequences of ignoring it. I'm interested in learning more about providing care for the mentally and emotionally traumatized, vulnerable groups, relief and air transport, as well as triage. (N3)*

*Another participant expressed, It motivated nurses to seek more recent information in this area. I emphasized the need for the hospital's education authorities to conduct additional training courses, particularly practical ones for nurses. (N5)*

#### **Gaining new experience**

Being placed in unique and complex situations, such as earthquakes, enables nurses to encounter experiences that they have not faced before.

Nurses who have undergone this challenging and rare circumstance have developed maturity, gained unique skills, and undoubtedly exhibit better performance in similar scenarios.

*One of the nurses said, If an earthquake happens again, or if I'm in a critical situation, I now know that my priority is to stay calm, triage patients quickly, and address their needs based on urgency. (N5)*

*One of the participants, with four years of experience working in the emergency department, stated: We became stronger in crisis management, identified our strengths and weaknesses, and gained valuable experiences(N11)*

### **Improving skills**

Participants reported that their self-confidence had increased during the care process, and now they can challenge their skills more than ever.

Participants in their experiences stated that during the caregiving process, their self-confidence increased significantly. Their performance and skills, which had previously been part of their routine work activities, became deeper and more efficient. This enhancement motivated them to help others again in the future or even consider changing their work departments.

*One of the participants shared their experience of enhanced capabilities, stating: That night, I was standing and inserting IV lines, or lying down on the floor, intubating patients who required intubation. This experience helped me become more skilled and capable compared to before (N 12)*

*A nurse expressed, Our communication and clinical skills, patient management, and teamwork have improved, and we have more confidence than ever before. (N11)*

*Most nurses would become flustered when multiple accident victims were brought to the emergency room simultaneously. However, on that particular night, we individually managed several casualties with minimal resources. For instance, we independently applied splints or performed cardiopulmonary resuscitation (CPR), which significantly boosted our self-confidence (N 15)*

*Another participant stated, If an earthquake happens anywhere in the world, I would immediately go there to assist (N 1)*

### **Gaining job satisfaction**

Based on the nurses' experiences, the recovery and survival of some of the victims made them feel valued. This feeling was reinforced by the families' appreciation of their efforts, resulting in job satisfaction.

*One of the participants expressed: A few days after the earthquake, a young woman came to the hospital, hugged me, thanked me warmly, and said, 'You saved my baby from certain death that night.' At that moment, I was proud of myself and proud to be a nurse. (N10)*

*Another participant expressed: I felt profound happiness and satisfaction from being able to contribute, even in a small way, to mitigating this major*

*crisis. I think it was the only time I truly felt content with my profession (N 6)*

### **The emergence of a new horizon in the meaning of life**

In their experiences of caring for victims, nurses expressed that natural disasters such as earthquakes significantly influenced their outlook on life, giving rise to the following sub-categories:

#### **Improving family relationships**

Participants mentioned in their experiences that they gained a more realistic understanding of their family relationships. They did not assume that being with family members was everlasting. For example, a participant stated:

*After the earthquake, I have grown more reliant on my family. My feelings of love and affection for my wife and children have intensified, and my roles within the family have become more prominent. (N14)*

*Another participant noted, This earthquake caused a significant change in our hearts; now, families value each other more (N8)*

#### **New perception of the concept of wealth**

General human understanding of concepts and life facts is primarily based on previous experiences and information. One of these concepts is wealth, which is mainly assessed by objective and material criteria. However, nurses who experienced the earthquake expressed serious doubts about this concept and its definition, leading them to prioritize non-material issues. This is highlighted as follows:

*I saw a wealthy individual, like other earthquake victims, queuing for a bottle of water, which changed my perspective on materialistic life. (N4)*

*Another participant shared: Friends from various cities reached out to me, expressing their willingness to offer any kind of support. It was then that I realized material wealth can vanish at any moment, but true wealth never fades. My true wealth was the kindness I had shown to my friends and colleagues (N 9)*

#### **Understanding the concept of world instability**

After experiencing an earthquake, participants in this study mostly felt that human life was insecure.

Understanding this unpredictability reduced their selfishness and enhanced their humanity. One participant highlighted this:

*I learned a lot from the night of the calamity. I learned to appreciate what I have. We should always be ready to leave and live our lives to the fullest, not postpone our love to the future, and live in the moment. Maybe we won't be alive one hour later. (N7)*

*Another participant stated: Due to an old misunderstanding, I intended to apologize to one of my colleagues. Unfortunately, they passed away in the earthquake, and I never got the chance to express my apology (N 1)*

## Main theme 2: Negative impacts

In addition to the positive impacts of caring for earthquake victims on nurses, there were also various negative impacts. Nurses expressed these negative experiences in different ways.

### Psychological trauma

Based on the analysis of nurses' experiences, they encountered a wide range of emotions while caring for and after caring for the victims, which impacted their emotional well-being and morale.

### Fear and anxiety

Many local nurses have been experiencing significant fear and anxiety, always waiting for another earthquake to occur, which has affected the amount and quality of their sleep, and this experience has continued to affect them up to this day. One participant stated:

*Now, I'm afraid of the hospital. Even when I'm on night shifts, I don't dare to go to the break room. I stay up until the morning. I think maybe another earthquake will hit. (N1)*

*Another participant stated: I constantly slept with the fear that the ceiling of my room might collapse on me, and I repeatedly woke up with this fear (N 14)*

### Getting shocked

The unexpected encounter with a large number of severely injured people shocked the nurses in the early hours, making it difficult for them to provide their services effectively. One of the participants mentioned:

*It was a terrible experience. I had never been through such a disaster. In the immediate aftermath of the earthquake, I was so shocked that I couldn't even perform simple tasks like IV insertion. (N14)*

*Half an hour after the earthquake, I immediately went to the hospital. I was shocked by the sight of so many bodies and severely injured patients (N 6)*

### Feeling guilty

Nurses reported developing a sense of guilt, which they believed stemmed from their perceived inadequate actions in caring for the victims. In this regard, one of the participants stated:

*I had infused serum into one of the patients. Half an hour later, I found out that he had died. Even now, I feel guilty. I wonder if I made a mistake and caused the patient's death. (N8)*

*Another participant shared their experience, stating: Many times, I think that if we had arrived earlier or acted more quickly, we might have been able to save more victims. (N 11)*

### Depression

Based on participants' statements, moods, and emotions, it was evident that they had encountered a wide range of depressive symptoms.

*One of the participants mentioned, I used to go to the park to exercise, but now I have lost interest in these activities, and I don't think about myself at all." (N11)*

*Another nurse expressed, I always forgot where I'd left my stuff. I was distracted and even had trouble making simple, basic decisions at work." (N2)*

### Social isolation

The social isolation that most nurses had experienced after the earthquake, disrupted their social interactions. For example, a participant stated that:

*For a long time after the earthquake, I didn't even want to go to the market to buy anything; I preferred to stay at home. (N6)*

*Another participant stated: I was afraid to reach out to my old friends because I knew they would ask about the situation in the city after the earthquake.*

*Even when my friends called me, I didn't feel like answering. (N 13)*

### **A decline in professional performance**

Another negative impact of the earthquake experience for nurses has been a decline in their professional performance, significantly reducing the quality of their work. This decline has sometimes led to a change in their attitude towards their profession, resulting in the following sub-categories:

#### **Accelerated burnout**

Nurses responding to a disaster may experience symptoms such as irritability, work fatigue, sleep disorders, difficulties in returning to family, and feelings of frustration. These are all signs of burnout that can negatively impact their professional performance.

*One participant highlighted this: Until before the earthquake, I was interested in nursing, but now, I'm not sure I can continue this challenging job forever. (N15)*

*One of the participants mentioned: Before the earthquake, I used to work 24-hour shifts without any worries. However, after experiencing the earthquake, even 12-hour shifts preoccupied me with thoughts about my family. Sometimes I forgot I was at work, and at other times, I forgot to do some of my duties. (N4)*

*Another participant stated: I experienced headaches and insomnia, and for a long time, I had nightmares. My spouse mentioned that I would talk about patients in my sleep. (N 16)*

#### **Job dissatisfaction**

The results indicated that nurses did not receive adequate organizational feedback relative to their efforts. They consistently felt that they were ignored and neglected by the authorities, and this lack of organizational support led to significant discouragement and job dissatisfaction among them.

*In this regard, one of the participants expressed: In the aftermath of the disaster, nurses sacrificed their own needs and provided long-term care for the victims despite losing family members and homes, working in difficult and unsafe conditions, and facing a lack of facilities. Unfortunately, their efforts were not properly acknowledged. (N5)*

*Another participant stated: In healthcare delivery, nurses are at the forefront of providing care. However, when it comes to sharing rewards and recognition, nurses have no role at all. This leads to dissatisfaction among nurses, to the extent that after the earthquake, some of them changed their profession. (N 16)*

#### **A deviation in professional standards**

Certainly, emergencies require urgent reactions and measures. Due to such urgencies, some treatment protocols during the Kermanshah earthquake were ignored. However, it was clear from the interview that some nurses continued to ignore the protocol even after returning to normal conditions. For example, one of the participants described her experiences as follows:

*The urgency of the situation required us to infuse the serums quickly. Now, I can infuse the serum in less than an hour, even though it should be infused within 8 hours. (N9)*

*Another participant stated: The need for rapid response in providing services led us to overlook the detailed medical history of the patients or to inquire about their medical history and drug allergies in a very general manner. Even now, I approach reviewing medical histories in a superficial way and am not as meticulous as I used to be (N 3)*

#### **Spiritual despair**

One of the negative impacts observed in the nurses' experiences was a sense of spiritual disappointment. This included feelings of uncertainty about their beliefs in God and the development of a nihilistic attitude toward life, which led to the following sub-categories:

#### **Hesitation over beliefs about god**

During the interviews with the nurses, some expressed hesitation about their beliefs in God. They reproached Him despite having deep faith in God and regularly engaging in religious practices. Three participants mention this topic.

One participant emphasized this point:

*I was deeply disturbed when I saw all those corpses. These were the bodies of people who had thousands of hopes and aspirations, but within a few seconds, they and their aspirations were gone. I thought about how divine providence allows such horrible scenes to happen.*

Another participant similarly noted:

*A seven- or eight-year-old child with an injured ankle was lying on a stretcher. When I asked about their parents, I was told that all of them had died, and no one was left for the child. I thought to myself, 'God, how could you not leave even one person for them?' (N 8)*

#### **Developing a nihilistic view of life**

Several nurses experienced the profound impact and the psychological damage that altered their perspectives on life, leaving them with a sense of absurdity and insignificance. One of the participants said:

*Before the earthquake, I was very active and vibrant, dealing with all aspects of life. However, the experience of the earthquake deeply impacted me and left me feeling very sad. Witnessing all human belongings being destroyed in the blink of an eye made me question the purpose of trying so hard. It made me feel like life is just a dream. (N12)*

*Another participant shared: A young couple who had just started their married life lost their lives under the rubble. It makes you realize how fragile life is—people spend their whole lives working toward such a day, only to leave everything behind on that very day (N 7)*

#### **Discussion**

In this study, we examined nurses' experiences regarding the impacts of providing care to earthquake victims. To do this, we conducted semi-structured interviews and categorized the results as a general concept of "dual impacts," with two themes of "positive impacts" and "negative impacts."

Regarding the first positive impact theme, which is professional maturity, most participants in the study found attending to and caring for the victims of the earthquake to be a unique opportunity for personal and professional growth. This effect was explained through sub-themes such as motivation to learn, gaining new experience, improving skills, and gaining job satisfaction.

Most studies have reported the potential positive impact of going through a disaster. For example, individuals involved in recovery and relief efforts during and after a disaster have often found the experience to be practical, valuable, and meaningful. It has also made staff feel personally and professionally engaged [27–29]. In a study conducted by Sheehan et al. following the Christchurch earthquake in New Zealand, 88% of participants reported that they learned new skills as a result of working in those

conditions. Additionally, 44% of the participants mentioned that they obtained additional information about the emergency care process. Some participants also described acquiring new emergency clinical skills such as rapid assessment, better time organization, increased preparedness in emergencies, learning emergency approaches, and more efficient communication skills, which contributed to their professional growth [30]. The findings of a systematic review study demonstrated that nurses obtained valuable experiences while delivering care in critical situations [31].

The second theme highlighted the emergence of a new horizon in the meaning of life. Many participants in the study indicated that natural disasters, such as earthquakes, had a profound impact on their perspective on life. After the Japanese earthquake, a study by Sato et al. found similar results. It showed that nurses, in the aftermath of the disaster, placed less priority on material issues and instead appreciated the value of their lives and relationships. This experience prompted them to re-evaluate their life goals, roles, relationships with family and others, and the significance of their existence. Consequently, they were able to establish clearer goals [32]. Similarly, a study conducted by Johal et al. on the impact of the New Zealand Earthquake showed that nurses' experiences during the earthquake had significantly influenced their perspectives and prompted them to re-evaluate their values. Additionally, they prioritized relationships with family, friends, and coworkers over materialistic concerns [11].

Participants in the present study who experienced an earthquake mostly felt that human life is transient. Similarly, in Ren et al.'s study after the Sichuan earthquake, participants felt that life was full of uncertainties and realized they did not have complete control over their lives [33]. Moreover, a study by Shih et al. on nurses during the Taiwanese earthquake found that most nurses experienced and observed the instability of the universe [23]. The nurses' experiences indicated that witnessing the recovery and survival of some victims led to a sense of being valued, which in turn contributed to their job satisfaction. According to Sato et al., nurses reported a sense of job satisfaction after the disaster. They reported feelings of pride, self-efficacy, effective communication, and a strong sense of community within the hospital. Additionally, they valued the support of their families, colleagues, and patients, which reinforced their belief in their importance and contribution to healthcare [32].

The first theme of negative impacts is psychological trauma. The study found that nurses experienced severe stress when working in disaster situations, which could lead to mental disorders. These disorders can affect both personal well-being and the quality of care services. Nurses have reported that educational systems do

not adequately address their health and psychological needs. Nurses can sometimes be overlooked as victims of disasters. According to Cukor et al., nurses may face psychological and social challenges after a disaster [34]. The findings of a study by Zhen et al. on the Wenchuan earthquake in China revealed that a significant number of nurses continued to experience high levels of psychological and social issues a year after the earthquake. The study reported a 27.1% prevalence of depression among the nurses [13].

Moreover, the findings of the study by Mounsey et al. on the Canterbury earthquake in New Zealand showed that nurses experienced a wide range of emotions, including fear, guilt, pride, appreciation, empathy, hopelessness, sadness, and anxiety [35]. Thus, authorities need to take steps such as conducting open sessions to share both positive and negative experiences, involving psychologists, providing support and understanding the sources of stress, as well as planning to address the needs for mental and psychological preparation to deal with such challenges. This involves studying and understanding mental health in times of calamities and disasters and being aware of the psychological needs and problems faced by nurses.

Another negative impact of the earthquake on nurses was a decline in professional performance, which significantly reduced the quality of their work. This decline sometimes led to a shift in their attitude toward their profession, resulting in negative feelings about it. Findings from a study by Ren et al. (2017) indicated that most participants complained about burnout, fatigue, and secondary damage related to their relief work [36]. Other studies have shown that rescuers often experience burnout and other negative emotions, leading to reduced eligibility, more clinical errors, lower motivation, and a tendency to quit relief work [37, 38].

The study results revealed that nurses did not receive adequate feedback from the organization relative to their efforts, leading to job dissatisfaction. In this regard, the results of the study by Sugino et al. showed that the majority of the nurses sacrificed much of their lives after the Bantul earthquake in Indonesia and took care of the injured day and night in challenging and dangerous conditions; however, the authorities did not appreciate their selflessness, leading to their dissatisfaction [39].

In the current study, another negative impact was spiritual despair, characterized by hesitation over beliefs about God and developing nihilistic views of life. In a study by Ren et al., most rescuers claimed that life seemed absurd when they witnessed everything changing in a moment [33]. The results of this study can be utilized to empower nurses by highlighting their challenges, concerns, and requirements during extreme situations, as

well as the strategies employed by nurses in response to those circumstances.

The study findings are based on the experiences of a small number of nurses who were present in an earthquake-affected area in a single province in Iran. Consequently, it is crucial to interpret these findings cautiously and avoid making broad generalizations. To address this limitation, participants were selected from a diverse range of provinces to ensure greater variation. Despite the wealth of information on the studied concept, the time gap between the interviews and the actual experiences raised concerns about the accuracy of the recollections. Additionally, some nurses were unwilling to continue the interviews due to the emotional burden and bad memories from the past. To address this limitation, efforts were made to recruit new participants as extensively as possible.

## Conclusion

The results of the present study revealed that nurses experience both positive and negative impacts in providing this type of care. On one hand, it improves their personal and professional lives; on the other hand, it also poses threats to them. Due to the vulnerability of nurses, evident during and after providing care, it is necessary to provide long-term follow-up and attention to optimize nurses' performance, minimize psychological and mental strain, and strengthen their approach to nursing care in future critical situations. Therefore, it is recommended to design appropriate training programs based on the practical needs of nurses in disasters to empower them. More qualitative research needs to be conducted in this field to enhance disaster preparedness.

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## Author contributions

All authors participated and approved the study design. KH, M; and AH, N contributed to designing the study. KH, M; and H, S collected the data, and data analyses were done by K, M and J, K; The final report and article were written by KH, M; AH, N; K, M; J, K; and H, S; and all authors read and approved the final manuscript.

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## Data availability

The data analyzed during the current study are available from the corresponding author on reasonable request.

## Declarations

### Ethics approval and consent to participate

The study protocol received approval from the Institutional Review Board (IRB) of Urmia University of Medical Sciences, in accordance with the principles outlined in the Declaration of Helsinki. Additionally, the Ethics Committee of the same university granted approval for this research under the ID IR.UMSU.REC.1398.042. Before the interview, participants were provided with written

and verbal information about the study, and written informed consent was obtained from all individuals. Participation was voluntary, and participants had the right to withdraw from the study at any stage. Strict adherence to data confidentiality, ethical considerations, and data dissemination protocols was observed, with no recording of personal identifiers such as names, surnames.

#### Consent for publication

Not applicable.

#### Competing interests

The authors declare no competing interests.

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