

# Participation a Key Factor for Life Recovery After Disaster: A Grounded Theory Study in an Iranian Context

Maryam Nakhaei,<sup>1</sup> Hamid Reza Khankeh,<sup>2,3,\*</sup> Gholam Reza Masoumi,<sup>4</sup> Mohammad Ali Hosseini,<sup>2</sup> and Zohreh Parsa-Yekta<sup>5</sup>

<sup>1</sup>Birjand Health Qualitative Research Center, Birjand University of Medical Sciences, Birjand, IR Iran

<sup>2</sup>Research Center in Emergency and Disaster Health, University of Social Welfare and Rehabilitation Sciences, Tehran, IR Iran

<sup>3</sup>Department of Clinical Science and Education, Karolinska Institute, Stockholm, Sweden

<sup>4</sup>Iran University of Medical Sciences, Tehran, IR Iran

<sup>5</sup>Tehran University of Medical Sciences, Tehran, IR Iran

\*Corresponding author: Hamid Reza Khankeh, Department of Clinical Science and Education, Karolinska Institute, Södersjukhuset, Sjukhusbacken, Stockholm, Sweden. Tel: +46-704085205, Fax: + 46-86162933, E-mail: hamid.khankeh@ki.se

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## Abstract

**Background:** Since life recovery after disasters is a subjective and multifaceted construct influenced by different factors, and survivors' main concerns and experiences are not clear, the researchers intended to explore this process.

**Materials and Methods:** This study was conducted in 2011-2014 based on the grounded theory approach. Participants were selected by purposeful sampling followed by theoretical sampling to achieve conceptual and theoretical saturation. Data were collected through interviews, observation, focus group discussion, and document reviews. Data were analyzed by Strauss and Corbin's (2008) recommended approach.

**Results:** Transcribed data from 26 interviews (managers, health care providers, and receivers), field notes, and other documents were analyzed, and 1,652 open codes were identified. The codes were categorized, using constant comparative analysis, into five main categories including reactive exposure, subsiding emotions, need for comprehensive health recovery, improvement of normalization (new normality achievement), and contextual factors. The process of life recovery after disaster was also explored.

**Conclusions:** The results clarified a deep perception of participants' experiences after disaster. The path of life recovery after disasters involves participants' striving to achieve a comprehensive health recovery, which starts with the need for all-inclusive health recovery as a main concern; this is the motivator for a responding strategy. This strategy is participatory, and the process is progressive; achievement of a new normality is the final goal, with new development and levels of empowerment.

**Keywords:** Disaster, Recovery, Participation, Life Recovery, Grounded Theory

## 1. Background

How people prepare for, respond to, and recover from the impacts of disasters is linked to how well a community can "bounce back" after a major disaster or how resilient it is (1, 2). This has been considered by most disaster scientists and policy makers in the past decade (3), but challenges have remained in making it operational. The recovery process offers unique opportunities for change to build disaster resiliency into the built environment (2).

General life has numerous components; therefore, life recovery should be considered a subjective and multifaceted process that extends beyond just restoring physical assets and reconstruction (4-8). Post-disaster recovery includes efforts to reduce acute stress, foster resilience, reestablish roles and routines, and enhance the psychosocial well-being and quality of life of the community members affected (7, 8).

Although different disciplines have been interested in

disaster recovery, only a few studies have been conducted to explore survivors' perspectives; therefore, our understanding of their concerns and how the needs of survivors change over time during the process of recovery is limited (5-8).

In Iran, despite a recent increase in disaster studies, there is no comprehensive study to define the recovery process and services (7-9), which need to be explored in more depth.

## 2. Objectives

The paper thus seeks to explore this relatively less studied area, that is, the recovery process after disaster. A qualitative study is warranted to identify the goals, challenges, and needs of survivors; therefore, to identify survivors' ongoing needs in recovery and to make policies for unique opportunities after disaster that conventional approaches

may fail to grasp, we tried to explore the recovery process by conducting a qualitative study in Iran, which has experienced some large natural disasters in recent years (2003 in Bam, 2005 in Zarand, 2006 in Lorestan, and most recently, the 2012 Azerbaijan earthquake).

### 3. Materials and Methods

Grounded theory, which is linked directly to symbolic interactionism and explores the social process within human interactions, was selected as an inductive and deductive approach to provide insight into the participants' perspectives and to generate theory that is grounded in the data collected from the field (10).

In this study, the researchers were interested in what happened to survivors after a disaster and how they recovered, and the questions that were considered concerned what the main concerns/problems of the participants were and how they overcame or processed these concerns.

Since life recovery after disasters is a subjective and multifaceted construct that happens in a social context and is influenced by different factors, it cannot easily be measured by quantitative tools. Thus, the researchers decided to explore this process using the grounded theory method to develop a substantive theory in this field which is not any.

#### 3.1. Participants

The participants were selected by purposeful and theoretical sampling (10) from among those who were able to communicate with the interviewer, who had been affected by disasters, or who had experience of receiving, providing, or managing health services in disasters.

Study participants included 26 individuals (13 women and 13 men) who had experienced recent disastrous events in Iran (2003 in Bam and Zarand, 2006 in Lorestan, and in the most recent Azerbaijan earthquakes in 2012). The participants ranged from 22 to 67 years of age with three types of disaster experience (Table 1). The sample size was determined by saturation through a sampling process (10), meaning that research guided the data collection, and the process continued until no new concept was acquired (i.e., the researcher concluded that collected data were repeated, new codes were not being developed or existing codes were not extended, and all categories were well developed in terms of properties, dimensions, and variations) (10).

#### 3.2. Data Collection

In grounded theory, researchers may collect data from interviews, observations, or documents or from a combi-

**Table 1.** Number and Positions of Participants

Code	Positions of Participants in the Experience of the Incident	Number
1	Health disaster manager	3
2	Health nongovernmental organization (NGO) manager	2
3	Rehabilitation specialist	1
4	Health care provider (physician, nurse, social worker)	6
5	Health service receiver (victim, resident in disaster area)	14
<b>Total</b>		<b>26</b>

nation of these sources (10). In this study, in-depth, semi-structured interviews were the main strategy for data collection. Each interview began with an open question, for example, "Tell me about what happened to you after the incident. What did you feel? What did it mean to you?" or "Could you explain your experiences with respect to health care after the incident? What did you need? How were the needs met?" or "Which factors facilitated/inhibited?" Complementary probing questions were added when needed and could relate to prior experiences of disaster or perceptions of health care and individual needs. The interviews lasted between 45 and 60 minutes. The time and place of the interviews were determined by mutual agreement.

#### 3.3. Data Management and Analysis

All interviews were transcribed verbatim and were compared with the recorded digital files for accuracy. Data were analyzed using Corbin and Strauss's approach, which involves taking data apart, conceptualizing it, and developing those concepts in terms of properties and dimensions in order to determine what the parts tell us about the whole (10).

Analysis involves what is commonly termed coding, that is, taking raw data and raising it to a conceptual level. (As in the previous approaches mentioned, it includes open coding-breaking data apart and delineating concepts to stand for blocks of raw data and axial coding cross-cutting or relating concepts to each other. Open coding and axial coding go hand in hand.) Analysis of data for context and process are essential aspects of any analysis. Analysis of data for context involves identifying the sets of conditions, ranging from the most macro to the micro, that shape the nature of situations, circumstances, or problems to which individuals respond by means of action, interaction, and emotions. This is not much different from analyzing data for concepts and categories. Bringing process into the analysis involves looking for an ongoing flow of action, interaction, and emotions occurring in re-

sponse to events or problems or as part of reaching a goal. The final step of analysis for researchers whose research aim is theory building is integration, the process of linking categories around a central or core category and refining and trimming the resulting theoretical construction (10).

### 3.4. Data Trustworthiness

Credibility was established through field notes and memos, prolonged engagement with the participants, and revisions by the participants using member checks and peer checks. The research team was multi-professional, with experience of disasters, emergencies, and qualitative research with several international publications. Triangulation of the researchers in the research team helped to take into account different perspectives when analyzing the data. The findings and interpretations of the study were reviewed by the research team as an expert revision. Maximum variation of sampling established the conformability and credibility of the data. As an additional control for validity, a peer check on a sample of transcripts was made by two faculty members who were not part of the research team. In addition, to confirm the fitness of the results, they were checked by a panel of experts in the field of health and rehabilitation who did not participate in the research.

### 3.5. Ethical Considerations

*The study was approved by University of Social Welfare and Rehabilitation Sciences in Iran.*

In this study, the researchers considered the following items, including obtaining the necessary formal permission letters from the university. The aim and process of the study were explained to participants, and they signed written informed consent forms to participate in the study; the information was confidential, and the participants' identities were made anonymous. Participants at each stage of the research had the right to withdraw.

## 4. Results

In this study, 26 participants were interviewed. By constant comparative analysis, data from interviews, observations, field notes, and other documents, which resulted in 1,652 open codes, were classified into 42 primary categories and 5 main categories. The main categories were "reactive exposure," "subsiding emotions," "need for comprehensive health recovery," "improvement of normalization (new normality achievement)," and "contextual factors" (Box 1).

**Box 1.** List of Categories and Subcategories

Main Category and Subcategory
<b>1. Reactive exposure</b>
Exposure shock
Nondeliberative relief
Lack of comprehensive health plan
Lack of preparedness
Poor coordination in health service delivery
<b>2. Subsiding emotions</b>
Emerging realities
Lack of social sympathy
<b>3. Need for comprehensive health recovery</b>
Discontinuation of physical health recovery
Lack of sustainable mental health
Striving to naturalize/stabilize livelihood
Need for family reunification
<b>4. Improvement of normalization (new normality achievement)</b>
Participation
Empowerment
<b>5. Contextual factors</b>
Structural factors
Accessibility and feasibility

### 4.1. Reactive Exposure

The occurrence of an incident or a disaster is a tough experience that is accompanied by injuries and damages to lives, property, and health, and it imposes great stress and psychological tension on the victims and other involved individuals. It shocks people, thereby influencing their response and behaviors.

"I was trapped under the rubble, neighbors came to help me. They just pulled me out as soon as they could; suddenly I felt a sharp pain in my back. But they could not find my daughter under the rubble; she was dead, they couldn't help her." [Participant No. 16, a mother].

Reactive exposure includes the reactions and emotion-based behaviors of professionals and nonprofessionals facing a disaster and its impacts; it includes exposure shock, nondeliberative relief, lack of a comprehensive health plan, lack of preparedness, and poor coordination in health service delivery.

### 4.2. Subsiding Emotions

After emotional responses in the early phases after the disaster, a period of time passed, and the lingering concerns of survivors became highlighted.

They complained that their problems remained unresolved, and they still felt in need due to a comparison between what they needed and what they received.

“...They took assistance, but our problems were not resolvable with these assistances. We lost everything, what we built in years. This assistance was like a dress on the deep wound that covers the surface of the wound, but it doesn't help repair.” [Participant No. 16, a mother]

While they felt exhaustion and hopelessness due to physical, psychological, and financial pressures, with the partial recovery of those who were less injured, they experienced mistrust and disappointment. This situation made survivors angry and full of blame.

Participants were unsatisfied with the lack of social acceptance and support (social sympathy) toward victims, especially those who had been physically injured.

“People's view of disabilities is really bad; they look at it as a punishment” [Participant No. 18, a victim with amputated leg]

People living unsatisfied and with a loss of resources over a period of time strove to end these conditions and return to the pre-disaster living conditions that they considered normal.

#### 4.3. Need for Comprehensive Health Recovery

Participants expressed needs and problems which propped not meet their different health demands by relief and response efforts.

“Even now after years, I really do not like to participate in family ceremonies; because we miss our lost loved ones.” [Participant No. 15, a 62-year-old woman who had lost her children in a disaster]

After early relief efforts, victims still needed to follow and complete their physical treatments. However, there was no plan for victim follow-up and referral, and the setup and equipping of centers was slow. Nor was there any active screening to identify the victims. Several fundamental problems interfered with the completion of care for victims in some families, causing individual and family consequences and a long recovery process.

“My husband felt ashamed of my condition. I couldn't do my self-care. I needed somebody take care of me. Now my husband remarried to have his own children...” [Participant No. 15, a 62-year-old woman who had lost her children in a disaster]

“Need for comprehensive health recovery” was the most abstract concept that emerged and the most central category that encompassed other categories and demonstrated relationships between them. This category includes the discontinuation of physical health recovery, a

lack of sustainable mental health, a striving for a naturalized/stabilized livelihood, and a need for family reunification.

#### 4.4. Improvement of Normalization (Achievement of a New Normality)

A disaster was a unique experience that caused huge changes in people's lives. The process that created these changes involved opportunities to participate that fluctuated through different phases of the disaster experience; in some periods of time, this participation faded, and in others, it was highlighted and finally led to cognitive and behavioral changes in the different domains of individual, family, and social states.

“When I came here (the rehabilitation center), I felt better. When I was home, I always remember the bad memories of death of my child, I was crying all the time. But here I am busy, I found good friends, they helped me to adapt; on the other hand, I have a paid work which helped in quality of my life improvement.” [Participant No. 8, a victim]

Participation in training/supportive strategies helped to identify social opportunities for employment and entrepreneurship, to establish social networks and peer learning, which finally led to the achievement of independence, to the experience of new roles, to identification of self-potential, to self-confidence, and to improvements in quality of life, giving a new meaning to the disaster experience.

“Now, it passed time and I thought about the past events I think that God is not cruel; surely there are wisdom reasons in those events. Maybe, God wanted to test our patience in the problems and how we behave in these situations, if we help or spurn each other.” [Participant No. 21, a victim]

Improvement in normalization (achievement of a new normality) was one of the main categories that emerged, and this category included participation and empowerment. Participation and empowerment were the ways by which survivors and their support systems tried to decrease and mitigate the impacts of the incident, improve the achievement of comprehensive health recovery, and increase positive outcomes. The more and more people were effective in using these strategies, the more quick and effective their outcomes and the improvement of normalization.

“If I came here sooner, I could find solutions for my problems, I could stand on my own feet sooner and I didn't feel psychological troubles. My life became on its routine and I didn't tolerate these tensions.” [Participant No. 11, a victim]

#### 4.5. Contextual Factors

Contextual factors were facilitators for or inhibitors of the life recovery process. Contextual factors included the characteristics of the incident, the function of infrastructures, and the cultural context.

Some of the characteristics of the disaster event that were mentioned included the suddenness, extent, severity, type, and time of the incident.

The functioning of the infrastructure included the health care infrastructure and hospitals, which were important in providing, restoring, and maintaining people's health.

"Hospital is so important for a city. When you have a patient, you go there. When the hospital itself is like that, then what? If gold rusts what then can iron do? When people reached to hospital, they were horrified to see its ruins." [Participant No. 6, a father in a disaster area]

The culture, as emphasized by most participants, is as important a factor as decision making. The cultural context involved reactions to disaster, disaster coping strategies and family life management.

"My friend asked me that should she commit suicide. She felt guilty that her kids were dead. I asked her to go to a psychologist, but she refused because she fears her relatives might say she is mad. She said: I don't want our relatives know about it. People think like this." [Participant No. 14, a citizen in a disaster area]

#### 4.6. Life Recovery Process

The starting point of the process was exposure to the incident. This phase actually starts once the event has struck, and it includes the reactions and behaviors of professionals and nonprofessionals in facing the disaster and its impacts. After the strong emotions in the early phases, a period of time passed during which further survivors' concerns needed to be addressed.

After they experienced the striking of the disaster, people strove to achieve comprehensive health recovery as their main concern; this was the main motivator that stimulated the primary strategy of the survivors. This concept was the most abstract concept that emerged and was the most central category, encompassing other categories and demonstrating the relationships between them.

Through the various phases of their experience, participants tried to achieve a comprehensive health recovery. This effort was exerted through participation strategies that fluctuated through different phases of the experience; in some stages, these strategies faded, and in others, they were highlighted, and finally, they led to cognitive and behavioral changes at different levels for the individual, family, and social states. The more and more effective people were at using these strategies, the faster and

more effective their attained outcomes and improvement of normalization (as shown in changes to the horizontal axis/time in Figure 1).

In fact, through this experience, people achieved another level of capability and development (as shown in changes to the vertical axis in Figure 1), and finally, this process led to the achievement of a new normality with indicators including the achievement of independence, an increase in confidence, changes in the quality of life, and the attribution of new meaning to the people's experience.

In brief, this disaster experience was unique and caused tremendous changes. In other words, people who went through this experience were not the same as before, with respect to physical and psychological factors and their family and social lives.

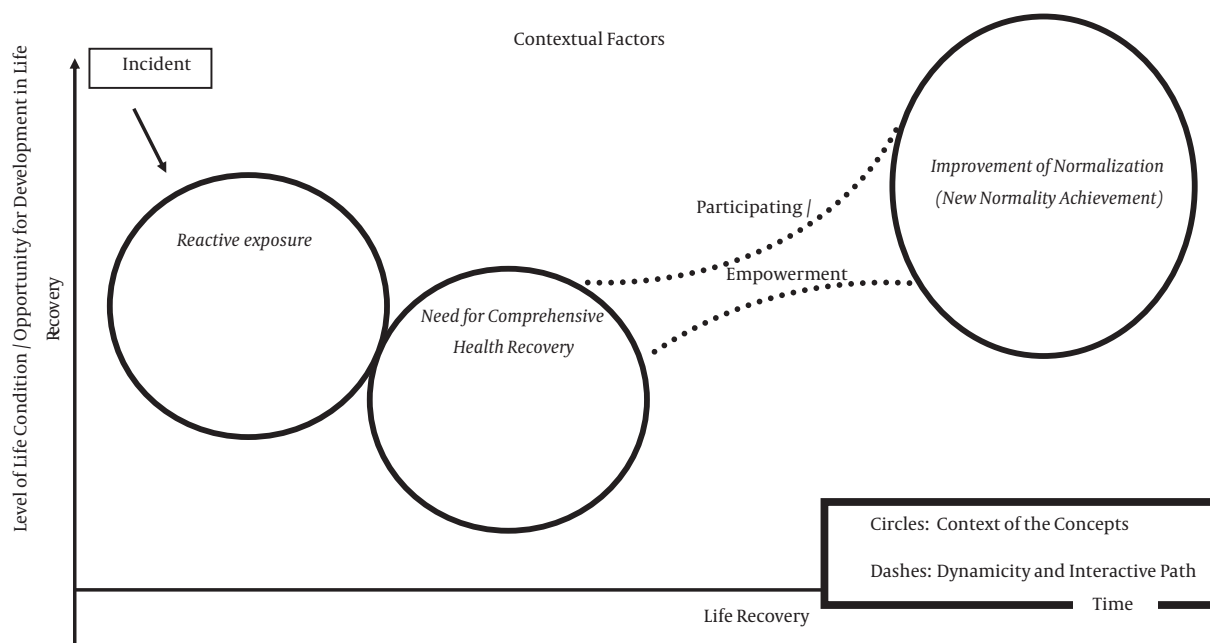
The life recovery process is dynamic, gradual (time-consuming), and progressive and is influenced by various factors.

## 5. Discussion

This study revealed the progression of life recovery that disaster survivors aimed to achieve. Our findings contribute to the exploration of the life recovery process by identifying several primary related concepts. The main categories are "reactive exposure," "subsiding emotions," "need for comprehensive health recovery," "improvement of normalization (new normality achievement)" and "contextual factors." The concept of "reactive exposure" included "exposure shock," "nondeliberative relief," "lack of a comprehensive health plan," "lack of preparedness," and "poor coordination in health service delivery."

All people exposed to a disaster will be impacted to some extent. The findings showed that the event resulted in conditions that instantly changed people's mental image of life and also exposed them to separation, loss, the death of ones beloved and relatives, internal conflict, stress-induced damage, loss of possessions, homelessness, etc.

Immediately after the event, heroic attempts by first responders, either local or professional and most of whom were not well trained or prepared, combined with a lack of standard operational protocols, often resulted in further damages or worsened them, as the literature emphasizes (12, 13). Also, previous studies of the Bam earthquake had pointed out that physicians and responders had not received training for aid, rescue, and treatment in critical conditions (14, 15). Because of emotional reactions and exposure shock in the early phases, advance preparation and standardized protocols can minimize this ineffectiveness and prevent worse casualties (13). Therefore, a comprehensive plan that encompasses a holistic health system

**Figure 1.** Life Recovery After Disasters

Inspired by Wood's model of social reintegration (11).

approach to disaster management will not only help save lives but will also alleviate suffering and injuries and allow the efficient use of resources (9). In a systematic review, Bayntun revealed that the holistic health system approach to disaster management, supported by a resolution passed at the world health assembly in 2011 and which aims to build health system resilience, had not been established (16).

The results of our study showed that survivors felt alone and forgotten after the time lag gap period that exists between the phasing out of humanitarian aid and relief and the initiation of reconstruction, time in which the incident faded from the front pages of the media. During this period, which is referred to in the literature as disillusionment (17), the reality of how life has changed post-disaster becomes ever more apparent; therefore, in recovery, this period may be as essential as the event itself (17). According to what the participants expressed, with the emerging realities and the evaluation of what aids they received related to what they needed, they experienced deficiencies and complained of unmet needs and problems. Living in unsatisfactory existing conditions and recognizing the distance between one's present and the preferred state becomes the drive to transit from a disordered and unbalanced state to an ordered and balanced state. Also, according to the "conservation of resources"

theory, people try to gain and maintain their resources; recovery means repossessing or directly or indirectly replacing what they have lost (17). Therefore, the major goal of post-disaster services should be the replacement of valued resources as soon as possible (18). Survivors' recovery depends on the mobilization of efforts to reverse losses and to return to or achieve a "new" normal day-to-day life (18).

Post-disaster recovery is a complex process influenced by a series of objective, subjective, personal, social, and environmental factors (1, 5, 7), and for as long as the needs of those affected are not dealt with, the consequences of the accident are not released, and recovery is not achieved. The results of this study showed that participants expressed needs and problems that demonstrated that there had been no efforts to deal with the various aspects of health and recovery. Effective recovery should consider the physical, psychological, social, cultural, religious, and economic aspects of people's lives (5, 6).

Participants mentioned a lack of continuity or a delay in physical recovery, which may cause functional disabilities and negative consequences in terms of physical, psychological, and social health (19, 20). Therefore, according to our results and documents, not only should victims be sensitive to completing their care process, but the health system should launch plans to help victims achieve their maximum potential.

Psychologically, almost all survivors expressed some degree of symptoms; the literature also confirms that people experience a wide range of symptoms (21). The study findings also implied a persistence of psychological issues long after the incident as well as a loss of jobs, income, and support. Unresolved financial concerns that were directly or indirectly related to the incident could form a lingering source of stress. Disaster victims in this study exhibited several forms of psychological problems that remained over time; these problems have been less often studied and need to be studied further. Therefore, in planning, the psychosocial concerns (22) and interpersonal interactions (23) that play a vital role in social capital and recovery (6, 23) must be considered.

After disaster strikes, multiple changes happen that affect all aspects of family function (24-26). Participants mentioned conditions such as losses, death, injuries, and long and frequent hospitalizations, which, in line with other documents, resulted in separation and a lack of family integrity, marital conflict, and familial conflict and violence (23, 25, 27). Therefore, interventions to enhance family functions should be considered.

Results showed that survivors were actively involved in trying to restabilize their lives and trying to achieve economic stability, which are holistic and permanent recovery prerequisites (3). Participants described employment as an important factor in the improvement of their livelihood, in financial independence, in quality of life and emotional improvement, and in social interaction and respect. Paid work is documented as an indicator of social reintegration, because it produces economic independence, self-respect, social networks, and quality of life (20, 28). Therefore, there is a need to consider various aspects of survivors' life recovery.

The findings revealed that the experience of a disaster event produced changes in people's personal, familial, and social lives. In other words, after one experiences the process, he or she is not the same with respect to physical, psychological (mental), familial, or social aspects of life. The process by which these changes occurred and which provided new paths of development and empowerment in these domains was participation. In line with previous studies, our results showed that participating in various opportunities, even immediately after the incident, provided the chance for people to use their potential, expand their social networks, be involved with their peers and with self-learning, and facilitate their recovery (20, 29, 30). These opportunities prepared them either to activate and resume their past roles and/or to experience new roles. The experience of these roles and the attainment of a sense of independence developed self-belief and confidence in their capabilities and a changing of their attitudes toward

themselves and their surroundings, and in turn intenerated the meaning of their experience of the incident (5, 17).

People's participation was highlighted more often in some parts of the process than in others. The fluctuating participation of survivors is portrayed as dashes in their life recovery process (Figure 1). Whenever people participated in participative/supportive strategies, they gained a new level of normality. These experiences produced changes in their need for comprehensive health recovery (whose categories included discontinuation of physical health recovery, a lack of sustainable mental health, a striving to naturalize/stabilize one's livelihood, and a need for family reunification); we show these experiences as part of an interactive path in the process.

Progression through the participation strategies was matched with gradual increases in confidence for the achievement of new normality indicators.

According to the results, improvements in normalization (achievement of a new normality) was expressed as an achievement of independence, increasing confidence, improvement in the quality of life, and applying new meanings to the disaster incident.

Other contextual factors in the process, described in this study, included such elements as the characteristics of the incident and the cultural context, which affected the exposure and recovery (3, 31).

### 5.1. Limitations

As is the case in qualitative studies, the number of participants in this study was relatively small, and therefore, the findings are less generalizable. However, this approach requires the researcher to explore the participants' experiences validate such as some techniques mentioned in trustworthiness. Although generalization is not within the scope of this kind of study, the findings should be interpreted with caution because of the different characteristics of the context.

### 5.2. Conclusion

This study exposed the life recovery process after disasters. The results clarified the deep perception of the participants' experiences of life recovery after disaster.

This study clarified the emotion-based reactions and behaviors among locals and professionals and showed how a lack of planning and preparedness may cause the ineffectiveness and inefficiency of services. This exposure, described as "reactive exposure," played an important role in the post-disaster process.

After the emotions subsided, the realities of the changes that had occurred became ever more apparent.

The results suggested that as survivors strove to meet their needs in the various domains of health recovery, this

striving was gradually facilitated by providing opportunities in physical and psychological/emotional recovery follow-up and in providing training and supportive strategies for participating.

Although disaster recovery was a long, arduous, and problematic process, it was progressive and forward-moving, so that it finally produced an improvement of normalization (the achievement of a new normality) with new paths of development and empowerment in the physical, cognitive, family, and social realms. This study also demonstrated some contextual factors in the process.

This study, with its deep perception of the participants' experiences, provides a clear picture of their concerns, process, and responses, and it explores the life recovery process after a disaster. The study, it is hoped, will help to produce faster and more effective responses to disaster survivors.

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### Footnotes

**Authors' Contribution:** Maryam Nakhaei and Hamid Reza Khankeh conceived the study and designed and obtained data. Gholam Reza Masoumi assisted in the conducting of the study and data collection. Mohammad Ali Hosseini and Zohreh Parsa-Yekta participated in data collection and analysis. All authors participated in data analysis and interpretation. Maryam Nakhaei and Hamid Reza Khankeh drafted the manuscript, and all authors contributed to its revision. All authors take responsibility for the paper as a whole.

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### References

- Shimizu M. Resilience in Disaster Management and Public Policy: A Case Study of the Tohoku Disaster. *RHCPP*. 2012;3(4):40-59. doi: [10.1002/rhc3.17](https://doi.org/10.1002/rhc3.17).
- Plough A, Fielding JE, Chandra A, Williams M, Eisenman D, Wells KB, et al. Building community disaster resilience: perspectives from a large urban county department of public health. *Am J Public Health*. 2013;103(7):1190-7. doi: [10.2105/AJPH.2013.301268](https://doi.org/10.2105/AJPH.2013.301268). [PubMed: [23678937](https://pubmed.ncbi.nlm.nih.gov/23678937/)].
- Hyogo framework for action 2005-2015: building the resilience of nations and communities to disasters 2005 Japan: International Strategy for disaster Reduction,; 2005. Available from: <http://www.unisdr.org/2005/wcdr/intergover/official-doc/L-docs/Hyogo-framework-for-action-english.pdf>.
- Abramson DM, Stehling-Ariza T, Park YS, Walsh L, Culp D. Measuring individual disaster recovery: a socioecological framework. *Disaster Med Public Health Prep*. 2010;4 (S1):S46-54. doi: [10.1001/dmp.2010.14](https://doi.org/10.1001/dmp.2010.14). [PubMed: [23105035](https://pubmed.ncbi.nlm.nih.gov/23105035/)].
- Tatsuki S. Long-term Life Recovery Processes Among Survivors of the 1995 Kobe Earthquake: 1999, 2001, 2003, and 2005 Life Recovery Social Survey Results. *JDR*. 2007;2(6):484-501. doi: [10.20965/jdr.2007.p0484](https://doi.org/10.20965/jdr.2007.p0484).
- Sakamoto M, Yamori K. A Study of Life Recovery and Social Capital regarding Disaster Victims -A Case Study of Indian Ocean Tsunami and Central Java Earthquake Recovery. *J Nat Dis Sci*. 2009;31(2):49-56. doi: [10.2328/jnds.31.49](https://doi.org/10.2328/jnds.31.49).
- Khankeh H, Nakhaei M, Masoumi G, Hosseini M, Parsa-Yekta Z, Kurland L, et al. Life recovery after disasters: a qualitative study in the Iranian context. *Prehosp Disaster Med*. 2013;28(6):573-9. doi: [10.1017/S1049023X1300900X](https://doi.org/10.1017/S1049023X1300900X). [PubMed: [24300524](https://pubmed.ncbi.nlm.nih.gov/24300524/)].
- Alipour F, Khankeh HR, Fekrazad H, Kamali M, Rafiey H, Sarrami Foroushani P, et al. Challenges for resuming normal life after earthquake: a qualitative study on rural areas of iran. *PLoS Curr*. 2014;6 doi: [10.1371/currents.dis.b4e84b942500e2f8f260f3471b7ee815](https://doi.org/10.1371/currents.dis.b4e84b942500e2f8f260f3471b7ee815). [PubMed: [25685625](https://pubmed.ncbi.nlm.nih.gov/25685625/)].
- Khankeh HR, Khorasani-Zavareh D, Johanson E, Mohammadi R, Ahmadi F, Mohammadi R. Disaster health-related challenges and requirements: a grounded theory study in Iran. *Prehosp Disaster Med*. 2011;26(3):151-8. doi: [10.1017/S1049023X11006200](https://doi.org/10.1017/S1049023X11006200). [PubMed: [21929828](https://pubmed.ncbi.nlm.nih.gov/21929828/)].
- Corbin JM, Strauss AL. Basics of qualitative research. 3 ed. London: Sage Publications; 2008.
- Wood JP, Connelly DM, Maly MR. 'Getting back to real living': A qualitative study of the process of community reintegration after stroke. *Clin Rehabil*. 2010;24(11):1045-56. doi: [10.1177/0269215510375901](https://doi.org/10.1177/0269215510375901). [PubMed: [20713436](https://pubmed.ncbi.nlm.nih.gov/20713436/)].
- Priebe MM. Spinal cord injuries as a result of earthquakes: lessons from Iran and Pakistan. *J Spinal Cord Med*. 2007;30(4):367-8. [PubMed: [17853659](https://pubmed.ncbi.nlm.nih.gov/17853659/)].
- Rathore FA, Farooq F, Muzammil S, New PW, Ahmad N, Haig AJ. Spinal cord injury management and rehabilitation: highlights and shortcomings from the 2005 earthquake in Pakistan. *Arch Phys Med Rehabil*. 2008;89(3):579-85. doi: [10.1016/j.apmr.2007.09.027](https://doi.org/10.1016/j.apmr.2007.09.027). [PubMed: [18295642](https://pubmed.ncbi.nlm.nih.gov/18295642/)].
- Saghafinia M, Araghizade H, Nafissi N, Asadollahi R. Treatment management in disaster: a review of the Bam earthquake experience. *Prehosp Disaster Med*. 2007;22(6):517-21. [PubMed: [18709940](https://pubmed.ncbi.nlm.nih.gov/18709940/)].
- Motamedi MH, Saghafinia M, Bararani AH, Panahi F. A reassessment and review of the Bam earthquake five years onward: what was done wrong?. *Prehosp Disaster Med*. 2009;24(5):453-60. [PubMed: [20066651](https://pubmed.ncbi.nlm.nih.gov/20066651/)].
- Bayntun C. A health system approach to all-hazards disaster management: A systematic review. *PLoS Curr*. 2012;4:1-13. doi: [10.1371/50081cad5861d](https://doi.org/10.1371/50081cad5861d). [PubMed: [23066519](https://pubmed.ncbi.nlm.nih.gov/23066519/)].
- Ursano RJ, Fullerton CS, Weisaeth L, Raphael B. Textbook of disaster psychiatry. UK: Cambridge University Press; 2007.
- Hobfoll SE. Conservation of resources and disaster in cultural context: the caravans and passageways for resources. *Psychiatry*. 2012;75(3):227-32. doi: [10.1521/psyc.2012.75.3.227](https://doi.org/10.1521/psyc.2012.75.3.227). [PubMed: [22913498](https://pubmed.ncbi.nlm.nih.gov/22913498/)].
- Wen J, Shi YK, Li YP, Yuan P, Wang F. Quality of life, physical diseases, and psychological impairment among survivors 3 years after Wenchuan earthquake: a population based survey. *PLoS One*. 2012;7(8):43081. doi: [10.1371/journal.pone.0043081](https://doi.org/10.1371/journal.pone.0043081). [PubMed: [22937014](https://pubmed.ncbi.nlm.nih.gov/22937014/)].



20. Hu X, Zhang X, Gosney JE, Reinhardt JD, Chen S, Jin H, et al. Analysis of functional status, quality of life and community integration in earthquake survivors with spinal cord injury at hospital discharge and one-year follow-up in the community. *J Rehabil Med*. 2012;**44**(3):200-5. doi: [10.2340/16501977-0944](https://doi.org/10.2340/16501977-0944). [PubMed: [22367060](https://pubmed.ncbi.nlm.nih.gov/22367060/)].
21. Norris FH, Friedman MJ, Watson PJ, Byrne CM, Diaz E, Kaniasty K. 60,000 disaster victims speak: Part I. An empirical review of the empirical literature, 1981-2001. *Psychiatry*. 2002;**65**(3):207-39. [PubMed: [12405079](https://pubmed.ncbi.nlm.nih.gov/12405079/)].
22. Ruzek J, Walser RD, Naugle AE, Litz B, Mennin DS, Polusny MA, et al. Cognitive-behavioral psychology: implications for disaster and terrorism response. *Prehosp Disaster Med*. 2008;**23**(5):397-410. [PubMed: [19189609](https://pubmed.ncbi.nlm.nih.gov/19189609/)].
23. Lowe SR, Rhodes JE, Scoglio AA. Changes in Marital and Partner Relationships in the Aftermath of Hurricane Katrina: An Analysis With Low-Income Women. *Psychol Women Q*. 2012;**36**(3):286-300. doi: [10.1177/0361684311434307](https://doi.org/10.1177/0361684311434307). [PubMed: [23125478](https://pubmed.ncbi.nlm.nih.gov/23125478/)].
24. Wind TR, Fordham M, Komproe IH. Social capital and post-disaster mental health. *Glob Health Action*. 2011;**4** doi: [10.3402/gha.v4i0.6351](https://doi.org/10.3402/gha.v4i0.6351). [PubMed: [21695072](https://pubmed.ncbi.nlm.nih.gov/21695072/)].
25. Nakhaei M, Khankeh HR, Masoumi GR, Hosseini MA, Parsa-Yekta Z, Kurland L, et al. Impact of disaster on women in Iran and implication for emergency nurses volunteering to provide urgent humanitarian aid relief: A qualitative study. *Australas Emerg Nurs J*. 2015;**18**(3):165-72. doi: [10.1016/j.aenj.2015.02.002](https://doi.org/10.1016/j.aenj.2015.02.002). [PubMed: [25891504](https://pubmed.ncbi.nlm.nih.gov/25891504/)].
26. Hackbarth M, Pavkov T, Wetchler J, Flannery M. Natural disasters: an assessment of family resiliency following Hurricane Katrina. *J Marital Fam Ther*. 2012;**38**(2):340-51. doi: [10.1111/j.1752-0606.2011.00227.x](https://doi.org/10.1111/j.1752-0606.2011.00227.x). [PubMed: [22512296](https://pubmed.ncbi.nlm.nih.gov/22512296/)].
27. Chan KL, Zhang Y. Female victimization and intimate partner violence after the May 12, 2008, Sichuan earthquake. *Violence Vict*. 2011;**26**(3):364-76. [PubMed: [21846023](https://pubmed.ncbi.nlm.nih.gov/21846023/)].
28. Tasiemski T, Nielsen S, Wilski M. Quality of life in people with spinal cord injury-earthquake survivors from Sichuan Province in China. *Family life*. 2010;**21**(2):28-36.
29. Solomon P. Peer support/peer provided services underlying processes, benefits, and critical ingredients. *Psychiatr Rehabil J*. 2004;**27**(4):392-401. [PubMed: [15222150](https://pubmed.ncbi.nlm.nih.gov/15222150/)].
30. Karunasena G, Rameezdeen R. Post-disaster housing reconstruction. *IJDRBE*. 2010;**1**(2):173-91. doi: [10.1108/17595901011056631](https://doi.org/10.1108/17595901011056631).
31. Ritchie EC, Watson PJ, Friedman MJ. Interventions following mass violence and disasters: Strategies for mental health practice. NY: Guilford Press; 2007.