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Being a Mother in the Shadow of the Earthquake: A Grounded Theory of Maternal Experiences of Earthquake-Affected Women

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ABSTRACT

Background: Understanding earthquake effects on pregnancy and motherhood can guide protective measures. This study aims to explore maternal experiences of women affected by earthquakes to guide responsive healthcare systems.

Methods: The classic Straussian-grounded theory method was used. Participants were 14 maternal women affected by the February 6 earthquake. They were interviewed online from September 2023 to June 2024 using semi-structured questionnaire. Data were analyzed using a systematic, inductive approach with constant comparative methods and three-stage coding, ensuring rigor.

Results: The core category was 'Becoming a Mother in the Shadow of the Earthquake.' Women reported "losses shaping the maternal journey," including basic needs, safety, materials, and moral values. As "being a mother during disaster," motherhood involved fragmented experiences, psychological disruption with depression, hypervigilance, and post-traumatic evolution with increased confidence. "Resources needed for resilience" comprised support, maternal strength, trauma-informed care, and coping methods. They described "systematic inadequacies in post-disaster recovery," emphasizing healthcare services to address maternal needs and provide outreach.

Conclusion: This study highlights the earthquake impact on maternal women and the necessary healthcare services. Healthcare services must organize psychological support providing on-site care, create community networks, and build personnel capacity for resilience-building and trauma-informed care, which understands vulnerable situations of women.

Clinical Trial Registration: It is not necessaary. Because, it was designed as grounded theory.

1 | Background

Annually, a substantial number of individuals worldwide are confronted with natural or humanitarian catastrophes which frequently result in devastating consequences such as death, severe injuries, anguish, and financial losses (Marshall et al. 2020). Earthquakes are among the most hazardous natural disasters due to their unpredictability and destructive power, significantly endangering public health by causing death, disability, and mental health issues such post-traumatic stress symptoms and depression (Kino et al. 2020; Mavrouli et al. 2023). During the past century, 1150 major fatal earthquakes have occurred in 75 countries (Yoosefi Lebni et al. 2020). In Turkey, the earthquakes of magnitudes 7.7 and 7.6 on February 6th, 2023 caused extensive damage and casualties over 108,812 km^2, affecting 11 provinces and neighboring Syria. More than 50,000 people were killed

and over 115,000 were injured. The destruction of living spaces, resulting in physical injuries and enduring psychological impacts, has created significant public health problems (UNFPA 2023).

Natural disasters and earthquakes disproportionately affect vulnerable groups, such as women, children, and ethnic minorities (Cutter 2017). During such events, women face heightened risks to sexual and reproductive health. Historically, women have faced increased violence, gender inequality, limited service access, more unwanted pregnancies, and deteriorating maternal and infant health after major earthquakes (Amarpoor Mesrkanlou et al. 2023; Yoosefi Lebni et al. 2020). After an earthquake, women in the maternal process encounter significant challenges for themselves and their babies. This period demands adaptation due to rapid physical, psychological, social, economic, and familial changes, making it stressful despite the joy of motherhood (Giarratano et al. 2019; Yalniz Dilcen et al. 2024). Post-earthquake stress and trauma are known to significantly affect women's mental health during pregnancy, childbirth, and the postpartum period (Yalniz Dilcen et al. 2024). The adverse effects are more severe in underdeveloped or developing countries. The earthquake, affecting 11 Turkish provinces, disrupted prenatal and postnatal care due to damaged healthcare facilities and limited resources. Women have poor living conditions in container cities, which may negatively affect them and their infants, with unclean water, inadequate sanitation, and poor hygiene (UNFPA 2023). However, no study has explored the maternal experiences of Turkish disaster victims in depth.

The World Health Organization (WHO) (2019) has outlined a Health Emergency and Disaster Risk Management (Health EDRM) framework that highlights the importance of risk evaluation, communication, and mitigation to enhance prevention, preparedness, response, and recovery while also fostering resilience in communities and health systems. The framework suggests the following: (1) clarifying governmental responsibilities and enhancing Health EDRM capabilities; (2) creating efficient coordination systems; (3) planning for workforce, training, and personnel safety; (4) facilitating implementation, capacity building, and contingency funding; (5) performing risk assessments, surveillance, and research; (6) ensuring effective communication across sectors and with the public; (7) prioritizing the security of health facilities and infrastructure; (8) acknowledging healthcare services within Health EDRM; (9) bolstering local workforce and community planning; and (10) tracking progress, risks, and strategy implementation. Therefore, national health systems must include well-trained and adequately equipped healthcare teams capable of providing quality healthcare services, even under the most challenging conditions. Supported by well-trained professionals, emergency preparedness plans are essential to guarantee sexual, reproductive, maternal, newborn, child, and adolescent health (Rena Geibel 2012). Nurses and midwives who continue to perform their duties without interruption after an earthquake must carefully assess and address women's reproductive health issues in the provision of healthcare services. A recent review highlights a persistent discrepancy between published guideline recommendations which are about sexual and reproductive healthcare and their actual implementation during disasters. The review also underscores the need for additional research and a thorough evaluation of post-disaster recovery to enhance service delivery in disaster and crisis situations (Stephens and Lassa 2020). Understanding the effects of earthquakes on pregnancy and motherhood can guide the development of protective and remedial measures for women during this period. Based on the identified data, planning actions and initiatives related to pregnancy and motherhood as part of earthquake preparedness is of strategic importance. Therefore, the present study was conducted to explore maternal experiences (pregnancy, childbirth, and postpartum period) of earthquake-affected women. It is thought that the results of this study will not only present the effects of the earthquake on maternal experience at the national level, but will also be a guide for other countries to use in the process of structuring their national health systems in terms of the evaluation of existing health systems, earthquake preparation, and post-earthquake management processes. The present study discusses how women's maternal experiences who experienced the earthquake should be integrated into health services.

2 | Methods

2.1 | Design

The classic Straussian grounded theory method was used in this study. This method is based on symbolic interaction and provides a conceptual framework that explains some previously unknown results with each other, based on data collected from individuals about their experiences with the social environment. It is described as the best qualitative research design to clarify complex issues that require deeper research (Strauss and Corbin 1998). Grounded theory examines people's experiences to understand how individuals react to events or tackle problems (Strauss and Corbin 1990). It is an appropriate approach for exploring social processes and examining areas with limited knowledge. In Turkey, research in this domain is sparse, and understanding women's maternal experiences requires consideration of the social context. Grounded theory aims to develop theoretical models that reflect individuals' views on a particular phenomenon and the methods employed to address or manage the issue (Dellve et al. 2002). This approach allows researchers to elucidate the nature of women's experiences and personal viewpoints on promoting maternal health during and after earthquakes. Therefore, grounded theory is especially suited to the current study, which aims to thoroughly explore and elucidate, using a model framework, the connections between concepts in women's social lives concerning their maternal experiences during and after the earthquake. The conduct and reporting of this study were in line with the consolidated criteria for reporting qualitative research (COREQ) (Tong et al. 2007).

2.2 | Setting and Participant

The study was conducted in 11 Turkish cities affected by the February 6 earthquake. Participants were women who met certain eligibility criteria: they had to (1) have any maternal period at or after the earthquake, and (2) volunteer to participate in the study. No exclusion criteria were applied. Given the earthquake's extensive area and unique nature, researchers employed the snowball method for recruitment. Midwives working in earthquake-affected areas were contacted through the

association. The midwives provided information about the study to the maternal women. Interested maternal women contacted the researchers. Initially, 19 women were approached, but five were ultimately excluded. Four of these women declined interviews due to severe earthquake-related trauma, while one became unreachable after initially agreeing to participate. Finally, the study comprised 14 women, providing sufficient data to reach saturation. Participants were approached considering factors such as parity, age, educational level and maternity stage (pregnancy, birth, and postnatal) during the earthquake. This diversity in maternal characteristics ensured a broader range of maternal experiences.

Theoretical sampling, aligned with the grounded theory design, was also employed. This method involves the researcher determining what data to collect and where to find it, aiming to generate a theory (Strauss and Corbin 1998). After the first seven interviews revealed some women have no permanent earthquake-related trauma, the new participants formed a theoretical sample to explore their coping mechanisms and contributing factors. In qualitative research, sampling continues until concepts and processes addressing the research question begin to repeat and no new information emerged from the interviews, indicating saturation (Creswell 2018). For this study, theoretical saturation was achieved with 14 earthquake-affected maternal women.

The participants' mean age was 28.21 years, ranging from 19 to 37. Educational backgrounds varied, with three individuals having completed primary school, five reaching high school level, and the majority attaining undergraduate education. Most participants were housewives. Ten were experiencing their first pregnancy, and many were maternal women during the earthquake event. In the aftermath, they resided in various locations or cities as guests. Six participants experienced material losses, including money, homes, and vehicles, while fews suffered the loss of friends, family members, or relatives (Table 1).

2.3 | Collection

Data were collected through online interviews conducted from September 2023 to June 2024. These sessions, lasting 45–60 min, took place in quiet settings and were recorded. Participants provided their informed, written consent before the interviews. A researcher (X), who was female, had a PhD degree in women's healthcare nursing, and was trained in qualitative research, conducted each interview once a time. There was no prior relationship between the interviewer and the participants.

Information was collected using a descriptive form covering sociodemographic details (e.g., age, education) and obstetrical characteristics (e.g., parity, maternal period). Additionally, a semi-structured interview guide, developed by the researchers, was employed. This guide included questions about the participants' earthquake experiences, their maternal experiences post-earthquake, and their needs during this time. After the analysis of the first seven interviews, the interview guide was revised according to the categories of data revealed, and dimensions addressing factors that help cope with the effects of the earthquake were added (see final interview guide in Table 2). The interviews began with an open-ended prompt: "Please tell us about your experiences as an earthquake-affected woman during your maternal period." Follow-up questions probed further into their experiences and needs (Table 2). Participants were encouraged to speak freely about their experiences. The audio-recorded interviews were transcribed verbatim and verified for accuracy.

2.4 | Strategy

The present study employed a systematic, inductive, and iterative methodology and a constant comparative approach to generate theoretical categories that the researchers did not predetermine. Data were analyzed using open, axial, and selective coding (Strauss and Corbin 1998). Open coding was carried out by reading the transcribed interviews in a way that answered the question 'What is here?' Concepts were defined, and codes were created. The axial coding process involves discovering the connections between the various components of the coded data. Strauss (1987) proposes that axial coding should focus on aspects such as preceding circumstances, the interactions between individuals, approaches, tactics, and the outcomes that result. Axial coding was performed more abstractly, considering the similar and different aspects of the codes obtained, and categories were created using axial coding. Selective coding provided more abstract categories encompassing all the categories that emerged in the last step. In this final stage, we aimed to create a conceptual framework that covered all categories and the relationships between them. During data analysis, the researchers (X, X) used the constant comparative method, considering the similarities and differences between the emerging categories. This method enables theory development by considering all data variations (Strauss and Corbin 1998). In case of any coding inconsistency during the analysis process, the researchers (X, X) reached a common consensus through discussion.

2.5 | Rigor

The research employed the TACT framework (Trustworthiness, Auditability, Credibility, and Transferability) to ensure rigor (Daniel 2019). Trustworthiness relates to the level of confidence in the data, findings interpretation, and methods used to maintain study quality and reliability. A semi-structured interview form was adapted conceptually to align with the research purpose and relevant literature. The study utilized a constant comparative method for data analysis. Auditability ensures an accurate representation of participants' experiences. To achieve this, interviewees were asked to verify or refute their statements in the transcripts post-interview. Credibility refers to data reliability. The researchers transcribed interviews verbatim and incorporated direct quotes in the analysis, which was meticulously conducted by all team members. Transferability involves making provisional judgments about the applicability of results in comparable settings. This research employed an in-depth interview approach to gather multiple data points; all female participants provided unrestricted responses and detailed accounts of their experiences.

TABLE 1 | General information of high-risk pregnant women ($N = 219$).

Characteristics	*n*	(%)	Mean	SD	Acceptance of pregnancy M ± SD	t/F/r (p)
Educational level						
Primary school	72	32.9			24.22 (0.77)	0.062 (0.940)
High school	95	43.4			23.94 (0.57)	
Undergraduate and above	52	23.7			23.90 (0.65)	
Working status						
Not working	138	63.0			24.13 (6.27)	0.370 (0.711)
Working	81	37.8			23.83 (4.71)	
Educational level of partner						
Primary school	66	30.1			24.24 (7.50)	0.365 (0.694)
High school	91	41.6			23.63 (4.90)	
Undergraduate and above	62	28.3			24.37 (4.66)	
Perception of income level						
Low	60	27.4			24.36 (6.61)	0.801 (0450)
Moderate	138	63.0			23.69 (5.30)	
High	21	9.6			25.23 (5.88)	
Family type						
Nuclear family	190	86.8			24.00 (5.61)	−0.146(0.884)
Extended family	29	13.2			24.17 (6.59)	
Wanted pregnancy status						
Yes	192	87.7			23.32 (5.28)	−5.116 (0.00)*
No	27	12.3			29.03 (6.42)	
Planned pregnancy						
Yes	118	53.9			22.64 (5.73)	−3.984 (0.00)*
No	101	46.1			25.64 (5.33)	
Parity						
Primiparous	61	27.9			22.32 (5.41)	−2.764 (0.006)*
Multiparous	158	72.1			24.68 (5.74)	
Age			28.30 (17–51)	5.50		0.033 (0.629)
Gestational age			30.19 (8–39)	5.38		−0.117 (0.084)
Number of pregnancy			2.44 (1–7)	1.32		0.282 (0.00)*
Number of loss			0.30 (0–3)	0.56		0.126 (0.064)
Number of living child			1.15 (0–7)	1.11		0.288 (0.00)*
Overall score of the acceptance of pregnancy					24.53 ± 5.83	
Overall score of prenatal distress					11.63 ± 4.96	
Overall score of sense of coherence					54.43 ± 7.49	

2.6 | Ethical Considerations

The Ethics Committee of Akdeniz University granted approval (approval date: 13.09.2023, decision number: KAEK-719) for the study. Participants were briefed on the research, and those who willingly chose to take part provided both verbal and written informed consent by e-mail. The research was conducted in line with the principles outlined in the Declaration of Helsinki. The study identified that women require professional psychological assistance through health services.

3 | Results

The core category 'Becoming a Mother in the Shadow of the Earthquake' was derived from the data and comprised four

TABLE 2 | Interview guide.

Main questions
1. Please tell us about your experiences during the earthquake.
1. How was the being pregnant, having given birth, or in the postpartum period (whatever period the woman was in) at the time of an earthquake?
1. What were your conditions from the moment of the earthquake to today?
1. How affected are your conditions from the moment of the earthquake until today's pregnancy, birth, and the postpartum period (whatever stage the woman is at)?

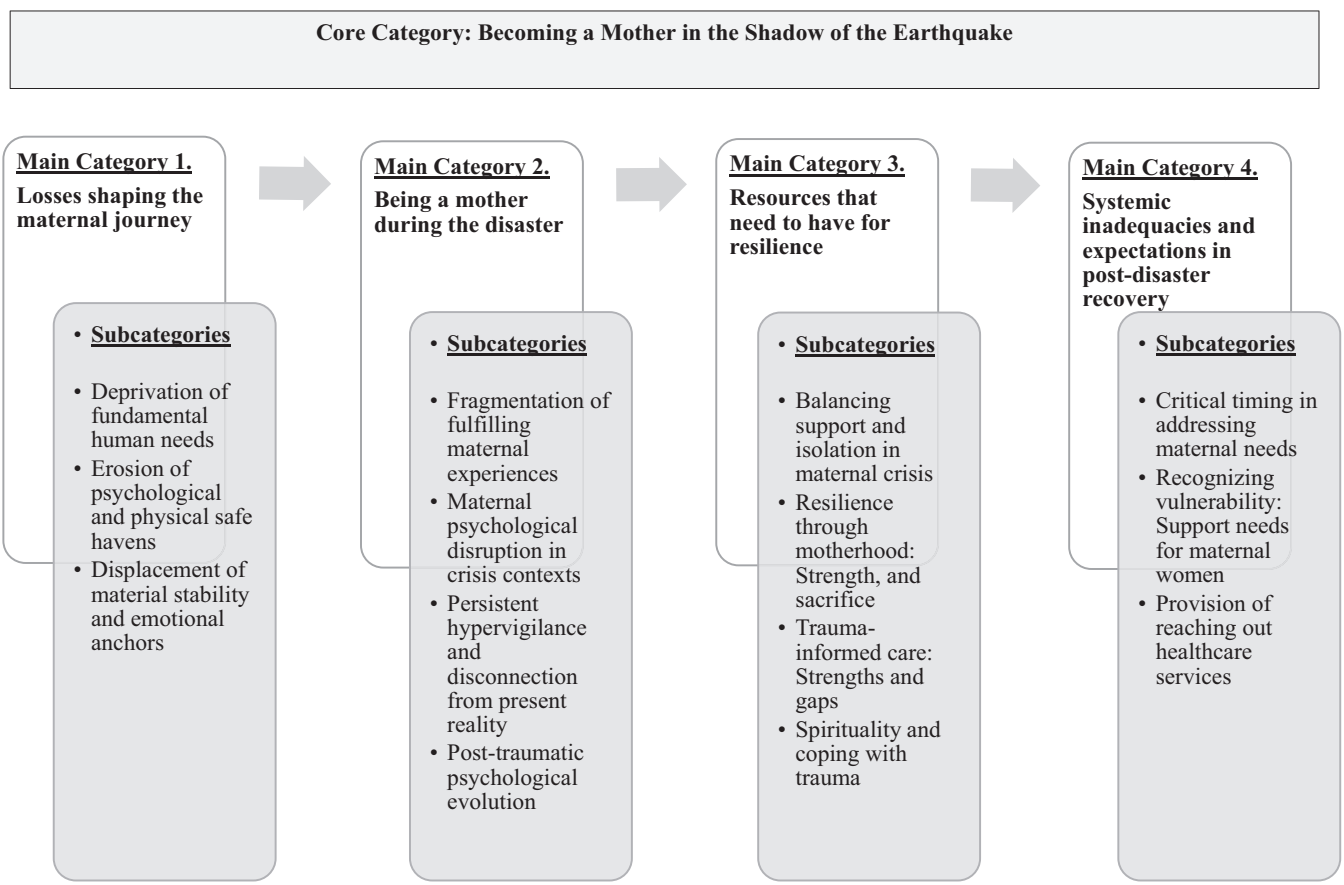

FIGURE 1 | Conceptual framework of the categories which are related to "becoming a mother in the shadow of the earthquake."

main categories and 15 subcategories (Figure 1). The main categories were experienced losses, persistent effects, sources of resilience, and expectations from the system. Women faced challenges in accessing fundamental necessities, including privacy, comfort, and material, emotional, and value-related losses. The earthquake disrupted the healthy maternal journey, causing psychological trauma, heightened alertness, attempts to create a safe environment, and personal growth. Resilience was fostered through emotional and material support from loved ones, coping abilities, the significance attached to motherhood and the baby, care quality, and spiritual beliefs. Women expressed their expectations from the system as being prioritized within a system, organized service delivery, and not only the existence of accessible healthcare services, but also the ability to reach these services for women. The category of the framework is presented in Table 3.

3.1 | Main Category: Losses Shaping the Maternal Journey

The losses that shaped the maternal expereinces of women during and after the earthquake were characterized as the inability to access basic human needs, the loss of comfort zones, and material and emotional losses.

3.1.1 | Subcategory: Deprivation of Fundamental Human Needs

Many women reported living in temporary shelters like tents or containers for extended periods following the earthquake. However, they struggled to access essential necessities such

TABLE 3 | Category framework of the study.

Main categories	Sub-categories	Quotations
Losses shaping the maternal journey	Deprivation of fundamental human needs	• *We had nothing to eat, the aid did not arrive, and we had a hard time. We were in the village. We slept in the greenhouse, we put the mattresses there (Interviewee E)*
		• *I was able to take a bath 13 days later. There was no water. The water was frozen. We carried it with our hands. (Interviewee J)*
	Erosion of psychological and physical safe havens	• *After the earthquake, we moved to a relative's house to create safe areas for ourselves and lived there for a long time. Living with relatives or extended family caused a loss of privacy and disruption of comfort. I felt more deficiencies for attention during the postpartum period due to not being able to have close relationships with my husband and being in a crowded environment. (Interviewee B)*
		• *Efforts to pay attention to every move, having to live in the same place with people you don't know, being in a place where you feel you don't belong.* (*Interviewee C*)
		• *Although everything was great and the family that opened their house to us was very caring, moving to a foreign house in a city where you don't belong made me very sad, I had constant crying fits.* (*Interviewee D*)
	Displacement of material stability and emotional anchors	• *Deaths, loss of values. It made us very sad to see that there was no fair distribution of aid. (Interviewee B)*
		• *We think that there was a moral collapse in the earthquake. Thieves, looters, unfortunately in this process. We also saw those who ended humanity and gave up hope on people. (Interviewee I)*
		• *Since we did not lose our homes, we did not lose our lives, we did not lose our loved ones, the process was more positive. (Interviewee A)*
Being a mother during the disaster	Fragmentation of fulfilling maternal experiences	• *I had a traumatic experience due to the trauma I experienced. I was more depressed during the postpartum period. I think there are traces of trauma in my baby, such as my baby jumping all the time, and waking up crying from sleep. (Interviewee D)*
		• *I did not feel like I was a mother during pregnancy, I was not ready, and when the earthquake happened, I completely broke down. I experienced the feeling of transitioning to motherhood in a delayed way during the postpartum period. She had problems breastfeeding, we got in between with formula, which made the process of taking the breast difficult (Interviewee A)*
	Maternal psychological disruption in crisis contexts	• *I was sitting and crying, I felt alone in the crowd. I felt vulnerable. (Interviewee F).*
		• *I was crying all the time, not during the event but afterward. I can't leave my children. If something were to happen, I want them to be with me. I'm afraid of losing them. I wasn't affected when I was caught in an earthquake in a place I had no memories of. But when I went to the city where I spent my childhood and could not see the roads and houses I knew, it affected me deeply.* (*Interviewee H).*

(Continues)

TABLE 3 | (Continued)

Main categories	Sub-categories	Quotations
Persistent hypervigilance and disconnection from present reality		• *Since earthquakes come with noise, you are always on alert at the slightest noise, you live with anxiety and fear. My head spins, is there an earthquake, that is the first option that comes to my mind. (Interviewee J)*
		• *I did not sleep at all that night in the hospital after my birth. The sounds of the machines were always a warning to me, I wondered if there would be an earthquake. I am still not in my house, this situation negatively affected my postpartum period (Interviewee K).*
Post-traumatic psychological evolution		• *The earthquake improved me. The struggle I did that night increased my self-confidence and I now feel strong because of the feeling of success. I think I can handle many things now. (Interviewee B)*
		• *I gained flexibility in the post-earthquake period. Before I was obsessed with doing everything as it should be, after that, I lived with whatever happened at that moment and didn't mind. (Interviewee H)*
Resources that need to have for resilience	Balancing support and isolation in maternal crisis	• *Living together with the family and the support of the spouse were very important. Feeling understood by the close circle, having their needs met and being valued created resilience in them. It allowed them to start the day positively and end the day positively. During that period, the fact that even people they did not know noticed and cared about my needs because I was pregnant was seen as the main element in getting through this process. (Interviewee B)*
		• *Although I was psychologically affected very badly by the earthquake and the period after, my husband ensured that my pregnancy went well during this period with his support. (Interviewee C)*
	Resilience through motherhood: Strength, and sacrifice	• *I lived focused on the baby, I paid attention to everything, it was seen as a consolation and support (Interviewee D)*
		• *The birth of my baby calmed me down. It was very good for me. I focused on being a mother. (Interviewee E)*

(Continues)

TABLE 3 | (Continued)

Main categories	Sub-categories	Quotations
Trauma-informed care: Strengths and gaps		• *My greatest luck was the doctor I gave birth to. The doctor in the city I went to. He gave me caring care without ignoring the earthquake and its effects, giving detailed information, empathic approach, understanding, feeling understood, giving more information than necessary, and giving confidence. (Interviewee D)*
		• *I always felt the endless support of the entire team during the birth process. They held my hand and made me feel that they wanted to help me. When I remember my birth now, the only scenes that come to mind are the scenes of their support. (Interviewee G)*
Spirituality and coping with trauma		• *I turned to prayer. I couldn't even tell my troubles to the closest person. I can't feel close to anyone. I would open up to God during prayers. (Interviewee E)*
		• *We had returned to nature. We were taking walks. Even the angle of the flower was giving us hope. (Interviewee G)*
Systemic inadequacies and expectations in post-disaster recovery	Critical timing in addressing maternal needs	• *The aid was not delivered in an organized manner. We are an earthquake country. Even shrouds could not be found to bury our people. They were buried in sacks. We should have been prepared for this. It is not the earthquake that kills people, it is the system. First aid training should be given. (Interviewee I)*
	Recognizing vulnerability: Support needs for maternal women	• *It should be known that pregnant women are a priority, the health system should be aware of this. I had back pain, I called the emergency room, and we got responses like if they can walk, they can come, we can't come. (Interviewee E)*
		• *Nobody cares if you are pregnant. You go to the municipality, you go to the district governor's office. Nobody tried to help me because I was pregnant. (Interviewee L)*
	Provision of reaching out healthcare services	• *If you do not take care of your own health, no one can reach you right now. No one called for vaccinations or anything like that. I got my child vaccinated with my own efforts. I would have liked midwives and nurses to go door to door in the old-fashioned way. I would have liked them to reach us, they would not make us feel helpless. I knew I had a vaginal infection, but it did not seem possible for me to reach the hospital. While I could not reach them, they could reach us. In this way, our needs would have been met. (Interviewee M)*
		• *We could not reach any doctor or hospital after the earthquake. I had injections so that my baby would not fall. Since there were no doctors or nurses I could reach, I gave my injections at home as much as I watched on the internet. I experienced the pain of my stitches for 45 days. No one examined me after the birth. I even tried to take care of my stitches with my own efforts. (Interviewee B)*

as water, food, sanitation facilities, and heating even in these accommodations. They highlighted that communal facilities in tent cities and container settlements, particularly toilets and bathrooms, led to poor hygiene conditions. Additionally, there was a lack of adequate equipment for heating and water supply. Therefore, they mentioned their experiences in which they had to personally transport water and seek warmth in vehicles due to freezing temperatures.

> "Thirty of us, all strangers, took shelter in the same area. We had no food to eat or warm up for. We thought the apocalypse had broken out, and they had forgotten us here. The aid arrived 3–4 days later. Toilets and bathrooms were luxuries for us." (Interviewee G)

3.1.2 | Subcategory: Erosion of Psychological and Physical Safe Havens

Women who were displaced from their most secure environments reported inhabiting less pleasant temporary shelters and small dwellings, or considering moving to different urban areas, lodging with familiar individuals or unknown persons. The loss of privacy, discomfort, and a sense of not belonging were common experiences in these settings. Some women reported feeling more psychologically distressed due to their inability to feel at home anywhere outside their original residences. Furthermore, certain women expressed negative impacts stemming from the inability to maintain intimate relationships with their spouses in these new environments, particularly during pregnancy and the postpartum period.

> "We tried to create a living space for ourselves with our means. Sleeping in a small area with a crowd of people was something that lacked privacy."(Interviewee D)

3.1.3 | Subcategory: Displacement of Material Stability and Emotional Anchors

Many participants lost their homes, jobs, and family during the earthquake. Women, who stated that their experiences were shaped by the state of loss in particular, emphasized that they got through the process more positively because they did not experience any material or moral loss. The type and number of losses they experienced varied from woman to woman, and some women lost all of their remaining families (mother, father, and siblings) and experienced pregnancy during this process. They stated that those who lost their relatives experienced this process more traumatically. They also stated that they were negatively affected by the loss of value they experienced when they were exposed to situations such as unfair aid distribution after the earthquake, and excessive price increases in earthquake zones.

> "I lost my beloved mother-in-law. I lost my house. My husband had lost her job, and we had financial difficulties for a long time. After the earthquake, everything became very expensive, which made it more difficult to access everything. However, it should not have been like this." (Interviewee C)

3.2 | Category: Being a Mother During the Disaster

Women described becoming maternal women during an earthquake as a disruption in the healthy and satisfying maternal process they had experienced during this period, a traumatized maternal psychology, being on the alert instead of being in the moment, and experiencing psychological growth.

3.2.1 | Subcategory: Fragmentation of Fulfilling Maternal Experiences

Women often stated that they experienced deterioration in their health (often contractions, pain, gestational hypertension, and vaginal infection) and the health of their babies during pregnancy and that they had difficulties in breastfeeding and coping with postpartum psychology in the postpartum period. They stated that they could not focus on their pregnancies due to crying crises, trauma, and losses they experienced during pregnancy; that they could not communicate adequately with their babies; that they could not prepare for the birth process; and that they experienced intense fear of birth and the hospital environment due to the loss of the expression of a safe space after the earthquake.

> "The health problems I experienced during my pregnancy prolonged my postpartum recovery period. In addition, I had problems with breastfeeding because I was not well psychologically, I did not have milk, and I did not believe that my baby would take it either. I felt inadequate. I was only able to breastfeed my baby for one or two months." (Interviewee B)

3.2.2 | Subcategory: Maternal Psychological Disruption in Crisis Contexts

Women stated that they often had crying fits for no reason and suddenly because they constantly felt fear of losing loved ones, hopeless about the future, and more depressed. Those who experienced losses during the process experienced deep mourning and stated that they wanted to be isolated, and felt lonely even in a crowd. Women also emphasized that the traumatic processes they experienced after the earthquake frequently came before their eyes that they relived those processes in their minds over and over again, and that they often had sleepless nights (because the earthquake occurred in the early morning). Some women also stated that they felt guilty about negatively affecting their babies because of these severe stress they experienced after the earthquake, or left their families in the earthquake zone and move another city which lead to experienced delayed mourning, and confronted the trauma late when they returned to the earthquake zones.

> "I'm questioning, I'm questioning everything, I don't know what I want. I'm thinking, should I live here? I don't feel happy." (Interviewee D)

3.2.3 | Subcategory: Persistent Hypervigilance and Disconnection From Present Reality

They stated that after the earthquake, they were intensely on guard for an earthquake at any moment; they tried to create safe areas for themselves, and therefore they could not be present. They stated that they tried to predict an earthquake by associating any sound, light, or noise with the earthquake, and that they could not feel safe anywhere because of the fear. Therefore, being in the hospital caused them to experience extreme fear during the birth process, or they did not sleep and waited on guard during the hospital stay after birth. Women who could not stay alone at home due to their fear of experiencing problems, such as going through the postpartum period uncomfortable, not being able to be close to their husbands, and feeling psychologically alone during this process.

> "My birth experience was poor. My dilation was very good, but it took so long that I had many stitches. I was afraid of an earthquake during my birth and I was afraid of dying. Because giving birth in a hospital did not mean giving birth in a safe area for me." (Interviewee L)

3.2.4 | Subcategory: Post-Traumatic Psychological Evolution

Although many women expressed negative consequences from trauma, some women reported positive outcomes following the earthquake and its aftermath. These women noted an increase in their self-confidence, feeling more resilient and capable of handling various challenges. They also overcame what they had previously perceived as a personal weakness. The difficulties they faced were emphasized to provide their personal growth, including enhanced flexibility and improved mothering abilities. Additionally, these women reported feeling less anxious about their childbirth. They also mentioned a shift in their life perspective and a sense of increased maturity resulting from the successful navigation of challenging circumstances.

> "Before the earthquake, I was very afraid of giving birth; after the earthquake, I said what was this, and I gave birth so easily because we saw the worst. We were outside of the comfort zone. My perspective on life changed." (Interviewee G)

3.3 | Category: Resources That Needs to Have for Resilience

Women emphasized the importance of the multidimensional support they perceived from their immediate environment, the meaning attributed to the baby and motherhood, the quality of care, and the ability to cope with the difficulties experienced during and after the earthquake.

3.3.1 | Subcategory: Balancing Support and Isolation in Maternal Crisis

Women often stated that their spouses and families often provided support, and they also stated that they experienced more needs being considered, recognized, and met by the external circle because they were maternal women. They were able to receive many types of materials and moral support during the process, and their comfort was maintained by taking on many household chores. Although living together sometimes causes negative feelings to be transferred for many reasons, they often emphasized the importance of being together, feeling complete, and supporting each other. Women who went out of town and were away from their families or lost their entire families in the earthquake were deprived of these types of support and therefore stated that they experienced the process negatively, such as feeling lonely and isolated.

> "I was never left alone after giving birth, I was given physical help, I could not be alone at night, and they were with me at night when my husband was not there. It was very important for me that all my physical and psychological needs were recognized and met." (Interviewee E)

3.3.2 | Subcategory: Resilience Through Motherhood: Strength and Sacrifice

Women often stated that their babies gave them the strength to fight, especially after they experienced processes such as communicating with their babies and being in contact with them. They emphasized the desire to sacrifice themselves, be good for their babies, and be strong. Women who discovered motherhood with the birth of their babies also stated that they focused on their babies by moving away from the traumatic effects of the process and that this was good for them.

> "Trying to hold on to the baby to fight for it. Life goes on. I try to do something for my baby to fix myself. To hold on to life, to be a good mother to her." (Interviewee C)

3.3.3 | Subcategory: Trauma-Informed Care: Strengths and Gaps

Providing motivation, providing a normal perspective regarding the process, and providing a comfortable and safe physical space during the birth were described as important elements of care that increased women's resilience during the process. They also emphasized the importance of providing empathic care while being aware of the impact of being an earthquake victim and the trauma they experienced. However, women often could not benefit from care services related to pregnancy and the postpartum period, and were often only able to obtain as much information as they could during hospital visits. In addition, some women reported that they remembered their maternal processes negatively because of the negative aspects of existing health

services, the inadequacy and scope of pregnancy and postpartum care services, and the lack of awareness of trauma-informed care in the birth unit.

> "I wanted to walk during the birth. She (health care professional) didn't let me. She accused me of harming the baby. I still feel anger when I remember them. At that moment, another nurse asked me to stop arguing with her, she defended my wishes. This was very valuable to me. She respected me and cared about my wishes." (Interviewee E)

3.3.4 | Subcategory: Spirituality and Coping With Trauma

Some women stated that they increased their endurance of the process with their spirituality as well as their own individual characteristics. Women who stated that they were often flexible in life stated that they lived life in their flow, and therefore did not allow the effects of the earthquake to remain on them. In addition, women stated that they experienced these processes with minimal trauma thanks to their awareness and expert knowledge about the psychological effects of the earthquake and the subsequent process on themselves or their babies. They stated that they turned to religion, prayed, and prayed to cope with the traumatic effect of the earthquake and the subsequent process and coped with the constant anxiety about the process with a fatalistic approach.

> "I turned to prayer. I cannot even tell my troubles to my closest person. I cannot feel close to anyone. I was opening up my troubles and heart to God in prayer." (Interviewee M)

3.4 | Category: Systemic Inadequacies and Expectations in Post-Disaster Recovery

To navigate the aftermath of the earthquake with minimal trauma, women classified their expectations from the system into several categories: timely fulfillment of basic human needs, vulnerable group-aware healthcare, and the provision of accessible services.

3.4.1 | Subcategory: Critical Timing in Addressing Maternal Needs

Most women emphasized the importance of rapidly meeting basic human needs in the aftermath of the earthquake. They pointed out that the suffering experienced after the earthquake made the process even more traumatic. The necessity of meeting needs such as water, food, hygiene, heating, and secure and private shelter without delay was highlighted.

> "Help was not delivered in an organized manner. The greatest needs were tents and food. We are an earthquake country. We couldn't even find a shroud to bury our people; they were buried in sacks. There should have been preparation for this." (Interviewee L)

3.4.2 | Subcategory: Recognizing Vulnerability: Support Needs for Maternal Women

Women frequently perceived multidimensional support from their close and external environment due to their pregnancy or postpartum status, and they expected similar support from the system. They expressed that care or assistance provided after the earthquake should be more attentive and comprehensive, considering maternal women as vulnerable groups, and need to try meet their requirements.

> "Maternal women should be prioritized, and the healthcare system should be aware of this. It makes a person feel valued. I had back pain, and since I was maternal women, I called emergency services. They responded that if i could walk, so i would come myself." (Interviewee K)

3.4.3 | Subcategory: Provision of Reaching Out Healthcare Services

Many women reported that while they could attend regular prenatal check-ups during pregnancy, they did not receive adequate care and counseling regarding pregnancy, childbirth, and postpartum. Especially after childbirth, women often had to address their needs themselves due to being outside the system. They emphasized the importance of providing accessible healthcare services, including reaching out to women after disasters like earthquakes, highlighting its necessity for those who couldn't pursue their health needs or lacked awareness or means.

> "I would have liked midwives and nurses to go door-to-door in the old-fashioned way. I wanted them to reach us; it would have prevented us from feeling helpless. I knew I had an infection in my vagina, but accessing the hospital seemed impossible. While I couldn't reach them, they could have reached us." (Interviewee E)

4 | Discussion

After earthquakes, people struggle to meet their most basic needs, such as food, shelter, and healthcare. Women are more likely to be disproportionately affected by disasters which leads to a gender-inclusive approach to healthcare organizations (Ogeyi Odey et al. 2023). The earthquake disaster that occurred on February 6, 2023, affected the lives of all people living in the region, leaving deep wounds that are difficult to heal and causing damages that are hard to repair (Duruel 2023). This study aims to reveal the maternal experiences of women exposed to the earthquake and the subsequent processes. In doing so, it provides insights into women's potential needs, experiences, and expectations from the system during disaster processes. The present study determined many *"losses shaping the maternal journey"* following the earthquake, which was a significant factor in traumatizing

the process, and emphasized the necessity of *"critical timing in adressing maternal needs"* which has already emphasized in the studies. Earthquakes have destroyed hospitals and medical centers, leaving maternal women vulnerable and struggling to access essential maternal care services like health check-ups and ultrasound scans. This collapse has not only hindered necessary care but also jeopardized the health of both maternal women and unborn children (Uwishema 2023). Post-earthquake, the elevated risk of giving birth in unsafe, unsanitary conditions increases the likelihood of infections and life-threatening complications, thereby heightening adverse maternal health outcomes (Ahmed and Khdhir 2023).

The*"maternal psychological disruption in crisis contexts"* after the earthquake was identified in the study. Studies focusing on the mental health of maternal women following earthquakes frequently reported major depression, post-traumatic stress symptoms, and suicidal tendencies (Tanoue et al. 2021; Watanabe et al. 2016). Therefore, it is crucial to develop targeted psychological support systems and mental health services tailored to address specific needs and enhance the coping mechanisms of maternal women affected by natural disasters. Maternal women had *"persistent hypervigilance and disconnection from present reality"* highlighting the need to address the enduring psychological impact of such disasters. Various interventions such as cognitive behavioral therapy, group therapy, mindfulness-based stress reduction, psychoeducation, and support groups have been developed to promote psychological adaptation in women following an earthquake. These approaches offer mental health support, resilience building, coping strategies, and stress reduction techniques tailored to maternal women' specific needs, and facilitate peer support and connection (Haktanir 2025; Nanduri et al. 2023; Yıldız et al. 2023). Therefore, it should be suggested to establish specialized maternal mental health services encompassing counseling, therapy, and support groups to address the unique needs of maternal women affected by disasters.

Many women are unable to attend regular check-ups that are crucial for monitoring the health of the mother and the developing baby. In some cases, maternal women have had to travel long distances to reach the nearest healthcare facility, which can be time-consuming and dangerous, especially for those in the late stages of pregnancy (Ahmed and Khdhir 2023). The present study concluded that health systems should not only be accessible but also need to have *"services which reach out to women"* by themselves. To ensure women's access to healthcare, mobile clinics, and outreach services, such as home or tent visits, are essential in providing care directly to affected areas. Due to the Health Transformation Program in the X country, maternal women did not any home visits, and these practices were already quit. Therefore, women's giving importance to these reach-out services may lead to a look at the current health care policy. It is not only a national issue that emphasizes the importance of reaching out and community-based health care policies not only during or after the earthquake but also every time.

Women frequently experienced *"fragmentation of fulfilling maternal experiences"*, including dissatisfaction with pregnancy, fear of childbirth, inability to prepare for birth, and psychological problems in the postnatal period. Increased incidence of medical complications, such as respiratory, hypertensive, and mental disorders has been reported in the studies (Hayashi et al. 2016; Kyozuka et al. 2022). It is an interesting finding that most of the women affected by an earthquake have a positive birth experience and feel welcomed by the maternity services (Giusti et al. 2022). Women's satisfaction is reported mainly due to the helpfulness and kindness of healthcare personnel, as well as the personalized care they received as earthquake victims, which is about that *"trauma-informed care"*, as reported in the present study (Colaceci et al. 2020). Trauma-informed care involves understanding, recognizing, and responding to trauma effects and emphasizing safety, trustworthiness, empowerment, and collaboration (SAMHSA 2014). Adaptability of trauma-informed care to current healthcare systems is vital for managing future disasters (Heris et al. 2022). Healthcare professionals should communicate with women affected by the earthquake with an empathetic, respectful approach that respects privacy. Women expected the healthcare system *"recognize their sensitivity/vulnerability"*, ensuring that the care provided includes elements like respect and empathy. Women are vulnerable due to the sensitive physiology and psychology associated with pregnancy, childbirth, and postpartum periods, a holistic healthcare system with heightened awareness of the impact of earthquakes should be provided (Ren et al. 2021). Therefore, sensitivity training ensures that they recognize the psychological and physical vulnerabilities of maternal women and respond with empathy and respect.

This study established the significance of *"balancing support and isolation"*, and *"resilience through motherhood"* to boost maternal resilience during and after earthquakes. Resources that promote resilience in maternal women dealing with earthquake aftermath are vital for mental health and overall wellness. Social support plays an important role in promoting the well-being, quality of life, and resilience of affected populations (Nishihara et al. 2018). Women who actively employed coping strategies could feel more in control, less stress and overwhelmed by trauma (Chen et al. 2020). Preserving a sense of maternal identity and concentrating on parenting responsibilities offer women a source of strength and motivation (Kuroda et al. 2021). Maternal women who were able to continue fulfilling their parental duties despite the disaster exhibited higher levels of resilience and psychological adjustment. These findings underscore the multifaceted nature of resilience resources for women following an earthquake, emphasizing the importance of social support, personal coping strategies, and community and cultural resources.

4.1 | Strengths and Limitations

This study explored the maternal experiences of women who were affected by an earthquake. Most participants were maternal women during the seismic event, allowing them to experience both the earthquake and its aftermath. As a result, the study offers a comprehensive, long-term assessment of maternal experiences in the context of the disaster. Participants were recruited from 7 out of the 11 affected cities. The women in the study represented a diverse group, varying in educational background, age, number of children, stage of pregnancy or motherhood at the time of the earthquake, as well as their losses and post-earthquake living situations.

4.2 | for Practice and Healthcare Policy

To address the physical and mental health needs of women following an earthquake, resilience-building resources should be the focus of specific interventions and health policies. It is crucial to incorporate trauma-informed care into standard health services, especially in settings related to maternal health. Various channels should offer access to psychological support, including counseling and specialized groups for maternal women and new mothers which present on-site care. Programs providing parenting assistance should be made available, offering workshops on managing stress and coping strategies. Community networks that provide practical and emotional support play a vital role (Sadri et al. 2018). It is essential to train healthcare providers and emergency responders in trauma-informed care (Hall et al. 2021). Healthcare providers should have access to capacity-building and training programs, while community-based outreach should offer mental health services and increase awareness. Public education initiatives should highlight the significance and availability of psychological support for women. Existing health systems should incorporate these policies, leveraging global health networks to exchange best practices and resources.

5 | Conclusion

Earthquake experiences and aftermath cause significant trauma in various aspects. Losses during motherhood necessitate focusing on individuals at critical times to address maternal needs, but mostly emphasized that this care needs to be on-site care. Beyond losing family, home, and relatives, the lack of healthcare access has resulted in physical and psychological effects. Psychologically, women face negative impacts in crisis contexts, such as hyperarousal, constant alertness, and dissociation, exacerbating fear and anxiety. The fragmentation of motherhood experiences also affects their adaptation to motherhood. During pregnancy, amid hardships and stress, healthcare professionals' kindness, compassion, and personalized care enhance childbirth satisfaction. Therefore, the necessity of trauma-informed care from healthcare professionals is emphasized. The healthcare services need to be sensitive about maternal women and be organized to meet these needs. Additionally, resilience increases through motherhood, with effective support and isolation balance strengthening resilience, underscoring social support's role in post-traumatic growth. Motherhood responsibilities empower women, aiding in coping with post-disaster challenges, crucial for mental health and well-being. Recognizing resilience's multi-dimensional nature, emphasizing social support, personal coping strategies, societal and cultural resources, and providing accessible, supportive healthcare services is essential.

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Disclosure

There was not included any material from other sources.

Ethics Statement

The Ethics Committee of Akdeniz University granted approval (approval date: 13.09.2023, decision number: KAEK-719).

Consent

Participants were briefed on the research, and those who willingly chose to take part provided both verbal and written informed consent by e-mail.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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