

RESEARCH

Investigation of the sustainability

advises are to initiate breastfeeding immediately after birth for 60 min and that infants should be exclusively breastfed for the first six months, with no other food or

study group consisted of all mothers living in the relevant container city (N: 38), and the sample consisted of earthquake survivor mothers who experienced the moment and aftermath of the earthquake in accordance with the inclusion criteria (n: 21).

The purposive sampling method was used to gather the sampling that is “mothers who breastfed their babies in the pre-earthquake period or continued breastfeeding with complementary feeding”. Purposive sampling allows in-depth research to be carried out by selecting cases where more information can be obtained in parallel with the purpose of the study [23]. Criterion sampling is based on the study of situations meeting the criteria determined by the researcher [24].

Within the scope of this study, semi-structured, open-ended interviews were conducted with 21 mothers and data collection process was stopped after reaching data saturation. Inclusion criteria: Being 19 years of age or older, volunteering to participate in the study, being literate, having experienced the earthquake that took place in February 2023 in Kahramanmaraş, mother and baby living in the same environment, living in a tent/container, and having no physiological and psychological barriers to communication. Exclusion criteria; Mothers who had to live separately from their babies for a while after the earthquake, who had a condition that prevented them from continuing the care of the baby, who had special health problems, who had more than one infant (twins, triplets, etc.).

Qualitative data collection

Data were collected through face-to-face in-depth interviews using a semi-structured interview form in order to reveal the experiences, perceptions, opinions, feelings, and thoughts of the participants. The interviews lasted between 45–60 min on average.

In the study, a form consisting of two parts was used by the researchers. The first section included 21 questions about the sociodemographic characteristics of mothers and infants. A semi-structured interview form consisting of a total of 11 questions was utilised. The draft semi-structured interview form was prepared in line with the literature and the experiences of the

for the interview recordings and similarities/differences were evaluated. To ensure the credibility of the study, data were translated from Turkish to English by a team of translators independent of the research. The Turkish and English texts were compared and the study was finalized.

Table 1 The mothers' and infants' demographic information (n = 21)

Variables	Mean± SD	Min-max
Mother's age	30.28 ± 5.49	22-43
Infant's age (month)	13.42 ± 5.18	5-24
Birth weight	3080.95 ± 256.64	2800-3800
Birth height	50.33 ± 1.23	48-54
Education level	N	%
	3	14.3
Primary School	14	66.7
Secondary School	4	19.0
High school	0	0
Yes	21	100
No	8	38.1
Low	13	61.9
Middle	18	85.7
Nuclear	3	14.3
Extended	9	42.9
1 child	12	57.1
2 and above	6	28.6
Vaginal delivery	15	71.4
Caesarean section	5	23.8
38	14	66.7
39	2	9.5
40-42	16	76.2
Immediately	3	14.3
One hour	2	9.5
After the first hour	11	52.4
Immediately	3	14.3
One hour	7	33.3
After the first hour	14	66.7
Yes	7	33.3
No	13	61.9
Breast milk and formula	2	9.5
Formula	4	19.0
Formula and supplementary nutrition	2	9.5
Supplementary nutrition		

^a self-reported

baby being hungry from time to time; (7) difficulties in formula adaptation in an infant who has stopped sucking; difficulties in accepting formula and showing selectivity in a midwife who breastfeeds; (8) psychological difficulty: psychological wear and tear and fighting; (9) other difficulties: tent city conditions are not suitable for infant care, lack of electricity and hygiene conditions (Table 2).

Main theme 4. Breastfeeding and infant feeding

The theme of needs related to experiences in breastfeeding and infant feeding includes three categories. These categories are (1) reduction/interruption of breastfeeding: reduction of breastfeeding due to stress and adverse conditions; (2) experiences in the supplementary food period: initiation of supplementary feeding under inappropriate conditions in tent cities; (3) breastfeeding in non-privacy areas: inability to provide breastfeeding privacy in crowded environments; (4) appropriate space/equipment and materials: Participants stated that there were no infant care products and infant area (Table 2).

The codes frequently mentioned by the participants are shown in Fig. 2. The map shows the relationships between the codes and which codes are frequently mentioned together. The lines are shown wider to reflect the relationship between codes that are mentioned

together and those that are mentioned more frequently. Accordingly, the participants who mentioned the code of decreased/interrupted breastfeeding also mentioned the codes of psychological difficulties, breastfeeding in areas where there is no privacy, not being able to feed the infant, difficulties due to the situation of the family/mother, difficulties in accessing formula/food, other difficulties and appropriate space/equipment and materials.

When the results of the study are examined, the experiences of disaster survivor mothers regarding breastfeeding and infant feeding were determined in accordance with our objectives, barriers related to the sustainability of breastfeeding were revealed, inferences were made, and contributions were made to health professionals and national disaster prevention and response action plans in the field of breastfeeding and infant feeding in similar situations.

Discussion

This study aimed to assess the long-term viability of breastfeeding and child feeding practices in the earthquake-affected area, drawing on the firsthand accounts of mothers who experienced the Kahramanmara earthquake in Türkiye in early 2023. As a result of the interviews conducted with family/

Table 2 Themes, codes and mothers' statements

Themes	Codes	Mothers' statements in subcategories
Theme 1. Expectations from health personnel	Information/Guidance	<p>"I didn't get any support. I needed support. We have no experience for disaster situations about what we can do. We cannot see and learn some things without experiencing. But health personnel receive their training. A lot of patients pass through their hands and they see a lot of similar situations. They can guide us more accurately." (P1)</p> <p>"I didn't get any support. I needed support. We have no experience for disaster situations about what we can do. We cannot see and learn some things without experiencing. But health personnel receive their training. A lot of patients pass through their hands and they see a lot of similar situations. They can guide us more accurately." (P7)</p>
	Psychological Support	<p>"The only thing I feel bad about as a mother is not being able to breastfeed my infant. I couldn't do it. It was such a disaster that my milk decreased with my tears. I would have liked to have had someone to support us as a mother at that time." (P18)</p>
	Health Check of Infants	<p>"I want my infant to be screened for nutrition. That's why health personnel should give us great support. We need a great deal of support for maternal and infant nutrition after the earthquake. Because my infant did not get enough nutrients at that time. This led to prolonged diarrhoea and illness. At the same time, his/her face became very pale and we lost weight. For some reason, it seems to me that he/she still hasn't recovered. That's why we need this support. At the same time, extra support programmes can be made for children and infants in earthquake zones. It would be good if special nutritious, vitamin-rich, practical foods were distributed to these children. The children could not eat the dry food distributed for us. When we buy soup, it gets cold until we get to the tent." (P9)</p>
Theme 2. Mothers' suggestions	Having a Distribution Plan for Infant Nutrition Products	<p>"I would have liked health personnel to act in a more organised way in terms of distribution. Because the staff from the Red Crescent and AFAD may have difficulties in identifying who is lacking what, especially in families with babies. But it would be better if the health personnel made a tent by tent list. We wouldn't be without food or bottles for a month." (P8)</p> <p>"Regarding the uncontrolled distribution of infant formula, perhaps if it were under their control, they would know better which mother needs how much formula and whether the formula distributed is suitable for the age of the infant. At that time, my infant had a urinary tract infection and I didn't know what to do. It was impossible to get to the hospital immediately. Maybe they would have calmed our fears." (P10)</p>

Table 2 (continued)

Themes	Codes	Mothers' statements in subcategories
	Insisting on Breastfeeding the Infant	<p>"My suggestion to mothers is not to stop breastfeeding their babies, at least until they reach the time to consume additional food. Yes, maybe they will be weaned like me, but at least they should get treatment from a doctor. Because maybe if I was breastfeeding and had a little milk, I wouldn't have such a hard time." (P5)</p> <p>"I have been through so many difficult things that I have tried to be strong for my children. Let them be strong. Mothers are the only indestructible house that can protect their children. I endeavoured to get my milk back, because what is available is a blessing that does not make me dependent on anyone. But it didn't work out, maybe that's what happened to me. They should definitely not rely on formula and give their milk to their children." (P21)</p>
	Remaining Cool and Strong	<p>"Mothers should be cold-blooded. She should eat whatever she can find to make milk for the infant. If they have the means, they should stay outside the city until the situation improves." (P1)</p> <p>"I have been through so many difficult things that I have tried to be strong for my children. Let them be strong. Mothers are the only indestructible house that can protect their children. I endeavoured to get my milk back, because what is available is a blessing that does not make me dependent on anyone. But it didn't work out, maybe that's what happened to me. They should definitely not rely on formula and give their milk to their children." (P21)</p>
	Making Infant Food Products Available for Earthquake Risk	<p>"There must be an earthquake lunch box for earthquake. It should contain ready-to-eat food, jarred food, milk, baby biscuit, fruit puree, canned foods, things that will not spoil and will not be affected by the cold. Only God knows when the earthquake will happen." (P6)</p> <p>"Such situations can happen at any time. The mother should be prepared and have formula and nappies ready. Because mums are being weaned. Something happens, they become helpless. But it would be a great support to those mothers if they had at least one formula in their bags at that moment. Water is also very important in such a situation, children become breathless and dehydrated. We can't find food and we have trouble finding water. Therefore, mothers should keep a bag of clothes, food, and water for babies. You don't think about it when an earthquake strikes. The state can also prepare and distribute this for mothers. But before the state can distribute it, because it will take time to distribute it, who and where will you find at that moment, the mother must be ready. They must be prepared." (P12)</p>

Table 2 (continued)

Themes	Codes	Mothers' statements in subcategories
	Nutrition of Nursing Mother	"They should definitely continue breastfeeding, whether it is a little or a lot. Because mothers cannot access healthy food immediately. They should eat whatever they find, no matter how dirty it is, so that their milk will come. From time to time, they can store milk at home. It doesn't come to mind when you run away from home, but if we had it ready, it would have made us more comfortable for at least a few days." (P2) "People couldn't help to give us food in those early days. It was not right for us to expect such a thing while people were dying under the rubble. Could breastfeeding mothers perhaps be given drinks or medicines to increase their milk? I do not know if it's too much to say. But another life feeds on us. Actually, the food distributed is more expensive." (P16)
	Breastfeeding and Supplementary Foods	"Mothers should be careful what they feed their children. They should give formula, but I can't say anything if they can't reach them. They should not be late in switching to supplementary foods, I had the most difficulty in this. There is nothing else I can say, God forbid it gets worse, God forbid it happens again." (P7)
Theme 3. Difficulties experienced	Difficulties in Accessing Food/Formula	"I don't give supplementary food. After the earthquake, we stayed in a tent for 2 months. The tent was out of place. We did not have a supplementary food environment for the infant. Look, it's like that now, for example, it's been 2 months since we moved to the container and it will be 3 months. There is neither a market nearby to buy food nor a market that brings fresh produce. We have no easy access, as if they had gotten shot of us. We couldn't get it. This time it's not healthy, I give them little by little what we have, whether it's soup or yoghurt." (P2) "It took 3–4 days for proper food to arrive in the tents. After that, we always had food, but as I said, we had no hot water. Then we found a gas tube and I heated it in the tube. Wouldn't you know it, I used that tube for one of my children and my infant so that the gas wouldn't run out. Because you never know what's going to happen. We saved it for them." (K4) "As I said, I had difficulty in getting the formula. Even when we tried to buy it with money, the owner wouldn't give it to us. He didn't give it to me in case there was a looting when he opened the shop. For the first three days I gave the little food I had with me and we stayed in the car anyway, then we went to the collective tents and food was distributed, but this time there was no clean water." (P20)

Table 2 (continued)

Themes	Codes	Mothers' statements in subcategories
	Diarrhoea/Allergy	<p>"Yes, it happened. As I said, I could not provide supplementary food, so I was giving his water. But it also disturbed my infant bittersweetly and I had to give it to him/her. And that's how he/she got a sore in his/her mouth. He/she had a lot of flatulence. He/she fever and diarrhoea and he/she went through a lot of trouble." (P4)</p> <p>"Yes, I did, and I had a lot of trouble. Once he/she had allergies, I think from the food we ate, and a couple of times he/she had severe diarrhoea. But at that time, many children in the tent area complained of thirst. I don't know, it may be due to water or it may be due to bulk food." (P14)</p>
	Difficulties with Safe Food Preparation	<p>"Preparing the food at night was also a problem. There was mud and dirt everywhere. There was no hygiene. It took a long time to get hot water and prepare the food. As you can see, we and the babies had the hardest time in this process." (P3)</p> <p>"I could not breastfeed our youngest one in the first days of the earthquake. I was supplementing with formula before the earthquake. I could not breastfeed immediately after birth, my milk decreased after 2–3 months. So, we switched back to formula. We were already using it before the earthquake. On the first day of the earthquake, with that fear and our escape, my milk never came. The child is hungry, there is no water if I give food. The water was cut off, I would say that I make the food with cold water, but I don't have that either. I had no milk. I experienced a great despair. Believe me, we did not have access to hot water, so</p>

Table 2 (continued)

Themes	Codes	Mothers' statements in subcategories
	Access to Heater/Hot Water	<p>"I could not breastfeed our youngest one in the first days of the earthquake. I was supplementing with formula before the earthquake. I could not breastfeed immediately after birth, my milk decreased after 2 –3 months. So, we switched back to formula. We were already using it before the earthquake. On the first day of the earthquake, with that fear and our escape, my milk never came. The child is hungry, there is no water if I give food. The water was cut off, I would say that I make the food with cold water, but I don't have that either. I had no milk. I experienced a great despair. Believe me, we did not have access to hot water, so we tried to heat the food between our trousers and coats. We had a hard time. I was already pregnant at that time." (P5)</p> <p>"After moving to the mass tent settlements, free milk was distributed to mothers with babies. I was feeling worse, I insisted on breastfeeding, but it didn't work, the infant was crying from hunger and I was completely dependent on formula. Especially at night he/she didn't want to suck at all. You know that breast milk is very good, but I wanted to give him formula even to make him sleep longer at night. I had no choice. But I had another crisis. My infant didn't want to eat the food I prepared for him. He/she wouldn't take it either. I know I cried for days: this helplessness is terrible. You're already psychologically unwell and incompetent towards your child. It was very, very difficult to be a mother under those conditions. I tried some other food and he/she started drinking it for a while. During the day, I would breastfeed first and if not, I would give formula supplements. It was very difficult to prepare the formula at night. You stay in a tent. You need hot water, heating the water and preparing the food is arduous. It was dark most of the time. It is really troublesome to get out of bed in those cold temperatures and prepare the formula and give it to the infant." (P16)</p>
	Not Being Able to Feed the Infant	<p>"No, not really. My child was just a little weak because he/she wasn't full. I attribute this to the fact that he/she didn't get enough food at that time. But I also found medicine for him/her, so he/she can get plenty of vitamins from my other tent neighbours. I took precautions in advance so he/she wouldn't get sick." (P8)</p> <p>"As I said, I had plenty of milk. But it decreased. I didn't know what to do, I panicked so much. We stayed in the car in the cold for about 4 days, then we went to our relative's house, and when 20 people stayed in the same house, we could not do it, so we came back. We settled in a tent city. Thank God we found a tent here. We suffered a lot. What can I tell you? The infant is crying, I have no milk. First, I mixed whatever they gave me from the neighbourhood with cicibebe biscuits and water. When I got milk, I gave it with milk. When the formula started to be distributed, I also started to feed with it." (P19)</p>

Table 2 (continued)

Themes	Codes	Mothers' statements in subcategories
	Difficulties in Formula Adaptation in an Infant who has Stopped Sucking	<p>"We were in a position to get it. But I didn't think formula was enough for my infant. I had a bit of a hard time here. I thought breast milk would be more adequate. Also, at that time, various types of food were distributed. My infant did not take every formula" (P7)</p> <p>"I needed formula the most. But the infant did not eat the formula. Maybe the infant rejected it because of the brand of the formula. I always gave food with foreign ingredients. He/she may not have liked their flavour. Maybe if there are things we know, if such things are distributed here now, I will know what they are and the child will eat them then." (P12)</p>
	Psychological Difficulty	<p>"I am a mother of 2 children, one 5 years old and one 8 months old, my infant was 30 days old at the time of the earthquake. I was breastfeeding. The earthquake was a separate problem. The fear of whether there would be another earthquake or whether we would die was another problem. There was also the fear of how the infant would be fed and what it would eat. I had incredible difficulties, I felt very helpless as a mother. To be frank, at that moment, it also feels like nothing will ever get better and nothing will ever be the same again." (P4)</p> <p>"My youngest infant is now 8 months old and was 1.5 months old during the earthquake. My middle daughter is 2 years old. My eldest daughter is 4 years old. I was scared, and when I was scared, I could not be useful to my infant in the first days. My husband works in Antalya. I was caught alone in the earthquake. I didn't know what to do in the earthquake. I couldn't reach my husband. When all three of them were kids, I was very scared about how to feed them and what to do, and I was left alone." (P12)</p>
	Other Difficulties	<p>"The biggest problem I had was the toilet problem. My infant has epilepsy and has frequent seizures. My other daughter had to go to the toilet. When I took her to the loo, I was on pins and needles. I had to leave my infant in the tent because it was cold. This also affected my milk. It affected other things. The food started to be distributed when I moved to the tent after the earthquake." (P1)</p> <p>"No light, no sockets, no electricity. There's no formula. We left the house without any food. I went to mosques, used electricity in mosques with electricity, and heated and used it here. The things that I had. I really had a hard time. In such a now ues, EMC [(t)6(ent af)-8.89999961spÿ nienc it. But y</p>

Table 2 (continued)

Themes	Codes	Mothers' statements in subcategories
Theme 4. Breastfeeding and infant feeding	Reduction/Interruption of Breast Milk	<p>"God bless them. I'm a mother of 2 children. One's 5 years old, one's 8 months. My infant was 30 days old at the time of the earthquake. I was breastfeeding. The earthquake was a separate problem. The fear of whether there would be another earthquake or whether we would die was another problem. There was also the fear of how the infant would be fed and what it would eat. I had incredible difficulties, I felt very helpless as a mother. To be frank, at that moment, it also feels like nothing will ever get better and nothing will ever be the same again. I really wanted to breastfeed, but my milk went dry a week after the earthquake. Sadness, fear and the difficulties caused by the loss of my relatives all overlapped and I had incredible difficulties." (P3)</p> <p>"I had just given birth; my infant was already 20 days old and I had milk. I was already eating everything before the earthquake to get my milk. I was very scared after the earthquake. I did not go out for forty. And I stayed indoors too long. I was in the car too long. They wouldn't give me petrol or anything. That stress, that distress came on top of that, my child was only 6 days old when he underwent surgery. He/she had an operation because one of his/her vertebrae was turned upside down in the womb. Then the stitches were opened, which caused an abscess. We had to take him/her to hospital. At that time, my milk stopped, and I actually did everything we could until that day. I breastfed my infant again, more, or less. In this case, we had to give my infant formula from time to time. Then we started to give it all the time." (P7)</p>
	Experiences in the Supplementary Food Period	<p>"I was not planning to switch to supplementary food before the 4th month, but I accelerated the process after the earthquake. I accustomed him/her to touching his pacifier little by little earlier. We just switched to formula. To be honest, I couldn't give him/her much. We had dry food, it was coming, but no additional food was provided for the child. The bottle came much later anyway. Whatever I ate, I gave him/her the pot liquor" (P4)</p> <p>"The only thing I remember is that I couldn't even find a dry bread and feed it to my infant. There was always chaos in the distribution of food and non-food in the collective tent centres. It was cold, snow, winter and people were panic-stricken, nervous, and tense. You get in the queue, the food cools down until it is your turn, and you give it to the infant as much as you can feed. And generally, the same things were given over and over again. I had just recently switched to supplementary foods and I had a lot of difficulty with it. I had to underfeed him/her for months. He/she was weak and frail, but what can you do?" (P14)</p>

Table 2 (continued)

Themes	Codes	Mothers' statements in subcategories
	Breastfeeding in Non-Privacy Areas	<p>"I also had a lot of trouble with breastfeeding. Everyone was staying in one place. It was crowded. It was all foreigners and men. We had to go there because it was hot. But it was too crowded. You're a mother, you're a lady. I had a very difficult time in this respect." (P1)</p> <p>"Everything is destroyed, you have lost your loved ones, you are under stress, your daily life is suddenly disrupted, your infant has just left the hospital, what could be the result. We were placed in communal tents but it was very difficult to find cosy, private places, and time for breastfeeding. It's cold, it's winter outside, who's going to go out and breastfeed the infant? Even if it is your relative, you are ashamed, your privacy is shaken, come and try to breastfeed in this way. I'm low on milk from travelling around. Food and drillime for</p>

expectations from health personnel, requirements related to infant feeding, experiences in breastfeeding and infant feeding, difficulties experienced and suggestions of mothers were determined. The themes and codes of this study suggest that it is important to develop management plans, policies, and procedures to support infant feeding to meet the needs of mothers and infants in emergency response situations such as earthquakes, and to ensure communication, sensitisation and education at all levels and sectors.

Main theme 1: Expectations from health personnel

Several participants in the study reported experiencing negative emotions when they were unable to breast-feed their infants. They also noted a decrease in their milk supply as a result of these emotions. Additionally, they expressed a lack of sufficient support and emphasised the need for psychological assistance in their particular circumstances. The literature suggests that disasters increase psychological burden and individuals often experience post-traumatic stress symptoms [34].

within the framework of primary health care, though, inter alia, the application of readily available technology and through the provision of adequate nutritious foods and clean drinking-water, taking into consideration the dangers and risks of environmental pollution” is stated.

ese statements emphasise the importance of promoting health and nutrition for all children and state that this should be achieved, where possible, through continued breastfeeding [49].

month of their infants. Mothers in the earthquake zone may have reduced milk supply due to "stress, injury, preoccupation with property damage and loss of privacy". Regular breastfeeding should be maintained even if breast milk decreases due to this acute stress experienced by mothers after the disaster [61]. Mızrak Sahin et al. (2024) study, participants who breastfed their babies during the earthquake mentioned many sources of stress, such as the effect of the earthquake's severity, death of family members, hunger, and housing problems, which decreased or stopped their breastfeeding [52]. Nevertheless, breastfeeding practices may be interrupted during and after a disaster, access to donor breast milk may not be available, or hygienic preparation and storage of

valid only in the specific context and cultural framework where the participants are located.

Conclusion

Since this study was conducted very soon after the earthquake, it is a unique study whose results can be utilized in disaster management strategies to encourage the dissem-

Emergency Nutrition Network; 2017. <https://>