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Experiences Regarding the Health, Security, and Privacy Problems of Women in Kahramanmaraş Earthquake

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Abstract

Objective: It is becoming increasingly evident that women are affected differently from men before, during, and after disasters. This study aims to evaluate the safety, health, and privacy concerns associated with earthquakes in Kahramanmaraş, focusing on the impact on women.

Methods: The study is a case study design within a qualitative research approach. The data obtained were evaluated using the thematic analysis method. In the study, semi-structured interviews were conducted with 24 survivors of the earthquake. The data were analyzed with MAXQDA analysis software.

Results: The study revealed that women have various health and safety risks. The main themes include experiences related to health, safety and privacy issues, hygiene, and other problems. Lack of adequate privacy, security problems, lack of appropriate resources and specialized facilities, women's menstrual difficulties, exposure to or witnessing violence, and issues related to being alone were found to be important themes.

Conclusions: The root causes of women's vulnerability during disasters should be identified, and programs should be designed to reduce this vulnerability. Strategies and policies based on the needs of women should be developed to reduce their future vulnerability. Inclusion of women in decision-making processes will be effective in the development of gender strategies.

Introduction

The number and severity of disasters are increasing globally, negatively affecting physical, social, and economic systems. It becomes increasingly evident that women and girls are affected differently from men and boys before, during, and after a disaster.[1] Due to their physiological and biological vulnerability, unequal distribution of resources, socially derived gender norms and roles, they are much more likely to die during a disaster, and are more likely to die at an earlier age.[2,3] There are some traditional disadvantages, like women's roles in caring for children and the elderly, the fact that they have to work at home, the fact that boys are considered more valuable than girls due to the prevailing belief in society that they continue the family lineage, and the fact that boys are preferred for rescue in disasters.[2,3]

Structural barriers and systemic socioeconomic discrimination in society are seen to result in lower levels of access to resources, skills, and knowledge necessary for women and girls to withstand disasters and secure their livelihoods.[4] In a study examining the role of gender in disaster preparedness processes by evaluating the disaster risk perceptions of high school students according to gender in a multi-natural hazard environment, it was found that the overall level of disaster preparedness of both genders was low to moderate, but the overall score of men was significantly higher than that of women, and the level of knowledge of women about entrance-exit, direction signs and emergency exit routes was lower than that of men, It was found that men were statistically significantly more knowledgeable than women about contacting emergency services and knowing the location of security points, and men were more knowledgeable about taking care of the injured and the location of water, food, first aid boxes in emergencies, and as a result of the study, it was determined that women's disaster preparedness levels were lower than men and this situation made them more vulnerable.[5] A study on women's welfare analyzed the effect of family time allocation on the welfare of married women in China, using the 2014-2018 China Family Panel Studies data and a fixed-effects ordered logit model. The study revealed that combining full-time work with housework negatively impacts women's well-being, particularly for those with lower levels of education. Market work has less negative impact than housework for less educated women, while the opposite is true for highly educated women. The study also showed that time poverty due to housework has a more significant negative impact

on women's well-being than dual work-housework time poverty.[6] Another study on gender-based inequalities investigated the impact of children's gender on parents' long-term care living arrangements. The results of this study reveal a significant gender gap in both employment status and income. Male first-born children of legal working age are more likely to be employed and have higher incomes than female first-born children. Given that adult men have more economic capacity than adult women, when the first-born child is male, parents have higher expectations that their children will provide long-term care in old age and less desire to live in nursing homes.[7]

After disasters, women and their dependent children and displaced people constitute a significantly large proportion of the population.[2,3] Disasters exacerbate pre-existing inequalities for women and girls, as well as create new risks for this population. These risks include exposure to physical, sexual, and domestic violence, exploitation and trafficking, reduced access to reproductive and sexual health services, and fear and shame associated with inadequacies in the temporary shelter.[8-11]

Women have different healthcare needs than men because of being women. Services required for pregnant and lactating women, provision of sanitary supplies and privacy for menstruating women, prevention, and treatment of sexually transmitted infections, and provision of culturally respectful medical services are not met in post-disaster settings due to resource constraints or a gender-neutral approach to disaster response.[12-13] Pregnant and lactating women are particularly vulnerable to the negative impacts of a lack of sanitation, clean water, and food.[14-15]

The United Nations Office for Disaster Risk Reduction (UNDRR), in its report titled "Accelerating Gender Equality Actions to Reduce Disaster Risks by 2030," states that gender equality and social inclusion are among the priority issues for many countries and that the root causes of socioeconomic inequalities need to be addressed to improve gender equality outcomes, The lack of gender-disaggregated data and inadequacy of systematic information collection make it difficult to better understand and report risks, good practices of local women's organizations and civil society are often not recognized, and active interventions are required to ensure gender balance in disaster risk reduction. The same report also highlights that steps toward ensuring gender equality are directly effective in reducing the impacts of disasters, that issues such as women's leadership, risk communication, equal access, and inclusive planning should be addressed as fundamental principles, and that policy-makers should strengthen data collection systems and involve local organizations more actively in the process.[16]

On February 6, 2023, two major earthquakes centered in Kahramanmaraş occurred. These earthquakes caused major devastation in 10 provinces. More than 50,000 people lost their lives in these earthquakes. These earthquakes were recognized as one of the greatest natural hazard-induced disasters of the last century due to their occurrence, magnitude, and destructiveness. In a disaster of this magnitude, the health and safety problems experienced by women survivors and their experiences in solving these problems are an essential issue that needs to be investigated. Women's vulnerability during disasters goes beyond policy responses and risk reduction practices and is influenced by social norms, access to resources, decision-making authority, and power structures. Building women's capacities and reducing their vulnerability in disasters is closely linked to broader development issues. To transform the Sendai Framework for Disaster Risk Reduction (SFDRR) into a more comprehensive strategy, prioritizing gender inclusiveness in implementation and monitoring is essential. This may include broadening understanding of gender, addressing gender-based violence, recognizing the diversity among women, men, and other gender identities, and aligning policies with the realities of the impacts of disasters on women and marginalized gender groups.[4]

This qualitative study aims to reveal the problems experienced by women who lived through these earthquakes.

Methods

In the data analysis, the steps of coding the data, creating subthemes and themes, organizing the themes and codes, and defining and interpreting the findings were followed. Reporting of the study was based on the criteria outlined in the Consolidated Criteria for Reporting Qualitative Research (COREQ) developed by Tong et al.

This research is a phenomenology research, one of the qualitative research approaches. The study population consists of female disaster victims affected by the 2023 Kahramanmaraş earthquakes. The sample consists of disaster victims who require assistance during the acute period following the earthquake and who face the challenges of being women recovering from an earthquake. The criterion sampling method, one of the purposive sampling methods, was used to determine the study group. Purposive sampling methods are useful in discovering and explaining phenomena and events in many situations. The studies' results using purposive sampling are not generalized to the universe.[17]

The researchers prepared the semi-structured interview form by reviewing the literature. The interview form was then submitted to expert opinion, and approval was obtained from the ethics committee. After the pilot group interview was conducted, the results were used for the participants. Interviews with the participants were conducted either face-to-face or online, in an environment that made them feel comfortable. In the interviews, a total of 13 open-ended questions were asked to examine the health, safety, and privacy problems experienced by the participants and their experiences in solving these problems. Interviews with the participants were conducted either face-to-face or online, in an environment that made them feel comfortable. Online interviews were conducted between June and July 2023 using Microsoft Teams. Face-to-face interviews were recorded using a voice recorder, and online interviews were recorded using the application's built-in feature. The interview questions were asked to each participant by the same researcher using the same words and tone of voice to evoke the same meaning. The researchers introduced themselves to the participants during the interview to establish a relationship of trust. Before starting the interview, a mild atmosphere was created without overstepping neutrality and without allowing excessive intimacy. The interview began with greetings, followed by light conversation and the sharing of information about the study, and concluded with the participant's consent to proceed. The participant's consent for the interview to be recorded was obtained before the interview began. The first questions of the interview were more general and aimed at getting to know the participant. Later, more detailed questions were asked to obtain richer data based on the answers given by the interviewee. As codes, P1, P2, and P3 were used for the participants' confidentiality. First, sociodemographic information was obtained, and then open-ended questions were asked. The interviewer elaborated on the questions with expressions such as "Is this what you wanted to say?" or "I understand this from what you said, right?" to ensure clarity. When the information became repetitive, it was considered that the "saturation point" was reached and the interviews were terminated.[18]

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Transcripts of the voice recordings taken within the scope of the research were created, and the thematic analysis method was used for data analysis. The data obtained are synthesized and critically interpreted to create themes.[19] When the literature is examined, it is evident that qualitative studies are generally conducted with 10-15 participants. The data collection process continued until data saturation, a preferred method for determining sample size in qualitative studies, was reached. In our research, it was accepted that the sample was sufficient since data saturation was reached and a total of 24 people were studied.

(In the evaluation of the qualitative data obtained through traditional qualitative content analysis, Lincoln and Guba's evaluation criteria were used.[20] At least two researchers were involved in the entire analysis process. The thematic analysis was conducted by reading the transcripts. A consensus was reached on a code list, and then at least two researchers jointly developed the primary and secondary codes.[21,22] ®MAXQDA 21 software program was used for data analysis. Some of the methods applied to ensure validity and reliability in qualitative research include prolonged interaction, expert review, applying inclusion and exclusion criteria, and applying data triangulation methods.[23]

As an inclusion and exclusion criterion, women aged 18 years and over who experienced the earthquake in the region where the disaster occurred were included in the study. Women under the age of 18 and those who left the disaster area after the earthquake were excluded from the study. All findings were presented without comment, and data loss was prevented by using a recording device.

The research, approved by the Ege University Medical Research Ethics Committee on 05.07.2023 with application number 2023-1188 23-7T/60, was conducted in accordance with the Declaration of Helsinki.

Result

The ages of the participants range between 18 and 83, with an average age of 40.6 years. 54.2% of the participants are single, 46% are university graduates, and 70.9% are not employed (Table 1).

There are three main themes. Fifteen sub-themes related to the main themes were formed depending on the frequency of interviewee statements. Participant statements related to these subthemes are given in findings (Table 2).

Table 1. Sociodemographics of participants

Variables		N	%
Age	18–29	10	41.6
	30–49	7	29.1
	50–64	5	20.8
	65–83	2	8.5
Marital status	Married	11	45.8
	Single	13	54.2
Education status	Primary school	7	29.1
	Secondary school	2	8.3
	High school	4	16.6
	University	11	46
Employment status	Be in employment	7	29.1
	Out of employment	17	70.9

Table 2. Themes and subthemes

Themes	Subthemes	N*
Security Issues	Insecurity of Temporary Shelters	11
	People Posing a Sense of Threat	11
	Looting and Theft Incidents	6
	Inadequate Lighting	4
	Refugees Pose a Security Problem	3
Privacy Issues	Lack/Absence of Shower/Toilet	24
	Extra Effort and Agitation	10
	Entering Damaged Houses	5
	Staying With Strangers in a Tent	24
	Visibility of the Tents From the Outside	2
Other Problems Experienced	Having Health Problems	36
	Menstrual Difficulties	8
	Experiencing and Witnessing Violence	12
	Having Long Hair	3
	Lack of Father/Brother/Spouse	3

*Number of subthemes.

Theme 1: Security Problems

The participants stated that temporary shelters were unsafe, as they experienced a security problem. This statement was followed by the statements of having people/situations that create a sense of threat, looting and theft incidents, insufficient lighting, and refugees posing a security problem, respectively.

Insecurity of Temporary Accommodation Places

For the participants, living in a tent after the earthquake was a bad experience. The participants stated that during their stay in the tent, they did not feel safe; they were afraid of insects and wild animals, had difficulty sleeping, and often slept in shifts:

"… There was no such thing as feeling comfortable. At first, we couldn't sleep at all. We were sitting up at night. Then we decided to sleep in shifts. We felt a little more comfortable. When I stayed with my family, my father usually never slept, he waited for us …" (P6).

"… We thought that the tent was flying, we felt like someone came in front of the tent, and we saw the shadows as people. It was a huge problem for us; we could not sleep properly …" (P4).

"… Since we were staying in a tent, we were already having difficulty sleeping. When the fear of someone entering the tent was added to this fear, we were constantly waking up every hour …" (P1).

"… We were not safe in the tent. I mean, it was wintertime, and we were afraid of insects, mice, and wild animals at any moment. We have never experienced anything like this before. We had never stayed in a place where we felt bad, where we did not feel safe …" (P15).

People Creating a Feeling of Threat

Participants reported seeing many unfamiliar people who had not come to help them, as well as vehicles with license plates from other cities arriving in their neighborhoods. This was accompanied by the absence of security guards on the ground, which created a sense of threat for the participants:

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"… Strangers came. For example, I saw license plates I had never seen before. Faces I have never seen before… There were no soldiers or police. Soldiers and police often frightened us because they were the harbingers of something bad. Our eyes searched for them. I mean, someone to protect us …" (P17).
"… Believe me, I never thought that I would see so many strangers on the second day of the earthquake. People who came out in the evening. I mean, they are not the people of the city. I mean, their eyes were up I always tell this story a lot. They were looking at the houses to see if they were vacant. I mean, it is obvious that they came with a bad purpose somehow …" (P12).

Incidents of Looting and Theft

Participants said they had witnessed a lot of looting and theft or heard about such incidents from people around them:

"… That's what the people who stayed at the rubble said. I mean, some people even tried to take the ring from the finger of dead women …" (P19).
"… In our neighborhood, there were already too many people who could not be trusted. In such a situation, there were many cases of theft. We witnessed these …" (P1).
"… They looted the whole place. I mean, not only the markets, but also… They looted clothes, rosaries, watch shops …" (P18).

Inadequate Lighting

Participants expressed that they were afraid and worried about their safety due to inadequate lighting in their locations:

"… We were in the dark, we felt uneasy. Animals came up to the houses. I don't know, there were no people. There was no light on the street. We were in constant contact with my sister in Istanbul, and she kept asking me what I was doing. I took a photo and sent it to her. She said, 'What is this?' Because it was dark. She didn't understand. She thought I took the screen and sent it. Then, when I saw a vehicle coming, I retook a photo and said This is how it is …" (P14).
"… There is no electricity. Some of them had flashlights, and we used those. We lit a fire outside, and we sat around it; some days, it was raining. That fire would go out …" (P3).

Refugees Creating Security Problems

Participants stated that refugees posed a security problem after the disaster. In the tent cities established, refugees affected by the disasters and living in the disaster area displayed aggressive behaviors. In addition, refugees living outside the disaster area and coming to the disaster area were involved in looting and theft incidents in the settlements. In addition, this sub-theme is contextually related to sub-theme 1.2. People Creating a Feeling of Threat.

"… There was a security problem. Because of this, even the gendarmerie had to close both entrances of the village. Because the refugees coming from outside were involved in looting, because the city center was not enough for them, they started coming to the villages …" (P4).
"… An acquaintance of mine was staying in a more crowded tent city, and he witnessed Syrian citizens attacking the tents in that tent city… There was a situation like breaking into the tents …" (P6).

Theme 2: Privacy Issues

When the participants were asked the question, "Did you experience any privacy problems in the acute period after the earthquake?," most of them stated that they experienced privacy problems due to the lack of a shower/toilet. This problem was followed by making extra effort and being uneasy, having to enter damaged houses, staying in tents with strangers, and tents being visible from outside.

Lack/Absence of Shower/Toilet

Participants reported that they were unable to take a shower for days after the earthquake. When there were no toilets, the participants had to use the toilet in remote or deserted places far from the settlements. Due to inadequate showers and toilets, women and men had to use the same toilets and showers, which led to privacy problems:

"… I mean, we pretended to sit down and relieved ourselves. However, we then realized that the feet were visible under the truck. We said, what did we do here? I'm glad he didn't see us. He could not have seen us in the dark anyway …" (P24).
"… You know, we used to dig holes in remote places and take them there or see your own needs there and do it that way. I mean in a very primitive way. Because the houses were not accessible …" (P10).
"… We needed a toilet, but there was none. Mum, Dad, and everyone had to go to the toilet somehow. This was a need. We used to go to the toilet in our garden in a discreet way and then return to the ring road or where we had parked the car. It was a very, very big problem. Anyway, there is no water. I know I didn't wash my hands. Yes. I remember not washing my face …" (P17).

Making Extra Effort and Being Agitated

Participants reported that they had to make more effort than usual to protect their privacy and felt uneasy:

"… The garden is another problem. Because if it were open on all four sides, there would be no need to satisfy needs. Is someone passing by? Is someone looking? Because everyone is on the street. Finding a nook and cranny at work or with my brother or my mother or another woman, you say let's go together. You look left and right, is someone coming? It was like this to see if someone was leaving …" (P17).
"… But for example, when someone is waiting at the door, you have to change your clothes. You say, 'Let me change,' and you already feel uneasy there. You don't have that comfort, that comfort zone. And of course, there is also the pressure of being crowded …" (P1).
"… After all, everyone has a private space. They have privacy, but in that tent, you have to live with 15 people in a few square metres. You have to eat your food. You have to sleep. You inevitably feel that psychological distress. As a result, your private life completely disappears. You have no private space. I can say that …" (P2).

Having to Enter Damaged Houses

Participants stated that they had to enter damaged houses due to the cold weather. In addition, the participants explained that they entered the damaged houses for a short period due to the lack of showers and toilets:

"… We would do it within 5 minutes and leave. I mean, there was no place to take a shower, and there were no toilets, so we were trying not to consume too much liquid …" (P2).
"… We positioned the tent close to my parents' house, and we were going in and out of my parents' house quickly …" (P14).
"… Since there is no toilet and water, we entered into that damaged house, the state has not demolished it yet, but when we had to, we used to go in there, we were afraid …" (P5).

Staying With Strangers in the Tent

Participants stated that they had to stay in tents with people they did not know:

"… Five families were staying together in a tent …" (P6)."… We had to stay in the tent after the earthquake. We had to leave the tent due to some health problems and living together with people we did not know in the tent …" (P2).

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Visibility of Tents From the Outside

Participants stated that the visibility of the tents from the outside made them concerned about their privacy.

"… A shopping center was built on the street and behind it was a tent city. When the light is switched on in the evening, you can already see the shadows inside the tent. If you were inside the tent, someone from outside could see you very easily …" (P23).

Other Problems Experienced

When the other problems experienced by the participants were analyzed, most of them reported health-related issues stemming from the negative situations they encountered after the earthquake. This problem was followed by menstrual difficulties, experiencing and witnessing violence, having long hair, and lack of father/brother/spouse.

Experiencing Health Problems

Participants stated that they experienced back, neck, and joint pains after the earthquake because they had to sleep on mats or floors for a long time, and those with a history of orthopedic diseases stated that their complaints increased. Those with chronic diseases said that they had difficulty coping with the unfavorable conditions they experienced in the period after the disaster. As a result of cold weather, unhygienic conditions, malnutrition, lack of sleep, and exposure to many stressors, some of the participants suffered from flu, constipation, and itching. Some participants stated that they were psychologically affected by the bad events they witnessed and experienced:

"… It was very cold and you were on the ground. I could feel the mud right below us, so we all got sick …" (P1).
"… I mean, even a five-year-old child asked why did I survive? Why did not I die in the earthquake, unfortunately …" (P15).
"… At that time, my friends and I dealt with the problem of constipation, so I know this. Because, you know, the toilet is a problem, I apologize. Shower is a problem, and you cannot eat healthy food. So we consume ready-made food. We even gained weight because we eat junk food rather than proper food, so there is no such thing as a food culture anyway …" (P23).

Menstrual Period Difficulties

Participants stated that they menstruated more than once a month in the post-disaster period and that they had serious difficulties in accessing sanitary napkins in the acute period:

"… In such cases, even if it is not likely to happen, the earthquake can coincide with special days for people, exacerbating stress. You can get your period, and there was nothing at that time, on the second or third day of the earthquake. I had my period directly due to stress, in that stress, I was able to get it from the fire brigade …" (P6).
"… We needed a lot of sanitary napkins. I mean, it was as if it coincided with that moment, we got our period. We experienced significant difficulties due to this issue. I mean, we had nothing to buy in our environment …" (P4).
"… I mean, there were people around me who had periods. This was a much bigger problem for them. Of course, you need to wear sanitary pads and change them regularly. Cramps, pain, and bleeding are all problems. I was able to do these things somehow, but there was nothing hygienic to clean my hands. On the one hand, the fear of infection …" (P17).

Experiencing or Witnessing Violence

Participants stated that they were exposed to or witnessed sexual, psychological, and physical violence after the disaster:

"… I saw a lot of girls being harassed. Verbally and physically… When I was waiting in line, the men behind me who were older than me approached me a lot, and I was incredibly disturbed by this …" (P21).
"… We encountered situations like insults. We felt uneasy …" (P12).

Having Long Hair

Participants stated that having long hair made their conditions even more difficult. After the earthquake, it was very difficult for the disaster victims to find hot water to wash and care for their hair. For this reason, one participant stated that she and her daughter cut their hair:

"… Our cleaning needs were very problematic here. When we could find water, I could only wash my children's heads. Since this was my biggest fear, I immediately cut my own hair and my daughter's. For days, there was no electricity, no water, nothing …" (P10).
"… For example, my uncle's son had to wash his hair, and he poured water like this in 2 minutes. I mean, he could handle a little shampoo and stuff like that. But unfortunately, as women, we could hardly take a shower because of the length of our hair …" (P4).

Lack of Father/Brother/Spouse

Participants stated that they did not feel safe because they did not have a man with them:

"… When we heard about these looters, we asked the families that we trusted around us, you know, the families that you think will protect us, including men, to set up tents near us …" (P4).
"… We were together, but because my father was a security guard, there were times when he went to work in the evening. He left work at seven at night. So we stayed alone in the tent for a few nights. When my father was not there, we did not feel very safe …" (P1).

Limitations

Phenomenological research is typically conducted with small sample sizes. Therefore, the findings obtained are valid in a specific context and cannot be generalized to large populations. The researcher's interpretations play a crucial role in analyzing the data. This increases the risk that the researcher's prejudices or perspective may affect the findings. It is essential that the participants can convey their experiences accurately, clearly, and in depth. Participants' difficulties in expressing themselves may limit the depth of the data. It may be challenging to reach suitable participants who have experienced a particular phenomenon and can relate to it. Since the interviews were conducted within a specific period, the long-term problems that women may face may not have been fully evaluated. Due to the time elapsed between the earthquake date and data collection, as well as the gender norms of the participants in the society, some participants may not have shared their experiences in full detail during the interviews. Some women had difficulty answering questions about privacy, harassment, and rape. They could not communicate easily due to inappropriate accommodation conditions. This may have led to their inability to fully express the truth.

Discussion

The findings from the 6 February Kahramanmaraş earthquakes indicate that the security problems faced by women in the immediate aftermath of the disaster and during the ongoing recovery process have both physical and social dimensions, which aligns with existing literature on gender-based vulnerabilities after disasters. Shelters are used to provide private and safe places for people

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who lose or leave their homes after a disaster. In the study, it was determined that ideal shelter areas and adequate lighting were not provided.[3,24] In Tearne et al.'s study, shelters, long transportation distances, overcrowding, and men and women sharing sleeping areas expose girls to security risks, and inadequate shelters are the cause of violence and human trafficking.[3] During the ice storm in Canada, the interior areas of many high-rise buildings were left completely dark, jeopardizing the evacuation of residents. In Fatema et al.'s study, one participant shared, *"Someone took advantage of the darkness to hug me tightly, I experienced unpleasant touches on my body, this happens mostly at night in the dark."*[25] During the recovery period after a disaster, shelter areas should be established by considering alternative lighting solutions and all relevant details.

During the recovery after a disaster, the presence of unfamiliar people in shelter areas, shouting, and noisy strangers increases incidents of looting and theft. In a study, it was stated that temporary shelters were unsafe, some people/situations created a sense of threat, looting and theft incidents occurred, lighting was inadequate, and refugees posed a security problem after the earthquake. In the study of Fatema (2023) and colleagues, thieves attacked citizens, harassed young girls, and stole animals and money during floods.[25] Some of the aid trucks sent to the region after the Van Earthquake were looted on the roads.[26] Similar to the findings of our study, a study by Petraroli and Baars reported that inadequate protection measures in evacuation shelters cause vulnerability in women, and that the lack of protection measures and privacy leads to a significant sense of insecurity in women and affects women's evacuation decisions, which are crucial for accessing important services and resources.[27] In another study, many young women reported that they perceived inadequate housing conditions as unsafe, making them easy targets of sexual violence, and expressed feelings of helplessness and constant hyper-vigilance against sexual violence.[28] Some studies emphasize that gender-based needs are not sufficiently considered in the design and management of temporary shelters after disasters.[29] After disasters, security measures should be provided at the maximum level and those in need should not be victimized.

The traditional workload that society places on women (childcare, care of the elderly and sick) makes women more disadvantaged during earthquakes.[30] Various studies reveal that women who must take shelter with their relatives after earthquakes must stay in tents and experience privacy problems.[9,31] A study conducted in India after the flood disaster showed that more than 40% of women resorted to open defecation, which was degrading and violated their privacy.[32] In the study, the participants reported experiencing privacy issues due to the lack of showers/toilets, having to exert considerable effort to ensure their privacy, and having to stay with strangers in tents. They also had to cope with difficulties such as the visibility of the tents. A similar study by Aryani and Muhlis found that women experienced problems with toilets and privacy, which is consistent with our findings.[29] There is an urgent need for interventions that acknowledge and address these specific challenges faced by women.

Participants stated that they had problems with their physical and psychological health due to the negative situations after the earthquake, menstrual difficulties, experiencing and witnessing violence, having long hair, and lack of father/brother/spouse. Similar to the findings of our study, some studies have reported that hygienic toilets, clean water, and safe waste management facilities are very inadequate in temporary camps/general shelter areas, access to basic hygiene products such as menstrual pads, soap and underwear is very limited, uniform pads are distributed, women and girls may feel embarrassed, shy and excluded about menstruation.[33] Due to social expectations, women who prioritized the needs and nutrition of others experienced health problems after the disaster.[34] The lack of adequate health facilities leaves women more vulnerable to reproductive and sexual health problems.[35]

Some studies showed that women's psychological health deteriorates after disasters, and they experience burnout, depression, and anxiety.[31] According to the results of a review study on the subject, female gender was found to have the most significant impact on the suicide rate after natural disasters, and this may be due to women's greater psychological vulnerability to natural disasters, increased violence against women, increased poverty among women, increased rape rates, loss of homeowners, and women's lesser access to health care, adequate nutrition and safe shelter.[36] Unfortunately, disaster relief for women is often inadequate, with a perceived lack of medical services that respect cultural constructs.[3]

Women's specific needs, including access to sanitary supplies, are often overlooked in the distribution of relief supplies.[9] The gender-based negative impact of disasters resulting from natural hazards on women's life expectancy is more pronounced in countries with low gender equality.[30] Pre-existing gender inequalities in society exacerbate this vulnerability.[37] The articles analyzed in a systematic review reveal that women and men have unequal access to information, as well as women having less influence within the family and socio-politically. Both issues highlight the underrepresentation of women in decision-making processes during disasters. The consequence of these differences is that these phenomena disproportionately affect women, impacting their safety and limiting their chances of survival.[38] Previous disasters, such as the 2004 earthquake and tsunami in Indonesia, Sri Lanka, India, the Maldives, and Thailand, highlighted that victims were subjected to sexual harassment and gang rape, but were reluctant to report due to fear of further violence and threats.[9]

Some physiological and biological characteristics of women also make them more vulnerable to disasters.[3-25] In the study, it was determined that women with long hair in disaster areas faced health and hygiene problems related to washing and drying in cold weather. The higher mortality rate of women in the 2004 tsunami disaster in India was linked to clothing traditions, long hair tangled in bushes, and lack of physical ability to run, as well as efforts to save valuables at home and protect children.[39]

Being alone in disasters increases a woman's vulnerability. However, some men want to take advantage of women's fatigue and loneliness during and after disasters.[25,34] Single-headed households have smaller support networks, lower socioeconomic status, and higher vulnerabilities. Therefore, higher mortality rates are due to the need to manage and activate coping mechanisms alone in disasters. In some countries, such as Bangladesh and India, some cultural and religious norms that prohibit women from going out without a man also cause women to be more victims in disasters.[39,40] Public awareness should be raised about the risks of gender-based social identity norms.

Conclusion

Some of the research results are only briefly mentioned in the literature. Refugees in the region and people who did not live there before the earthquake come to the affected areas, creating a perception of threat. The fact that the lack of a father/brother/spouse deepens disadvantage, the difficulties caused by having long hair in disaster areas, and the visibility of tents from the outside are some of

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the study's specific results. Therefore, the study has results that contribute to the literature. Also, in the study, women mainly experienced a lack of hygiene and hygiene materials, and areas where privacy is ensured during the disaster, and emphasized their experiences of gender-based struggle. Gender analysis should be conducted by considering the local, cultural, social, and economic structures of the affected community. The negative experiences of women during disasters and the root causes of their vulnerability should be identified, programs should be designed to reduce this vulnerability, and needs-based strategies and policies should be developed to reduce their future vulnerability. The inclusion of women in decision-making processes will be effective in developing gender strategies.

This study makes a significant contribution to the understanding of the gender-based vulnerabilities faced by women in disasters, providing important findings for policy-makers and humanitarian organizations. The recommendations developed based on the experiences of the women who participated in the study emphasize the necessity of gender-sensitive strategies in disaster management. The elimination of gender inequalities and ensuring women's participation in decision-making processes are imperative to mitigate women's vulnerability in the post-disaster period. In this context, it is recommended that intervention plans be structured with consideration for the specific needs of women.

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