



A qualitative study of the social factors influencing disaster risk and vulnerability in Iran

Javad Babaie ^{1,2}, Mohsen Nouri ³, Behrouz Samei ¹

¹Social Determinants of Health Research Center, Health Management and Safety Promotion Research Institute, Tabriz University of Medical Sciences, Tabriz, Iran

²Tabriz Health Services Management Research Center, Health Management and Safety Promotion Research Institute, Tabriz University of Medical Sciences, Tabriz, Iran

³Department of Disaster's Public Health, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran

* **Corresponding author:** Javad Babaie. School of Management and Medical Informatics, Tabriz University of Medical Sciences, Tabriz, Iran.
Email: javad1403@yahoo.com

Received: 5 November 2023 **Revised:** 27 December 2023 **Accepted:** 29 December 2023 **e-Published:** 29 December 2023

Abstract

Background: Disasters occur as a result of the interaction between hazards and the societal conditions. These conditions that turn hazards into disasters are referred to as vulnerability. Vulnerability has different dimensions; one of its important dimensions is the social dimension.

Objectives: This study was conducted to explore social factors influencing disaster risk and vulnerability in Islamic Republic of Iran's social context.

Methods: This study was conducted with a qualitative approach. Data were collected through in-depth semi-structured interviews with experts who were purposefully selected. Collected data were analyzed and coded manually using the conventional content analysis technique. The trustworthiness of the study findings was checked by Guba and Lincoln's criteria (credibility, conformability, dependability and transformability).

Results: In this study, 16 disaster management experts were interviewed. The coding process of the interviews led to the formation of 243 codes, which were merged and 10 categories of social factors affecting disaster risks and vulnerability were identified: personal characteristics, community risk perception, employment, quality of residence, social capital, disaster/risk governance, religious beliefs, economical condition, communication/social isolation, and the existence of infrastructures.

Conclusion: Many social factors cause increased disaster risks and vulnerabilities. These factors are affected by the characteristics of societies and act differently in each society. This study has identified and introduced these factors from the point of view of experts, which can be used by policymakers in this field.

Keywords: Social factors, Disaster, Vulnerability, Emergencies.

Introduction

All parts of the world are at risk of different disasters. In 2022 alone, 387 disasters caused by natural hazards occurred in the world, killing 30,704 and affecting 185 million people.^[1] Iran is also a disaster-prone country and is exposed to all kinds of natural and man-made hazards.^[2] During 1970-2021, 98 earthquakes occurred in Iran. These earthquakes resulted in 106,823 deaths (an average of 2094 people per year) and 2760623 affected (an average of 54129 affected per year).^[3] Hazards are physical events, phenomena, or potentially harmful human activities that can cause loss of life, injury, damage to property, social and

economic disruptions, or environmental destruction.^[4] According to this definition, not every hazard necessarily becomes a disaster.^[5] The concept of risk emphasizes that risk is the result of the interaction between hazard and vulnerability. In other words, disaster is the result of the occurrence of one or more hazards in a vulnerable society. Vulnerability is a condition that increases the susceptibility of society to the effects of hazards. These conditions are determined by physical, social, economic, and environmental factors or processes.^[4] Vulnerability changes over time and from one area to another.^[6] Even the people who live in the affected areas are not equally

affected by disasters. For example, evidence shows that poor people are more vulnerable in all phases of disasters (before, during, and after a catastrophic event).^[7] Also, evidence from previous disasters shows that certain people and groups of society suffer more damage.^[8] Hazards are related to the structures and capabilities of spatial vulnerability and are influenced by the physical, social, and economic factors of places.^[9]

Vulnerability has different dimensions^[10] one of its important dimensions is social vulnerability, which can be considered as a social determinant of the occurrence and impact of disasters.^[11] The concept of social vulnerability is not new in disaster management and has been part of this field's literature since the 1970s.^[7] Social vulnerability explains the combination of social, cultural, economic, political and institutional conditions and processes that shape the differences of societies in experiencing risks and getting rid of them.^[11] Social vulnerability is a creation of the structural relations of groups and forces of society against various pressures. Social factors play an important role in reducing or increasing the vulnerability of humans, and examining its deficiencies and shortcomings is effective in vulnerability to disasters.^[12]

Objectives

Despite the high importance of social vulnerabilities in reducing the risk of disasters, this issue has received less attention from other researchers in the context of Iran. The aim of this study is to answer this question: Which social factors are effective on disasters vulnerability in Iranian society?

Methods

In this study, we focused on the social factors affecting disasters risks and vulnerabilities in Iran's socio-cultural context. The study adopted a qualitative approach and used the conventional content analysis technique. The participants were experts in fields of disaster management who had education and management experiences in disaster risk reduction and were purposively selected based on the researchers' knowledge.

Study participant's inclusion criteria:

- Having postgraduate education in the field of disaster management.
- At least one experience of being in the disaster field and managing it (response phase).
- Having at least two years of experience in disaster risk reduction activities in government or non-governmental organizations.

The data were collected from the participants through

semi-structured in-depth interviews, which continued until data saturation was achieved. An interview guide was designed based on texts and opinions from the field of disaster management experts. To improve the validity, the guide was sent to 5 disaster management experts and their views were applied. The interviewees were then interviewed using this guide, which included three general questions about the vulnerability and its factors affecting the viewers' opinion on the vulnerabilities in the social context of Iran. These questions were:

What is meant by social vulnerability to disasters?

What factors affect the social vulnerability of societies against disasters?

In the social conditions of Iran, what social factors are effective in the vulnerability of society against disasters?

Then, based on the answers of participants, more detailed questions were asked to get more accurate and richer data. Each interview lasted 40-90 minutes (An average of 65 minutes). The interviews were conducted with prior coordination with the interviewees and at their preferred places and conditions. The interviews were recorded with the written consent of the interviewees and then transcribed. The data were repeatedly studied to create immersion for the researchers and at the same time, after entering the data in the form of words, phrases, or paragraphs, they were organized and coded. Then, through integrating similar codes, subcategories and categories were extracted. Guba and Lincoln criteria (credibility, conformability, dependability and transformability) were recruited for trustworthiness assessment of the data.^[13] In this way, the researchers have been involved with the data for a long time and reached immersion in the data by repeated study. After transcription of the interviews, the final comments of the participants were applied to the transcriptions. Two members of the research team (B.S and M.E) coded the interviews independently, and the third person (J.B) resolved any discrepancies. Finally, the extracted codes and categories were sent to two experts in disaster management and their opinions were also included.

Ethical considerations

The study was conducted in accordance with the Declaration of Helsinki. Institutional Review Board approval was obtained.

Results

In total, 16 experts in the field of disaster risk management were interviewed, whose characteristics are detailed in Table 1. The result of coding the interviews led

to the formation of 243 codes, 62 subcategories, which were categorized into 10 main categories of social factors affecting disasters risks and vulnerabilities in Iranian society. The 10 main categories identified were:

1- Personal characteristics 2- Community risk perception 3- Employment 4- Quality of residence 5- Social capital 6- Disaster/risk governance 7-Religious beliefs 8- Economical condition 9- Communication/social isolation 10- The existence of infrastructure. The details of the resulting codes and categories are presented in Table 2.

Table 1. Characteristics of the study participants

	Title	N (%)
Education	Ph.D.	9 (56.25)
	MSc	7 (43.75)
	Total	16 (100)
Specialty	Health in disasters	11 (68.75)
	Nursing	3 (18.75)
	Disaster management	1 (6.25)
	Policy making	1 (6.25)
	total	16 (100)
Experience in response to disasters	1 time	2 (12.5)
	2 times	6 (37.5)
	3 times	4 (25)
	4 times	4 (25)
	total	16 (100)
Experience in disaster management	<4 years	9 (56.25)
	5-9 years	3 (18.75)
	>10 years	4 (25)
	Total	16 (100)

Personal Characteristics

Demographic characteristics of people can affect the transformation of hazards into disasters. The age structure of the population and the proportion of the population in different age groups, especially vulnerable age groups such as children and the elderly, are important factors in this regard. Gender was also mentioned as an influential factor. From the perspective of the interviewees, women are more vulnerable. In this category, dimensions such as gender and sexual discrimination, population age structure, population density, household size, population growth rate, migration rate inside and outside, and mortality indicators were also included. At the time of disasters, people must take immediate and emergency measures to save and protect themselves. Therefore, individual characteristics of people affect their level of vulnerability. In particular; disability and illness, old age and living in nursing homes, single parenthood, and being in hostels and gathering centers were among these cases. The level of

literacy of people and their ability to access the information they need to reduce the risk of disasters from different sources can affect the occurrence of disasters. The distribution of literacy among different genders and segments of society is also important. The interviewees said this:

“For example, a person who is deaf may not notice the warnings at all...” (P1). “An elderly person who lives in a nursing home, in addition to having some limitations due to old age, may not be able to take shelter in time during an earthquake...” (P3). “If disasters don’t kill such people, their illness may worsen their condition and even cause their death...” “Of course, when I think more, age is also involved in exposure. In an earthquake, young and old people are more affected because they are at home...” (P4). “Being male or female, being old or young, these are the main social factors...” (P1). “The number of people living in a household, complex or even neighborhood can be a factor that increases vulnerability...” (P3).

Community risk perception

Community member's perception of the risk of disasters, their seriousness and timely actions to reduce them are important. In this category, dimensions such as the existence of programs for public disaster education, with a focus on women and girls, the state of people's awareness of the risk of disasters and their attitude towards it were also mentioned. Examples of interviewees' statements in this regard are:

“Understanding the risk and the possible consequences can reduce the exposure...” (P6). “In disasters, the level of knowledge, literacy, and understanding of people is one of the social factors that are very influential...”(P2).

Employment

Employment, its quality, and stability are among the factors that can make people vulnerable to disasters. Also, how stable the jobs are and how satisfied the people working in them are also influential factors. In this category, other dimensions such as unemployment rate, type of employment (sustainable, industrial, etc.), job security, job dissatisfaction, job equity, and the area of agricultural land and types of products were also mentioned. Examples of interviewees' statements are:

“Being a doctor, being an engineer, and in general the state of the job, these are the main social factors...” (P7). “Job has a direct relationship with people's income and this can also affect vulnerability...” (P6). “Well, a worker who does not know how long he will be at work and will have a salary cannot protect himself against many cases, including

disasters...” (P8). *“If we want to have a resilient society, people must have stable jobs...”* (P3).

Quality of residence

People’s place of residence in society such as a city or village and even the neighborhood such as the city center or its slums can affect the vulnerabilities. The quality of construction in cities and their access to services and facilities may be the reasons for this. Also, the poor usually prefer the outskirts of the cities for their residence due to economic reasons and the inability to afford housing in the city centers. The dimensions of this category that the interviewees mentioned were: marginalization, urbanization and land use and construction policies, geographic location, safety and strength of buildings, and neighborhood quality. The interviewees said this:

“Poverty and urbanization, place of residence affect the damage caused by disasters...” (P9). *“The place of residence is also an important social factor in the degree of vulnerability...”* (P10). *“People, who live in temporary or unsafe settlements, people who live in the foothills. People who live near the fault are more damaged...”* (P1). *“The condition of buildings, the safety condition of buildings, and the type of construction (licensed and unlicensed) these have social origins...”* (P4).

Social capital

Social capital is an intangible capital, the amount of which is very effective on development of society. What social capital is and how it is obtained is not the focus of this article, but many dimensions of social capital were mentioned that, according to the interviewees, can affect the risks of disasters in society. Concepts like: social cohesion, social trust, cooperation, collective participation, social support network, social fracture, discrimination and justice, and social resilience. The interviewees had various statements in this regard, some of which are:

“People who live in a community can solve many problems with their participation...” (P3). *“They can help and support each other even in emergencies...”* (P2). *“In a society where there is more social justice and everyone feels that they have their rights, vulnerability is less...”* (P13). *“The existence of social networks and their connection with people is very effective in reducing vulnerabilities...”* (P11). *“The feeling of discrimination is like a poison that makes people not trust each other and even the government, and this makes them more vulnerable...”*(P5).

Disaster/risk governance

The government’s view on disasters and the place of disaster risk reduction in their long-term and short-term plans, the existence of organizations for disaster risk management, the formation of working groups and committees for their management, the provision of their budget, and in short the responsibility of governments for disaster risk reduction activities were among the factors that were mentioned. Also, in this category, issues like; the existence of general governance policies to reduce risk, the existence of laws approved in legislative centers, the existence of laws preventing high-risk actions, the commitment of the senior management of communities to risk reduction measures, inter-sectoral coordination, and the existence of forecasting and early warning systems, the amount of budget allocation to risk reduction activities, and risk transfer mechanism (insurance) were emphasized. Examples of interviewees’ statements are:

“The structure that governments have for disaster management, the stability that exists in them or not, affects all programs...” (P14) (P12). *“They put people at the head of disaster management centers that have no experience and now they will be replaced until they gain experience...”* (P12). *“The position of disaster management in the political and administrative structure of the country affects the vulnerabilities more or less...”* (P5). *“The share of disaster management from the country’s annual budget, and the amount of its allocation are important issues ...”* (P7).

Religious beliefs

Different religions have different views on disasters, their causes, and even how to manage them. Some of them believe that disasters are caused by supernatural causes and invite people to surrender to them. Therefore, people who follow these religions are also influenced by such beliefs. Thus, religious and cultural beliefs were mentioned as influential factors. Some of these items were: the cultural beliefs of the society; the traditions and customs of the society, the understanding of the people and the officials about the risk, and the religious beliefs of the people. The participants in the study said:

“Some people’s cultural and popular beliefs regarding the perception of surrounding dangers are dangerous themselves and it is tough to remove them...” (P13). *“In our religion, disaster is a divine test, and this attitude is very effective...”* (P15). *“Many people consider it fate and destiny...”* *“There is no escaping what will be your part...”* (P16). *“In divine religions, there are many issues about the causes of disasters...”* (P9).

Table 2. Details extracted subcategories and categories

Category	Subcategory	Category	Subcategory
Community risk perception	-The existence of programs for public disaster education -People's and authorities' understanding of the risk of disasters -Educational equity	Religious beliefs	-Cultural beliefs of society -Traditions and customs of society -People's religious beliefs -Community support for risk reduction measures
The existence of infrastructure	-Access to educational services -Access to recreational facilities -Access to health services -Access to telecommunications -Access to communication roads and highways -Access to the railway -Access to media networks -Access to the Internet and virtual space	Quality of residence	-Marginalization -Urbanization and living in rural area -Land use and construction policies -Geographical location -Safety and strength of buildings -Neighborhood quality
Employment	-Rate of employment and unemployment -Type of employment -Job security -Job dissatisfaction -Employment equity -Area of agricultural land and type of crops	Social capital	-Social cohesion -Social trust -Cooperation and collective participation -Social support network -Discrimination and justice -Social resilience
Disaster/risk governance	-The existence of general governance policies for risk reduction -The existence of approved laws in legislative centers -The existence of laws preventing risky actions -The commitment of senior management of communities to risk reduction measures -Interdepartmental coordination -The existence of forecasting and early warning systems -Status of budget allocation to risk reduction activities -Existence of risk transfer mechanism (insurance)	Personal characteristics	-Age structure of the population -Population density -Family size -Population growth rate -The rate of immigration -Mortality indicators -Disability and illness -Aging and living in nursing homes -Single parent -Attending dormitories and gathering centers
Economical condition	-Income, wealth, and its fair distribution -The prevalence of poverty -Income vulnerability -Gross national income -The economic status of society -Inflation rate	Communication/social isolation	-Belonging to ethnic minorities -Membership in marginalized and isolated tribes -Belonging to certain races -Language and linguistic differences and limitations -Being locked up

Economical condition

In this category, 6 dimensions were mentioned, which were: income and wealth and their fair distribution, poverty prevalence, income vulnerability, gross national income, economic status of the society, and inflation rate. In this regard, the participants in the interviews said:

“Poverty and urbanization, occupation, even place of residence has an effect on the damage caused by disasters...” (P5). “Different hazards affect different social groups, for example, a plane crash is an incident for the rich, an earthquake is an incident for the poor, and a flood is an incident for the villagers...” (P7). “Income (with a good

income, a suitable place of residence is created) ...” (P14). “Capital, these are social factors that can affect disasters...” (P11).

Communication/social isolation

Social groups that are in the minority have different religions, races, languages, and customs from the majority of people or are rejected in society. They are among the most vulnerable groups in disasters. In many cases, language barriers cause people to not understand the issued warnings well and in time and to be unable to take timely and effective actions. In this category, there were the following dimensions: belonging to ethnic minorities (especially against the government), membership in marginalized and isolated tribes, belonging to certain races, language and linguistic differences and limitations, and being locked up and confined. Examples of interviewees' statements are:

“Social factors such as language, race, ethnicity, and tribe... These are significant issues...” (P11). “For example if you say the announcement of exit and evacuation in English in an environment where the language is Farsi, it has no effect. Language is the way of communication...” (P7). “Most of the people who are in the social minority are more isolated, they are socially isolated. They have low participation power. I can even say that they are not in social cohesion and are an independent family. This adds to their vulnerability...” (16). “Race, nation, and tribe cause differences in physical strength, cause differences in resistance, patience, and adaptability, so social factors such as race and ethnicity can affect injury...” (P5).

The existence of infrastructure

Development has different dimensions of it is one of the factors that the occurrence of disasters in societies is directly related to. Some of these dimensions that were mentioned were: access to educational services, recreational facilities, health services, telecommunications, communication, roads and highways, railways, media networks, and access to the internet and virtual space.

Discussion

The purpose of this qualitative study was to explore the social factors affecting disasters risks and vulnerabilities in the social context of Iran. After conducting 16 interviews and analyzing them, 10 categories of social factors were identified, including: Personal characteristics, community risk perception, employment, and the quality of residence, social capital, disaster/risk governance, religious beliefs,

economic condition, communication/social isolation, and the existence of infrastructures. Babaie et al., in a scoping review have identified 14 categories of social factors that are effective in disaster risks.^[14] Most of them were mentioned by the participants in this study. However, the four social factors including social harms, cultural factors, family management, and trusteeship and leadership were not mentioned in Iranian society.

Population density (the number of people living per square kilometer of area), was mentioned in many interviews. So many previously published studies introduced it as a social vulnerability, too. They have emphasized the higher the population density in a society, the more people will be affected by disasters.^[15-17] The structure of the population and the age and gender distribution of the population are also factors that can be considered related to this factor.^[18] However, in the structure of the population, the presence of a high proportion of elderly people can also be a factor in the high vulnerability of that society.

Living in a village and having a high proportion of the rural population in a society are also among the factors that create more vulnerability and as a result, can turn a hazard into a disaster with high deaths and injuries. Some studies have pointed to this vulnerability in their results.^[19,20]

One of the factors that enable people to obtain the information they need in all fields, including ways to prevent and reduce the risk of disasters and to act on them, is the study and understanding of the available resources, which is naturally related to people's literacy. Zehra et al., in their study entitled disaster literacy levels of individuals aged 18-60; have pointed to the role of disaster literacy on reduction of disasters risks that its prerequisite is literacy.^[21] However, the impact of literacy on other dimensions of development is also known, which can also be effective on vulnerability to disasters. On the other hand, equity in education, including women and girls, were among the social factors that were related to social vulnerabilities. Hamidazada et al., in their study, while pointing to the difference in the level of vulnerability of women and men to disasters, also points to the difference in the education of women and men and mentions it as one of the causes of women's greater vulnerability.^[22]

The employment situation in society, the unemployment rate, single occupation (employment in one sector), and employment in unsafe occupations in terms of disaster occurrence and job stability, employment in primary and basic occupations, and the number of people working in industry, tourism, and health were among the factors that

were mentioned as affecting the occurrence and impact of disasters and injuries. People's employment has a direct relationship with their income. In addition to the fact that income can be the origin of many actions and other factors, it is also effective in reducing the risk of disasters. High income enables people to avoid high-risk areas for their residences and use engineering methods and materials that are more resistant to hazards in building their residences, to insure their buildings and property, and in case of disasters, to compensate for the effects and return to their lives faster. Some jobs are directly related to risks. Among these, we can mention agriculture and fishing, which are exposed to hazards such as fires, droughts, tsunamis, floods, hurricanes, and all kinds of storms. Relying on one job, especially jobs that are vulnerable to economic issues can also put their employees at risk.

Ghadiri in his study entitled "socio-economic factors in residential vulnerability to earthquakes in Tehran city" has concluded that there is an inverse relationship between vulnerability to earthquakes and income, occupational status, education and risk perception.^[23] Riahi and Karimi have also mentioned the impact of employment in unsafe areas, vulnerable jobs and vulnerability to hazards.^[24] Fatemi et al., have also mentioned employment as one of the indicators of vulnerability.^[25]

The place that people choose to live is not only affected by many other factors, but it is also one of the factors that affect the society's vulnerabilities. Many people live in informal settlements and on the outskirts of cities and villages. Not only are these places unsafe and the principles of engineering have been neglected, but they also have lack of access to social services. They are vulnerable, and it will be very difficult and sometimes impossible to help them in case of need. Due to their characteristics, disadvantages, and advantages, urbanization and ruralization can have both positive and negative effects on the occurrence of disasters. There are many studies that have pointed out the vulnerability of informal and marginal settlements and have examined the quality of human settlements in terms of vulnerability.^[26,27]

The existence and quality of various physical and social infrastructures such as communication lines, energy supply, roads and highways, hospitals and healthcare centers, fire stations, police stations, rescue stations, transport services and vehicles, urban green spaces, shelters and safe places and industrialization are factors that the level of enjoyment of communities can have a significant impact on reducing the level of vulnerability.

Ostadtaghizadeh et al., have extracted many social factors

from articles, including educational equity, age, access to transportation systems, communication variables such as language, coverage of health services, household per capita, employment, income and its distribution, employment rate of women, type of business, size of business, political integration, immigration, social capital and place of residence.^[28]

Different societies have different views and attitudes toward disasters. Some of them consider disasters to be the work of God or nature and an inseparable part of nature, and they believe that humans are subject to these disasters and cannot take measures to reduce the risk and prevent them. According to their fate and luck, they are caught in their circle. Other groups of people do not consider the risk of such cases very high and as a result, do not take them seriously or consider them too far from their place of residence and never imagine a day when they get caught in them. Such societies cannot imagine disasters until they have happened and caught them. On the other hand, some people and societies believe that many risks and the disasters that follow them are not only predictable, but also preventable, and even in cases that cannot be prevented, such as earthquakes; measures can be taken to reduce and minimize the risks of them. These views are factors that are influenced by societies are considered social factors and can play a great role in disaster management.^[29,30]

The state of community health, coverage of health services, existing health facilities in the communities and people's access to them and the services provided by them, the level of readiness of these facilities to provide the health services needed by the people during disasters are factors that can be very effective in reducing injuries and complications caused by disasters.^[28]

The government's view on disasters and the place of disaster risk reduction in their long-term and short-term plans, the existence of organizations for disaster risk management and reduction, the formation of working groups and committees for their management, the provision of their budget, and in short, the responsibility of governments for disaster risk reduction activities were among the factors that were discussed in evidences. Many activities and measures that are necessary to reduce the risk of disasters are collective and community-based activities that require the serious and comprehensive participation of all members of society.^[24-28]

Aldrich et al., in their article titled Social and Physical Determinants of Mortality in the 2011 Tsunami, have pointed out the role of social capital, and political support in mortality.^[31]

Communities that are in the minority, have different

religions, races, languages, and customs from the majority of people, or are rejected by society for some reasons are among the factors that increase the vulnerability of such communities. In many cases, language barriers prevent people from understanding the issued warnings well and in time and from taking timely and effective actions. Paveglio et al., in a study to evaluate the characteristics of social vulnerabilities in forest fires point out that the value of the property and building and the year of its construction were influential factors. However, demographic characteristics had no effect, and the type of lifestyle, and perceived risk had a weak relationship with the occurrence of forest fires.^[32]

Conclusions

This study was conducted to explore social factors affecting the risk of disasters and social vulnerabilities in Iran. The results of the study show that 10 categories of social factors (and 100 subcategories) affect the risk of disasters and vulnerabilities in Iranian society. Paying attention to these factors in disaster risk reduction policies and plans can effectively help reduce disaster casualties and prevent hazards from turning into disasters.

Acknowledgment

The authors would like to wholeheartedly thank the authorities of the social determinants of health research center and study participants.

Competing interests

The authors declare that they have no competing interests.

Abbreviations

Philosophiae Doctor: PhD;
Master of Sciences: MSc.

Authors' contributions

All authors read and approved the final manuscript. All authors take responsibility for the integrity of the data and the accuracy of the data analysis.

Funding

This study was funded by the Social Determinants of Health Research Center, Health Management and Safety Promotion Research Institute, Tabriz University of Medical Sciences.

Role of the funding source

None.

Availability of data and materials

The data used in this study are available from the corresponding author on request.

Ethics approval and consent to participate

The study was conducted in accordance with the Declaration of Helsinki. Institutional Review Board approval was obtained.

Consent for publication

By submitting this document, the authors declare their consent for the final accepted version of the manuscript to be considered for publication.

References

- Center for Research on the Epidemiology of Disasters (CRED). Disasters in numbers 2022. Available at: <https://www.cred.be/publications>. (Accessed 9 Aug 2023)
- Babaie J, Noori M, Sarani M, Sadeghi F. Flash Flooding in East Azerbaijan Province, Iran: A Field Report. *Health Emerg Disasters Q.* 2019; 4 (2):109-111 [doi:10.32598/hdq.4.2.109](https://doi.org/10.32598/hdq.4.2.109)
- UN-ESCAP. Risk and resilience portal. Islamic Republic of Iran disaster data. Available from: <https://rrp.unescap.org/country-profile/irn#paragraph-id--26333>. Accessed: 12 Dec 2023
- United Nations office for disaster risk reduction (UNDRR). Sendai framework terminology on disaster risk reduction. Available from: <https://www.undrr.org/terminology/disaster>. Accessed: 12 Dec 2023
- Shi P. Hazards, disasters, and risks. *Disaster Risk Sci.* 2019; 1-48. [doi:10.1007/978-981-13-6689-5_1](https://doi.org/10.1007/978-981-13-6689-5_1)
- Ghahroudi Tali M, Servati MR, Safari M, Pourmousavi P, Derakhshi K. Flood vulnerability assessment in Tehran city. *Sci J Rescue Relief.* 2014; 4(3): 79-92
- Flanagan BF, Gregory EW, Hallisey EJ, Heitgerd JL, Lewis B. A Social vulnerability index for disaster management. *J Homel Secur Emerg Manag.* 2011; 8(1): 1-24. [doi:10.2202/1547-7355.1792](https://doi.org/10.2202/1547-7355.1792)
- Ghadiri M, Eftekhari AR, Shayan S, Parhizkar A. I was explaining the vulnerability of Tehran city to earthquakes. *Spat Plan.* 2014; 16(3): 31-54.
- Deborab T. Natural Hazards risk assessment for the state of Colorado, GEOC-hazard mitigation and vulnerability assessment class. University of Colorado at Denver and Health Science Center.
- Ferguson BC, Brown RR, Frantzeskaki N, Haan FJ, Deletic A. The enabling institutional context for integrated water management: lessons from Melbourne. *Water Res.* 2013; 47(20): 7300-14. [doi:10.1016/j.watres.2013.09.045](https://doi.org/10.1016/j.watres.2013.09.045) PMID:24148920
- Spielman SE, Tucillo J, Folch DC, Schweikert A, Davies R, Wood N, Tate E. Evaluating social vulnerability indicators: criteria and their application to the Social Vulnerability Index. *Nat Hazards.* 2020; 100: 417-436. [doi:10.1007/s11069-019-03820-z](https://doi.org/10.1007/s11069-019-03820-z)
- Darban Astane A, Bazgir S, Sheikhzade M. Spatial analysis of Social vulnerability of households against Earthquake (case Study: 6 Region of Tehran). *Hum Geogr Res Q.* 2017; 49(2): 465-484

13. Mazloomi Mahmoodabad, S. S., Zeidabadi, B., Rajabalipour, M. R. Predicting Iranian road accidents: application of the theory of planned behavior. *Int Arch Health Sci.* 2023; 10(4): 186-192. doi: [10.48307/iahsj.2023.404891.1000](https://doi.org/10.48307/iahsj.2023.404891.1000)
14. Babaie J, Nori M, Samei B. Social determinants of disasters occurrence and injuries: a scoping literature review. *Disaster Emerg Med J.* 2022; 7(4): 245-254. doi: [10.5603/DEMJ.a2022.0029](https://doi.org/10.5603/DEMJ.a2022.0029)
15. Sabokbar HF, Narimisa MR. Factors affecting vulnerability zoning district 6 of Tehran and vulnerability in the face of natural disasters. *Urban Manag Stud.* 2016; 8(28): 1-12
16. Marzban, A., Emami, P. Importance of food safety in disasters: a glance at the recent flood in Iran (July 2022). *Novel Clin Med.* 2022; 1(4): 204-205. doi: [10.22034/ncm.2022.353717.1054](https://doi.org/10.22034/ncm.2022.353717.1054)
17. Hosseini SS, Safarnia H, Poursaeed M. The relationship between Knowledge Management related to earthquake and resilience social factors. *Disaster Prev Manag Knowl.* 2016; 6(3): 273-283
18. Carpenter A. Social ties, space, and resilience: Literature review of community resilience to disasters and constituent social and built environment factors. *FRB Atlanta Community and Economic Development Discussion Paper.* 2013; (2).
19. Zhou Y, Li N, Wu W, Wu J. Assessment of provincial social vulnerability to natural disasters in China. *Nat hazards.* 2014; 71: 2165-86. doi: [10.1007/s11069-013-1003-5](https://doi.org/10.1007/s11069-013-1003-5)
20. Kumar B, Bhaduri S. Disaster risk in the urban villages of Delhi. *Int J Disaster Risk Reduct.* 2018; 31: 1309-1325. doi: [10.1016/j.ijdr.2018.04.022](https://doi.org/10.1016/j.ijdr.2018.04.022)
21. Zehra Gence F, Yieldz S, Kaya E, Bilgili N. Disaster literacy levels of individuals aged 18-60 years and factors affecting this level: A web-based cross-sectional study. *Int J Disaster Risk Reduct.* 2022; 76: 103244. doi: [10.1016/j.ijdr.2022.102991](https://doi.org/10.1016/j.ijdr.2022.102991)
22. Hamidazada M, Maria Cruz A, Yokomatsu M. Vulnerability Factors of Afghan Rural Women to Disasters. *Int J Disaster Risk Sci.* 2019; 10:573-590 doi: [10.1007/s13753-019-00227-z](https://doi.org/10.1007/s13753-019-00227-z)
23. Ghadiri M. Socio-economic factors in residential vulnerability to earthquake in Tehran city. *J Geogr Space.* 2015; 15(51): 241-262.
24. Riahi VAF, Karimi K. Disaster management and desired pattern development with an emphasis on vulnerability. *Disaster Manag Prev Knowl.* 2017; 6(14): 368-381
25. Fatemi F, Ardalan A, Aguirre B, Mansouri N, Mohammadfam I. Social Vulnerability Indicators in Disasters: Findings from a Systematic Review. *Int J Disaster Risk Reduct.* 2017;22:219-27 doi: [10.1016/j.ijdr.2016.09.006](https://doi.org/10.1016/j.ijdr.2016.09.006)
26. Quuseda-Raman D. Disaster risk assessment of informal settlements in the Global South. *Sustainability.* 2022; 14(16): 10261 doi: [10.3390/su141610261](https://doi.org/10.3390/su141610261)
27. Sandoval V, Sarmiento JP. A neglected issue: informal settlements, urban development, and disaster risk reduction in Latin America and the Caribbean. *Disaster Prev Manag.* 2020; 29(5): 731-745 doi: [10.1108/DPM-04-2020-0115](https://doi.org/10.1108/DPM-04-2020-0115)
28. Ostadtaghizadeh A, Ardalan A, Paton D, Jabbari H, Khankeh HR. Community disaster resilience: a systematic review on assessment models and tools. *PLoS Curr.* 2015. doi: [10.1371/currents.dis.f224ef8efbdfcf1d508dd0de4d8210ed](https://doi.org/10.1371/currents.dis.f224ef8efbdfcf1d508dd0de4d8210ed)
29. Bempah SA, Øyhus AO. The role of social perception in disaster risk reduction: Beliefs, perception, and attitudes regarding flood disasters in communities along the Volta River, Ghana. *Int J Disaster Risk Reduct.* 2017; 23: 104-108 doi: [10.1016/j.ijdr.2017.04.009](https://doi.org/10.1016/j.ijdr.2017.04.009)
30. Jackson G, McNamara K, Witt B. A Framework for Disaster Vulnerability in a Small Island in the Southwest Pacific: A Case Study of Emae Island, Vanuatu. *Int J Disaster Risk Sci.* 2017; 8(4): 358-373 doi: [10.1007/s13753-017-0145-6](https://doi.org/10.1007/s13753-017-0145-6)
31. Aldrich DP, Sawada Y. The physical and social determinants of mortality in the 3.11 Tsunami. *Soc Sci Med.* 2015; 124:66-75. doi: [10.1016/j.socscimed.2014.11.025](https://doi.org/10.1016/j.socscimed.2014.11.025) PMID:25461863
32. Paveglio TB, Prato T, Edgeley C, Nalle D. Evaluating the characteristics of social vulnerability to wildfire: Demographics, perception, and parcel characteristics. *Environ Manag.* 2016; 58: 534-548 doi: [10.1007/s00267-016-0719-x](https://doi.org/10.1007/s00267-016-0719-x) PMID:27272166

How to Cite this Article:

Babaie J, Nouri M, Samei B. A qualitative study of the social factors influencing disaster risk and vulnerability in Iran. *Arch Trauma Res.* 2023;12(4):186-194. doi: [10.48307/ATR.2024.423490.1049](https://doi.org/10.48307/ATR.2024.423490.1049)