

# The Family Preparedness for Landslide Disaster

**Kuslan Sunandar, Tati Suheti, Yosep Rohyadi, Anah Sasmita, Desmaniarti Zaini, Supriadi, Rukman**

Nusing Diploma Study Program, Health Polytechnic Ministry of Health, Bandung, Indonesia

Email: kuslansunandar@upi.edu, tatisarmo@gmail.com, akang.yosep.rohyadi@gmail.com, anah.sasmita@gmail.com, desmaniarti@gmail.com, supriadi@staff.poltekkesbandung.ac.id, rukmansuriahsupriadi@staff.poltekkesbandung.ac.id

**How to cite this paper:** Sunandar, K., Suheti, T., Rohyadi, Y., Sasmita, A., Zaini, D., Supriadi, & Rukman (2023). The Family Preparedness for Landslide Disaster. *Journal of Geoscience and Environment Protection*, 11, 56-66.

<https://doi.org/10.4236/gep.2023.117004>

**Received:** May 27, 2023

**Accepted:** July 10, 2023

**Published:** July 13, 2023

Copyright © 2023 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

## Abstract

In early 2017 landslides occurred in West Bandung Regency, West Java Province, one of which was in the Parongpong District area. Parongpong District is in the Lembang fault area which is on the disaster-prone map, according to the disaster risk index issued by national agency for disaster management, West Bandung is included in the high disaster risk category. The biggest landslide threat in Parongpong District is experienced by Cihanjuang Village and Cihanjuang Rahayu Village which are located in the hills. In both villages, landslides often occur during the rainy season. The purpose of this study was to determine the preparedness of families in Parongpong District in facing landslides, both during the pre-disaster, when the disaster occurred, and after the disaster occurred. The research was conducted in Cihanjuang Village and Cihanjuang Rahayu Village, which are hilly villages and the most at risk according to their topography. The research population was the head of the family who lived in Cihanjuang Village and Cihanjuang Rahayu Village, Parongpong District, West Bandung Regency, with a total sample of 120 respondents who were determined simple random sampling. Data collection was carried out by interviewing the head of the family using a questionnaire as a guide for door-to-door interviewed. The collected data were analyzed using percentage descriptive statistics. The results of the research on the readiness of families in the Parongpong District area in dealing with landslides, during the pre-disaster all (100%) did not make preparations, when a disaster occurred 31.9% carried out guard/guard and when after a disaster occurred 58.3% did community service.

## Keywords

Landslides Preparedness Management

## 1. Introduction

Disaster is an event or series of events that threatens and disrupts people's lives and livelihoods caused by natural and/or non-natural factors as well as human factors resulting in human casualties, environmental damage, loss of property and psychological impacts (Sharma & Kar, 2019; Welton-Mitchell et al., 2018). One type of disaster that often hits hilly areas is landslides. Landslide is a movement of soil from a higher area so that it will overlap or cover the sliding area and cause heaps on the land below. Usually landslides are associated with rainfall that exceeds normal limits, illegal logging and misuse of agricultural land in hilly areas. The causes of landslides are environmental damage, such as the conversion of conservation land functions and illegal logging. Events caused by natural phenomena or caused by human activities can only be called a disaster when the people or people affected by the event are unable to cope with it (Samodra et al., 2018; Runkle et al., 2018).

The occurrence of disasters is due to the presence of hazard factors (threats) and vulnerabilities, as well as trigger factors. For landslides, the triggering factor for the emergence of disasters is usually in the form of high rain intensity for a certain period of time. Disaster risk can be reduced if the level of community vulnerability can be improved through various preparedness measures, both before the disaster occurs, during the disaster, and after the disaster. Research on community preparedness in dealing with disasters is urgently needed to manage future disasters. Disaster management is a systematic and comprehensive effort to deal with all disaster events quickly, precisely and accurately to reduce victims and losses incurred (Runkle et al., 2018). Disaster management examines disasters and all aspects related to disasters, especially disaster risk and how to avoid disaster risk. Runkle et al. (2018), Poorheidari et al. (2020) further stated the importance of disaster management to: 1) prepare for all disasters or unwanted events, 2) reduce losses and victims due to the impact of a disaster, 3) increase awareness of all parties in society about disasters to involved in the process of disaster management, and 4) protected community members from hazards or the impact of disasters. West Bandung Regency according to the Center for Volcanology and Geological Hazard Mitigation (PVMBG) that all sub-districts in West Bandung Regency have the potential to experience medium to high ground movement. Three of these sub-districts, namely Cisarua, Parongpong and Lembang should be watched out for because in addition to ground movement, they also have the potential to experience flash floods (Priyanti et al., 2019; Qasim et al., 2015).

In early 2017 landslides occurred in West Bandung Regency, West Java Province, one of which was in the Parongpong District area. Parongpong District is in the Lembang fault area which is on the disaster-prone map, according to the disaster risk index issued by BNPB, West Bandung is included in the high disaster risk category (Qing et al., 2021). Parongpong District is one of sixteen districts in West Bandung Regency. Parongpong sub-district has an altitude of  $\pm 1000$

m above sea level, so with a relatively high topography, this sub-district has a high threat of landslides. The biggest landslide threat in Parongpong District is experienced by Cihanjuang Village and Cihanjuang Rahayu Village which are located in the hills. In both villages, landslides often occur during the rainy season. Considering the background of the problem as described, the researcher is interested in conducting research on family preparedness in dealing with landslides in Parongpong sub-district, West Bandung regency in 2019. This study aims to determine the preparedness of families in the Parongpong sub-district in facing landslide disasters, both when before the disaster, during the disaster, and after the disaster occurred. Research results are needed to determine disaster mitigation and/or adaptation measures in the future.

## **2. Literature Review**

### **2.1. Disaster Preparedness Management**

#### **2.1.1. Definition of Preparedness Exercise**

In these guidelines, preparedness training is defined as a form of coordination, communication and evacuation training involving all stakeholders (government and the general public). All parties involved simulate real disaster situations using disaster scenarios that are made to approximate or match real conditions. With reference to the definition above, this guideline is prepared for the implementation of exercises that involve multi-stakeholders and is used to build and improve a preparedness system as well as improve skills in coordination and implementation of disaster management operationse (Raikes et al., 2019; Rumoro et al., 2010).

#### **2.1.2. Types of Preparedness Exercise**

Training is an element that plays an important role in systematically enhancing preparedness efforts. There are three training stages, namely the training stage, the simulation stage, and the system test stage. All three have a flow, namely: The gradual understanding in preparedness training is carried out starting from the initial stages of needs analysis, planning, preparation and implementation, as well as monitoring and evaluation.

Tiered, means that the training is carried out starting from the most basic level of complexity, namely socialization, to the highest complexity, namely integrated training/field rehearsals. All types of preparedness training are intended to increase the capacity of stakeholders, starting from increasing knowledge, to attitudes and skills in carrying out functions and responsibilities during an emergency situation. Sustainable, in the sense that preparedness training is carried out continuously and routinely. Preparedness training activities can be carried out routinely, especially in cities/districts with high disaster risk, and carried out at least once a year in order to reduce the number of victims of a disaster (Raikes et al., 2019; Ronan & Towers, 2014).

At the preparedness training stage, one type of exercise is self-evacuation. Self-

evacuation is the ability and action of individuals/communities independently, quickly, precisely and directed based on work steps in carrying out self-rescue from disaster. Self-evacuation drills are exercises to be carried out by organizations or companies, hotels, schools, villages, and so on in response to a disaster early warning system. Preparedness training is usually carried out at the community level, such as corporate organizations, hotels, schools, villages, and so on (Rostami-Moez et al., 2020; Rumoro et al., 2010; Ryan et al., 2018).

## **2.2. Vulnerable Groups and Persons with Disabilities**

### **2.2.1. Vulnerable Groups**

Vulnerability is a condition or environmental condition of a community or society that leads to or causes an inability to face the threat of disaster. Vulnerability for women is multiplied due to natural roles, such as menstruation, pregnancy, childbirth and breastfeeding which if not prioritized will have the potential to cause gender inequality, and also the gender roles expected by society for women make them lose access, participation, control over decision-making and do not benefit from the implementation of disaster management (Sangkala & Gerdtz, 2018; Sawangnate et al., 2022; Wyte-Lake et al., 2014). The level of vulnerability can be viewed from four aspects, namely: Physical vulnerability (infrastructure), describes a physical condition that is vulnerable to certain hazards (hazards). This condition of vulnerability can be seen from various indicators, including: the percentage of built-up areas, building density, the percentage of emergency construction buildings, electricity networks, road length ratio, telecommunications networks, agricultural environment, forests, and others. Population social vulnerability describes the condition of the level of social fragility in facing danger (Sayuti, n.d.; Su, 2015).

### **2.2.2. Person with Disabilities**

The Indonesian Ministry of Health's Center for Data and Information (2014) explains that data on persons with disabilities in Indonesia may vary. This is caused by the use of different concepts and definitions according to the goals and needs of each. BPS itself has been collecting data on persons with disabilities since 1980. Apart from that, since 2007, data on persons with disabilities has also been collected through Basic Health Research (Riskesmas) conducted by the Ministry of Health. This study refers to the definitions and classifications based on Law no. 8 of 2016. Persons with disabilities, according to Law no. 8 of 2016, every person who experiences physical, intellectual, mental and/or sensory limitations for a long time in interacting with the environment can experience obstacles and difficulties to participate fully and effectively with other citizens based on equal rights (Su, 2015). The types of persons with disabilities according to the law are: (Subramaniam & Villeneuve, 2020; Tomio et al., 2012; Villeneuve et al., 2021).

1) Persons with physical disabilities are impaired movement functions, including amputation, paralyzed or stiff, paraplegic, cerebral palsy (CP), due to

stroke, due to leprosy, and small people.

2) People with intellectual disabilities are impaired thinking functions due to below average levels of intelligence, including slow learning, mental disabilities and Down syndrome.

3) Persons with mental disabilities are impaired thinking, emotional and behavioral functions, including: Psychosocial, including schizophrenia, bipolar, depression, anxiety and personality disorders; Developmental disabilities that affect the ability to social interaction, including autism and hyperactivity.

4) Persons with sensory disabilities are disturbed by one of the functions of the five senses, including visual disabilities, deaf disabilities and/or speech disabilities

In addition, vulnerable groups may consist of children, the elderly and the homeless, who need to receive disaster protection and disaster preparedness evacuation drills.

### 3. Research Methods

The research is located in an area prone to landslides in Parongpong District, West Bandung Regency. The focus of the research is the preparedness of the family in dealing with landslide disasters, both during pre-disaster, emergency response, and rehabilitation and reconstruction. The population in this study were families from Cihanjuang Village and Cihanjuang Rahayu Village, Parongpong District who had lived in the area for at least 1 year. This study used a sample of 120 household heads from 15,600 families, by using the sample size formula based on the different proportions of the Lemeshow. Respondents were determined by random sampling. Data collection was carried out by interviewing respondents. In this case the head of the family who was interviewed door-to-door. The interview uses a questionnaire as an interview guide: The data analysis method used in this study is percentage descriptive statistics,

### 4. Results

Before presenting the results of the research, the author conveyed the characteristics of the respondents as follows:

**Table 1** shows that most of the family heads have a junior high school education and a small number of family heads work as casual daily labourers.

#### Research Results

The results of research on family preparedness in dealing with landslides in West Bandung Regency are as follows:

In **Table 2** it can be seen that most of the heads of families stated that there had been a landslide disaster in the villages of Cihanjuang and Cihanjuang Rahayu, Parongpong District, West Bandung Regency. That a small number of family heads reported experiencing large material losses (>10 million) that a small number of family heads said that there were casualties due to landslides.

**Table 1.** Characteristics of the latest education and occupation of respondents on landslide disaster preparedness in west bandung regency N = 120.

No.	Category	Frequency	Percentage
<b>Last education</b>			
1	Elementary school	8	6.7
	junior high school	79	68.8
	high school	33	27.5
<b>Work</b>			
2	Farmer	61	50.8
	Self-employed	40	33.3
	Laborer	19	15.9

**Table 2.** Description of landslide disaster events in cihanjuang and cihanjuang rahayu villages, parongpong district, west bandung regency.

No.	Category	Frequency	Percentage
<b>Disaster Events</b>			
1	Has ever been a landslide	72	60.0
2	Has never been a landslide	48	40.0
<b>Material losses</b>			
1	No material loss	48	40.0
2	Minor material loss	49	40.8
3	Huge material loss	23	19.2
<b>The fatalities</b>			
1	There are fatalities	17	14.2
2	There were no fatalities	103	85.8
<b>Preparedness Training</b>			
1	Had training	11	9.2
2	Never had training	109	90.8
<b>Family Preparation</b>			
1	No preparation	120	100
2	There are preparations	0	0
<b>Establishment of Evacuation Routes</b>			
1	No preparation Evacuation Route	120	100
2	There are preparations	0	0

Continued

<b>The Early Warning System</b>			
1	No Early Warning System	120	100
2	There are the Early Warning System	0	0
<b>Picket Activities</b>			
1	No Picket	97	80.8
2	Picket	23	19.2
<b>Activities of the head of family</b>			
1	No activity	41	34.2
2	Community service	62	51.6
3	Help disaster victims	17	14.2
	N	120	100

that a small number of family heads stated that they had attended disaster preparedness training. That no one head of the family made any preparations in dealing with disaster preparedness. That none of the heads of the family reported seeing the establishment of an evacuation route in disaster preparedness. that none of the heads of households conveyed the existence of an early warning system in disaster preparedness. That less than half of the heads of households took care of the landslides. That, more than half of the heads of families did community service after a landslide disaster occurred.

## 5. Discussion

### 5.1. Family Preparedness for Landslides during the Pre-Disaster Period

The Parongpong sub-district area, especially Cihanjuang and Cihanjuang Rahayu villages, is a hilly area. The hills are designated as agricultural areas and rainwater catchments, but recently they have been used as residential areas. With this change in designation, there will be disaster risks, especially landslides. Residential settlements in the Cihanjuang Rahayu village area, several RWs which are located on the hillsides, you will see houses located below and agricultural gardens above them. According to the author, this situation has a high risk of landslides in residential areas.

**Table 2** shows that 11.1% of respondents have attended disaster preparedness outreach/training. In **Table 2** shows that none of the families carried out preparedness for landslides. The occurrence of a landslide disaster is an unexpected disaster, so families or communities must prepare themselves.

Families or communities can monitor the condition of the surrounding environment, such as the presence of cracks in the ground, the ability of ditches or ditches to collect rainwater or the siltation of rivers. So during the rainy season

the heads of families must always be ready and alert to signs of impending landslides (Waloejo et al., 2021; Walsh et al., 2015).

### 5.2. Family Preparedness for Landslides When a Disaster Occurs

Based on experience when a disaster occurs, people generally panic about landslides, so they only have time to save themselves and their families to a safer place. Most of them just stay silent waiting for announcements or orders, and some people do first aid to children, the elderly or people who are in need. Part of the community disseminated disaster status warnings, both via cell phones (SMS and telephone) and traditional equipment (kentongan) (Wukich, 2019).

The results of the study show that when a disaster occurs, less than half (31.9%) of them (31.9%) are on guard. 9.2% of household heads have participated in disaster preparedness socialization, but have not applied their knowledge in disaster preparedness practice. According to BPBD officers in West Bandung district, disaster preparedness training will affect community preparedness behavior if the training is carried out regularly, until a habit is formed (accustomed to being prepared) (Zhang et al., 2021).

### 5.3. Family Preparedness for Landslides after a Disaster Occurs

Family activities in the Parongpong District area in dealing with landslides, when after the disaster occurred more than half (58.3%) carried out voluntary work. Communities in rural areas are thicker with the value of mutual cooperation, this is influenced by kinship. In addition to the value of close kinship, there is also the attachment of time to their work. The work of the respondents is 50.8% farmers and 33.3% entrepreneurs. Thus they can more freely arrange the time to agree to do the community service (Adams et al., 2018).

The management of landslides that occurred in rural areas, especially in RW 06 Cihanjuang Village which was carried out in September-October 2019 received assistance from Village funds from the Ministry of Villages for the 2019 fiscal year, in the form of installing gabions/repairing roads that experienced landslides in July 2019. We everyone does not expect an avalanche disaster to occur, but if an avalanche occurs, material losses and casualties can be prevented or minimized, namely with the preparedness of all parties (Zhang et al., 2021; Acosta & Chandra, 2013).

## 6. Conclusion

The conclusions of the results of this study are as follows: The readiness of families in the Parongpong District area in dealing with landslides, at the time of the pre-disaster all (100%) did not prepare. The readiness of families in the Parongpong District area in dealing with landslides, when the disaster occurred/the emergency response period, less than half (31.9%) carried out guarding. The readiness of families in the Parongpong District area in dealing with landslides, when after the disaster occurred/the recovery period, more than half (58.3%) did vo-



luntary work.

## Acknowledgements

We would like to express our gratitude to all the participants for their valuable time participating in this research. Hopefully, this research can be useful, and beneficial, and contribute to science. We've appreciated any constructive criticism, suggestion, and feedback needed for this research paper's improvement.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

## References

- Acosta, J., & Chandra, A. (2013). Harnessing a Community for Sustainable Disaster Response and Recovery: An Operational Model for Integrating Nongovernmental Organizations. *Disaster Medicine and Public Health Preparedness*, 7, 361-368. <https://www.cambridge.org/core/journals/disaster-medicine-and-public-health-preparedness/article/harnessing-a-community-for-sustainable-disaster-response-and-recovery-an-operation-al-model-for-integrating-nongovernmental-organizations/34C4F353CABA5DAA1096F48CF13CB7F6> <https://doi.org/10.1017/dmp.2012.1>
- Adams, R. M., Prelip, M. L., Glik, D. C., Donatello, I. et al. (2018). Facilitating Partnerships with Community- and Faith-Based Organizations for Disaster Preparedness and Response: Results of a National Survey of Public Health Departments. *Disaster Medicine and Public Health Preparedness*, 12, 57-66. <https://doi.org/10.1017/dmp.2017.36> <https://www.cambridge.org/core/journals/disaster-medicine-and-public-health-preparedness/article/facilitating-partnerships-with-community-and-faithbased-organizations-for-disaster-preparedness-and-response-results-of-a-national-survey-of-public-health-departments/FD88B95446A678D513B0C76819B64D1C>
- Poorheidari, G., Boojar, M. M. A. et al. (2020). Interactive Model of Disaster Risk & Disaster Management: The Egg Model. *Iranian Red Crescent Medical Journal*, 22, e27. <http://eprints.bmsu.ac.ir/8670/>
- Priyanti, R. P., Hidayah, N. et al. (2019). Community Preparedness in Flood Disaster: A Qualitative Study. *Community Health Equity Research & Policy*, 40, 67-68. <https://doi.org/10.1177/0272684X19853169>
- Qasim, S., Khan, A. N., Shrestha, R. P., & Qasim, M. (2015). Risk perception of the People in the Flood Prone Khyber Pukhthunkhwa Province of Pakistan. *International Journal of Disaster Risk Reduction*, 14, 373-378. <https://doi.org/10.1016/j.ijdrr.2015.09.001> <https://www.sciencedirect.com/science/article/pii/S2212420915300601>
- Qing, C., Guo, S., Deng, X., & Xu, D. (2021). Farmers' Disaster Preparedness and Quality of Life in Earthquake-Prone Areas: The Mediating Role of Risk Perception. *International Journal of Disaster Risk Reduction*, 59, Article ID: 102252. <https://www.sciencedirect.com/science/article/pii/S2212420921002181> <https://doi.org/10.1016/j.ijdrr.2021.102252>
- Raikes, J., Smith, T. F., Jacobson, C., & Baldwin, C. (2019). Pre-Disaster Planning and Preparedness for Floods and Droughts: A Systematic Review. *International Journal of Disaster Risk Reduction*, 38, Article ID: 101207.

- <https://doi.org/10.1016/j.ijdr.2019.101207>  
<https://www.sciencedirect.com/science/article/pii/S2212420918315231>
- Ronan, K. R., & Towers, B. (2014). Systems Education for a Sustainable Planet: Preparing Children for Natural Disasters. *Systems*, 2, 1-23. <https://www.mdpi.com/64900>  
<https://doi.org/10.3390/systems2010001>
- Rostami-Moez, M., Rabiee-Yeganeh, M., Shokouhi, M., Dosti-Irani, A., & Rezapur-Shahkolai, F. (2020). Earthquake Preparedness of Households and Its Predictors Based on Health Belief Model. *BMC Public Health*, 20, Article No. 646.  
<https://doi.org/10.1186/s12889-020-08814-2>
- Rumoro, D. P., Bayram, J. D., Malik, M., & Purim-Shem-Tov, Y. A. (2010). A Comprehensive Disaster Training Program to Improve Emergency Physicians' Preparedness: A 1-Year Pilot Study. *American Journal of Disaster Medicine*, 5, 325-331.  
<https://www.wmplc.org/ojs/index.php/ajdm/article/view/2003>  
<https://doi.org/10.5055/ajdm.2010.0039>
- Runkle, J., Svendsen, E. R., Hamann, M., Kwok, R. K., & Pearce, J. (2018). Population Health Adaptation Approaches to the Increasing Severity and Frequency of Weather-Related Disasters Resulting From our Changing Climate: A Literature Review and Application to Charleston, South Carolina. *Current Environmental Health Reports*, 5, 439-452. <https://doi.org/10.1007/s40572-018-0223-y>
- Ryan, M. T., Rohrbeck, C. A., & Wirtz, P. W. (2018). The Importance of Self-Efficacy in Parental Emergency Preparedness: A Moderated Mediation Model. *Disaster Medicine and Public Health Preparedness*, 12, 345-351. <https://doi.org/10.1017/dmp.2017.80>  
<https://www.cambridge.org/core/journals/disaster-medicine-and-public-health-preparedness/article/importance-of-selfefficacy-in-parental-emergency-preparedness-a-moderate-d-mediation-model/C111D3019453545CF217A26813A78A33>
- Samodra, G., Chen, G., Sartohadi, J., & Kasama, K. (2018). Generating Landslide Inventory by Participatory Mapping: An Example in Purwosari Area, Yogyakarta, Java. *Geomorphology*, 306, 306-313. <https://doi.org/10.1016/j.geomorph.2015.07.035>  
<https://www.sciencedirect.com/science/article/pii/S0169555X15301008>
- Sangkala, M. S., & Gerdtz, M. F. (2018). Disaster Preparedness and Learning Needs among Community Health Nurse Coordinators in South Sulawesi Indonesia. *Australian Emergency Care*, 21, 23-30. <https://doi.org/10.1016/j.auec.2017.11.002>  
<https://www.sciencedirect.com/science/article/pii/S2588994X17300040>
- Sawangnate, C., Chaisri, B., & Kittipongvises, S. (2022). Flood Hazard Mapping and Flood Preparedness Literacy of the Elderly Population Residing in Bangkok, Thailand. *Water*, 14, Article No. 1268. <https://www.mdpi.com/1586848>  
<https://doi.org/10.3390/w14081268>
- Sayuti, R. (n.d.). *Community Preparedness and Village Resilience toward the Threat of Natural Disasters in Small Island: Evidence-Based Study in Lombok, Indonesia*. SSRN. [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=4270165](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4270165)
- Sharma, A., & Kar, N. (2019). Posttraumatic Stress, Depression, and Coping Following the 2015 Nepal Earthquake: A Study on Adolescents. *Disaster Medicine and Public Health Preparedness*, 13, 236-242. <https://doi.org/10.1017/dmp.2018.37>  
<https://www.cambridge.org/core/journals/disaster-medicine-and-public-health-preparedness/article/posttraumatic-stress-depression-and-coping-following-the-2015-nepal-earthquake-a-study-on-adolescents/458494843BEAFF59A8906E152BFEF930>
- Su, Y.-S. (2015). Taiwan Vulnerability Analysis: A Comparative Study with Japan, China, USA, UK, France, and the Netherlands. *Journal of Management and Sustainability*, 5, 76-85. <https://doi.org/10.5539/jms.v5n4p76>  
[https://heinonline.org/hol-cgi-bin/get\\_pdf.cgi?handle=hein.journals/jms5&section=60](https://heinonline.org/hol-cgi-bin/get_pdf.cgi?handle=hein.journals/jms5&section=60)

- Subramaniam, P., & Villeneuve, M. (2020). Advancing Emergency Preparedness for People with Disabilities and Chronic Health Conditions in the Community: A Scoping Review. *Disability and Rehabilitation*, *42*, 3256-3264. <https://doi.org/10.1080/09638288.2019.1583781>
- Tomio, J., Sato, H., & Mizumura, H. (2012). Disparity in Disaster Preparedness among Rheumatoid Arthritis Patients with Various General Health, Functional, and Disability Conditions. *Environmental Health and Preventive Medicine*, *17*, 322-331. <https://doi.org/10.1007/s12199-011-0257-3>
- Villeneuve, M., Abson, L., Pertiwi, P., & Moss, M. (2021). Applying a person-Centred Capability Framework to Inform Targeted Action on Disability Inclusive Disaster Risk Reduction. *International Journal of Disaster Risk Reduction*, *52*, Article ID: 101979. <https://www.sciencedirect.com/science/article/pii/S2212420920314813> <https://doi.org/10.1016/j.ijdrr.2020.101979>
- Waloejo, C. S., Wardhana, T. H., Andrianto, L., Pandin, T. E. N., & Pandin, M. G. R. (2021). Analyzing Earthquake, Tsunami, and Liquefaction Disaster Mitigation Preparedness in Central Sulawesi, Indonesia. *Review of International Geographical Education*, *11*, 1581-1589. <https://search.ebscohost.com/login.aspx?direct=true&profile=ehost&scope=site&authType=crawler&jrnl=21460353&AN=152939659&h=wBQASY1qNM2BKj0LqTC3qA1eDCZ3Xp6HOSY3V5ZWNhYJu7qrj1V1L35B8sKAxGP7osc5PHp215H4BM8Gb%2BxcxQ%3D%3D&crl=c>
- Walsh, L., Craddock, H., Gulley, K., Strauss-Riggs, K., & Schor, K. (2015). Building Health Care System Capacity: Training Health Care Professionals in Disaster Preparedness Health Care Coalitions. *Prehospital and Disaster Medicine*, *30*, 123-130. <https://www.cambridge.org/core/journals/prehospital-and-disaster-medicine/article/building-health-care-system-capacity-training-health-care-professionals-in-disaster-preparedness-health-care-coalitions/25C1A385D7F19238DF9E34EEA0285462>
- Welton-Mitchell, C., James, L. E., Khanal, S. N., & James, A. S. (2018). An Integrated Approach to Mental Health and Disaster Preparedness: A Cluster Comparison with Earthquake Affected Communities in Nepal. *BMC Psychiatry*, *18*, Article No. 296. <https://doi.org/10.1186/s12888-018-1863-z>
- Wukich, C. (2019). Preparing for Disaster: Social Media Use for Household, Organizational, and Community Preparedness. *Risk, Hazards & Crisis in Public Policy*, *10*, 233-260. <https://doi.org/10.1002/rhc3.12161>
- Wyte-Lake, T., Claver, M., Griffin, A., & Dobalian, A. (2014). The Role of the Home-Based Provider in Disaster Preparedness of a Vulnerable Population. *Gerontology*, *60*, 336-345. <https://www.karger.com/Article/Abstract/355660> <https://doi.org/10.1159/000355660>
- Zhang, D., Liao, H., Jia, Y., Yang, W., He, P., Wang, D. et al. (2021). Effect of Virtual Reality Simulation Training on the Response Capability of Public Health Emergency Reserve Nurses in China: A Quasiexperimental Study. *BMJ Open*, *11*, e048611. <https://bmjopen.bmj.com/content/11/9/e048611.abstract> <https://doi.org/10.1136/bmjopen-2021-048611>