

## Community empowerment psychosocial support for disaster survival children in adonara

Epifania M. Ladapase<sup>a,1,\*</sup>, Sitti Anggraini<sup>a,2</sup>, Agustinus Rudi Yanto<sup>a,3</sup>, Yosep Don Bosko Bara<sup>a,4</sup>, Yuliana Yustanti Witak<sup>a,5</sup>, Yenita Lusya Welin<sup>a,6</sup>, Yohana Yunita Owon<sup>a,7</sup>

<sup>a</sup> Program Studi Psikologi, Fakultas Ilmu-Ilmu Sosial, Universitas Nusa Nipa, Jl. Kesehatan, Maumere, NTT, 86111, Indonesia

<sup>1</sup> [faniadapase@gmail.com](mailto:faniadapase@gmail.com); <sup>2</sup> [anggimof@gmail.com](mailto:anggimof@gmail.com); <sup>3</sup> [yrudi2708@gmail.com](mailto:yrudi2708@gmail.com); <sup>4</sup> [yosephdonbosco@gmail.com](mailto:yosephdonbosco@gmail.com); <sup>5</sup> [tutewitak28@gmail.com](mailto:tutewitak28@gmail.com),

<sup>6</sup> [yenitawelin07@gmail.com](mailto:yenitawelin07@gmail.com), <sup>7</sup> [yohanayunitaowon@gmail.com](mailto:yohanayunitaowon@gmail.com)

\* Corresponding Author

### ABSTRACT

The Seroja cyclone disaster that occurred in East Adonara, East Flores, left deep wounds for the community, the families of the victims who died, lost property, and lost their homes and relatives. This certainly causes severe psychological disturbances for family members, especially for children who have survived the disaster. The results of the assessment of the condition of the children in the Nelelamadiken Village area, East Adonara are very concerning. These child survivors seem to have received less serious attention from their parents and the local government. It should be noted that the banjirbandang disaster is not the main factor causing trauma and psychological injuries to children in the area, but it is only a reinforcing factor for the deepening of the wounds felt by children who survived the disaster. For this reason, there is a need for psychosocial support in overcoming the psychological vulnerability of the survivors. Psychosocial support is a process to facilitate the development of well-being in a person by using the resources that exist within himself and also the resources that exist in his community or social environment. This psychosocial support aims to minimize the physical, psychological and social impacts caused by disasters or crisis situations. Psychosocial support is carried out for 14 days, namely three days of conducting an assessment and ten days of carrying out psychosocial support programs according to the needs of children who have survived the disaster. The psychosocial support program for 14 days showed a significant change in the behavior of the children who survived the disaster.

### KEYWORDS

Disaster;  
East Adonara;  
Child;  
Psychosocial Support



This is an open-access article under the [CC-BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license

### 1. Introduction

Flash floods due to extreme weather or Tropical Cyclone Seroja hit Adonara Island, East Flores on Sunday (4/4/2021) early in the morning at around 02.00. Rain with heavy to extreme intensity, above 150 mm in the NTT region for four days, and in that period for two consecutive days the highest rainfall of 241 mm and 306 mm measured at the Eltari Meteorological Station greatly influenced this disaster from Riefda in Kompas.com, Monday 5/4/2021. This disaster has left deep wounds for the families of the victims who died and lost their property. All residents affected by the flash flood had to evacuate to refugee camps provided by the local government. Psychological problems in children and adolescents related to natural disasters persist long after the disaster incident. This condition gets worse if it is not handled properly and detected early on by identifying problems for victims of natural disasters. Research on disaster psychology has been carried out by previous researchers. Social cognitive performance in post-traumatic stress disorder was investigated by Janssen [1]. The need for cognition and reflection: An alternative explanation for gender differences in disaster information seeking was investigated by Lachlan [2]. The role of emergency managers and directors of emergency social services to support disaster risk reduction in Canada was investigated by Oostlander [3]. Observations on Citizen Risk Awareness and Natural Disaster Management Practices in Mongolia: Khovd Citizens Questionnaire Survey Data researched by Nara [4]. A Conceptual Framework for Motivating Action Towards Disaster Preparedness Through Risk Communication was investigated by Abunyewah [5].

Expanded Peer Community: Assessing the contribution of tacit knowledge in climate change decision making researched by Meisch [6]. Could risk communication with non-experts contribute to normal post-disaster recovery? A survey in disaster-stricken prefectures after the Great East Japan Earthquake was studied by Kobayashi [7]. Quality of life and subjective social status after five years of the Mount Sinabung eruption: Disaster management and current sources of inequality in displaced, remaining and relocated communities were studied by Sullivan [8]. Psychology of energy: Efficacy, speed, mechanism investigated by Feinstein [9]. Applying cultural values to promote disaster preparedness: Lessons from low-hazard countries studied by Appleby-Arnold [10]. An international study of psychological coping during COVID-19: Towards a meaning-centered coping style was researched by Eisenbeck [11]. The progress of the Sendai framework (2015–2020): A focus on families with children with special health care needs (CSHCN) was investigated by Dodd-Butera [12]. Disaster Fiqh: Mitigation of Covid-19 in the Perspective of Islamic-Science Education researched by Suyadi [13]. Failure-enhanced evacuation training using a VR-based disaster simulator: A comparative experiment with simulated refugees was investigated by Mitsuahara [14]. The role of society in dealing with natural disasters: Lessons from the 2010 Chile Earthquake and Tsunami researched by Moreno [15].

The push for voluntary COVID-19 vaccination: How to explain peer information? studied by Sasaki [16]. Cooperative and competitive behavior among passengers during the Costa Concordia disaster was studied by Bartolucci [17]. The benefits, barriers, and incentives for increasing resistance to disruption in university teaching were investigated by Dohaney [18]. Geo-hydrological and seismic risk awareness in schools: Emergency preparedness and evaluation of risk perception was investigated by Bandecchi [19]. Flood disaster: Its effect on adolescents at AngodaRahula College, Sri Lanka was studied by Randeniya [20]. Psychological barriers to effective altruism were investigated by Jaeger [21]. The psychological effects of the 2017 California wildfires on children and adolescents with disabilities were studied by Ducey [22]. Why the disaster happened: The cultural frame of the Diamond Island raid in Cambodia is investigated by Eisenbruch [23]. Living like there is no tomorrow: The psychological effect of earthquakes on saving and spending behavior was investigated by Filipski [24]. Disaster recovery process: Analyzing the interaction between the community and the authorities in Chennai, India researched by Joerin [25].

The assessment of building ceiling thermal emissions from agro-industrial waste was investigated by Dirisu [26]. Measuring community resilience with a critical analysis of a policy-oriented indicator tool researched by Tan [27]. Emergency reaction questionnaire – The first step towards a new method was researched by Zsido [28]. Psychometric design and evaluation of the Adolescent Resilience Tool in Disaster (ARDT-Q37): A mixed methods study was investigated by Mohammadinia [29]. The analysis of factors influencing the capacity of disaster prevention in urban green spaces based on an analytical hierarchical process was investigated by Liu [30]. A systematic review of loneliness in bereavement: Current research and future directions investigated by Vedder [31]. Integrating Indigenous perspectives and community-based disaster risk reduction: Pathways to sustainable Indigenous development in Northern Pakistan was researched by Ali [32]. Impact evaluation challenges: An attempt to measure the effectiveness of community-based disaster risk management was investigated by Sarabia [33]. Solastalgia grief and the slowly evolving effects of asbestos pollution: A qualitative study in Italy was investigated by Testoni [34]. The Impact of Disasters on SMEs in Malaysia was investigated by Auzzir [35].

Whether large-scale wind power is a problem, a solution, or a victim was investigated by Bjärstig [36]. Staying behind despite disaster risk: Place attachment, voluntary immobility, and adaptation in the Pamir Mountains of Tajikistan studied by Blondin [37]. Understanding resilience: Lexical shifts and proximal meaning in the human-centered natural and artificial environment literature from 1990 to 2018 were investigated by Wang [38]. Increased social services and the burden of post-traumatic stress disorder among economically vulnerable people after natural disasters: a modeling study investigated by Cohen [39]. Measuring the level of disaster preparedness in Auckland was studied by Rañeses [40]. How human

factors and ergonomics save lives was investigated by Hancock [41]. The sophistication of decision-making regarding post-disaster housing assistance was investigated by [42]. The perspective of disaster resilience practitioners in international development was investigated by Keating [43]. Psychology and climate change were investigated by Clayton [44]. How can Psychology inform disaster research? investigated by Robinson [45].

Changes in maternal cortisol levels, cortisol binding globulin and cortisone levels after diagnosis of fetal anomalies were investigated by Oftedal [46]. Composite inherent resilience index for Zimbabwe: An adaptation of the local disaster resilience model studied by Mavhura [47]. Panic buying? Stockpiling of food during pandemic times with city lockdowns was investigated by WANG [48]. The systemic problem of capacity building for disaster risk reduction in a complex, uncertain, dynamic, and ambiguous world is investigated by Hagelsteen [49]. Reduction of communication demand under catastrophic congestion using controls to change human communication behavior without direct limitation was investigated by Satoh [50]. The results of the assessment of the condition of the children in the Nelelamadiken Village area, East Adonara are quite alarming, apart from not being handled, these child survivors seem to have received less serious attention from both parents and the local government. Especially children who are in refugee camps or who have followed their relatives. Many came, one after another, meeting the children, just giving snacks, toys and inviting the children to play and sing after that they left and changed to something else. No one has really come specifically to deal with these disaster-affected children.

For children, disasters can be very scary, their physique is not as strong as adults make them more vulnerable to the threat of disaster. Children's main sense of security is the adults around them (parents and teachers) and regular schedules. Therefore, children are also greatly affected by the reactions of their parents and other adults. If their parents and teachers react in a panic, the child will be even more frightened. When they live in refugee camps and lose their homes, schools and other family members, children no longer have a regular schedule for learning and playing activities, which makes children lose control of their lives. The trauma and wounds have actually been felt by the child survivors for a long time and it is realized or not that the family environment and local government have a big role in it. Children who have survived this disaster have experienced loss before this disaster occurred. Loss of attention and affection, lost parenting from both parents, lost opportunities to play and even lost opportunities to learn.

Natural disasters are certain to have an impact on the psychology of the people who are affected either directly or indirectly. This condition causes a decrease in mental quality as a result of the traumatic event. The contribution of this service is psychosocial support for children who are disaster survivors in Adonara. For children, disasters can be very scary, their physique is not as strong as adults, making them more vulnerable to the threat of disasters. Children's main sense of security is the adults around them and the regularity of schedules. Therefore, children are also greatly affected by the reactions of their parents and other adults. There is no regular schedule for learning activities, and play, making children lose control of their lives.

## 2. Method

The implementation of psychosocial support in Nelelamadiken village, East Adonara lasted for 14 days. The work program for 14 days is to restore the trauma felt by children who survived the flash flood in Nelelamadiken, East Adonara. Children in the early and advanced age categories who are in the age range of 0-14 years as proposed by the National Association for The Education of Young Children (Odekon, in Hidayat&Rezi, 2021), is an age that can be called the golden age where The brain is able to develop up to 80%, so it can be interpreted that at this time children can record an event quickly and can also have a big impact on physical and mental conditions when faced with a natural disaster. The psychological mental state of children after a disaster will greatly disrupt the child's growth and development if they do not get special attention and treatment as early as possible after the disaster.

Schedule of implementation of psychosocial support in Nelelamadiken village: The first three (3) days we conducted an assessment of the condition and implementation of psychosocial support activities with children who survived the disaster.

### 3. Results and Discussion

The Psychology Study Program at the University of Nusa Nipa Indonesia in collaboration with WahanaVisi Indonesia (WVI) provided psychosocial support for children who survived the Seroja Cyclone disaster that occurred in East Adonara, particularly in Nelelamadiken Village, Ile Boleng District, East Flores Regency. The Psychology Study Program sent several students and accompanying lecturers who had been provided with psychosocial support training for Adonara by psychologists from WVI.

Psychosocial support given to child survivors in Nelelamadiken village is in the form of recognizing disasters, the factors that cause disasters, how to avoid disasters, providing sex education to children, overcoming the psychological consequences (trauma) of disasters and increasing children's creativity. This psychosocial support is provided with the aim of providing information about disasters, disseminating knowledge and understanding of children about sex and how to protect themselves from sexual crimes, entertaining children, reducing stress and trauma due to disasters, improving children's psychomotor skills. The first three days we conducted a condition assessment with the aim of registering children affected by the disaster, obtaining permission from parents for the involvement of children in psychosocial support activities for 10 days, building report cards with parents and children and seeing firsthand the conditions. Children and families affected by the disaster are shown in [Fig. 1](#).



**Fig. 1.** Children's assessment: data collection activities and building report cards

The [Fig. 1](#) shows that the achievements. Parents are very supportive of the activities that will be followed by the children and feel very helpful because during the post-disaster, children do not have a place and opportunity to play. The problem is that there are no obstacles during the data collection process.

On the first, second and third days, the activities included dividing the children into small groups based on age, light relaxation. In small groups the children prayed together, sang disaster relief songs and how to avoid disasters, practiced Nelelamadiken chants, played (running) cardboard, drawing, coloring pictures, sticking mosaics, fairy tales, games), making an agreement with the children during the activity, for teenagers, children getting psychoeducation on disaster recognition, disaster rescue strategies and sharing experiences, recognizing emotions and closing with prayer are shown in [Fig. 2](#).



**Fig. 2.** Activities with kindergarten/paud children

The Fig. 2 shows that the goals are to reduce anxiety and stress in children, restore children's joy, teach children how to deal with disasters, and train children to recognize the various emotions they feel and express emotions in an appropriate way. The problem was that there were still some children who did not want to join and showed refusing behavior, two other children were silent during the activity, there were four children who experienced minor trauma, several other children showed disturbing behavior and there were children who just cried from the beginning to the end of the activity. Follow-up for children who have emotional and behavioral problems, we conduct home visits and there are further counseling sessions and children who experience minor trauma undergo therapy sessions with a psychologist

During the first day of the program, the children showed active behavior, were difficult to manage, withdrawn, committed acts of violence to friends, especially verbally (mocking, insulting, giving nicknames, issuing harsh words such as swearing, shouting and yelling) seeking attention, showing expressions different emotions such as crying, being silent and not wanting to participate in activities, scolding friends. There were four children who were seen to be traumatized by the loss of their home and other family members, we also found that some children had learning difficulties and these were children who had lost the care of both parents and one of the parents.

On the fourth, fifth and sixth days, the activity was carried out by starting activities with prayer, relaxation, yelling, teaching children to be grateful by singing and sharing faith experiences, psychoeducation of ethics in the family, sexual education by playing using sign cards, playing, singing, and dragon snake games, ice breaking, for teenagers there are frequent experience sessions and covering the activities with prayer is shown in Fig. 3. The Fig. 3 shows that the purpose of this activity is to make children calmer and see positive things from every event they experience, to build a sense of caring and respect for others, especially parents and children, knowing what can and cannot be done based on age and be more alert. The obstacle faced was that there were still some children who did not participate in the activity and disturbed other friends who were participating in the activity and the activity was stopped because the children had to meet groups that came and brought snacks.

Before starting the activity, we made an agreement with the children to stick to the rules we had made. During the implementation of activities with children on the first day, we conducted direct observations and interviews with children regarding the situation of their parents, as well as the surrounding environment. The second day we run the second day program with the theme we have set. We teach yells and also new songs to lighten the mood, and educational games. the fourth day of the program that we run went well, here there has been a change in the behavior of the children themselves, namely they have started to obey, follow the rules we made, start to open up and are calmer than the first day.



**Fig. 3.** Educational sex with the play method

The program that we implemented started at 08:00-11:00 noon, and around 16:00-17:00 we visited the homes of residents affected by the disaster (parents). The fifth day we run a program with the theme "sex education" the children do not understand because of the lack of early education from parents, even if at school the teachers teach separately between boys and girls and not in detail, so their knowledge about sex education is still very minimal. . In the afternoon, we and the youth (SMP) build relationships by sharing experiences after the disaster occurred in their village. On the sixth and seventh day we carried out the planned program, here we found behavioral changes that were more prominent from the children, for example children showed more cheerful expressions, were more comfortable with our presence, active children were calmer and more daring to express their feelings. they.

On the tenth day being our last day with the children, we held a competition (singing, and reading poetry) after which they got the prizes they had prepared. Besides that, we give impressions and messages to children and vice versa, children give their impressions and messages to us while participating in activities with us.

Especially for children who experienced minor trauma, who previously did not dare to pass through the disaster site and avoided stories or recalled the disaster situation on the seventh day, they showed a change. The child is willing to remember and tell the situation when a disaster occurs, want to go to the place or location of the incident and show the location of the house that has been lost by the flood. The condition of the child has not fully recovered because the child does not want to visit the general burial site of the disaster victims.

Based on the results of observations and interviews that have been carried out for ten days, we found that the main cause of the behavior shown by these children was not from this disaster situation. The real disaster has been experienced by children before the flood disaster, but a social disaster that comes from parental care, where many parents migrate so that parenting patterns are replaced by grandmothers or closest relatives. The ideal parenting should be carried out by parents for their children, but today's families show that many parents are working. This more or less affects the process of parents in guiding and caring for their children, so that sometimes in parenting parents need support from others and require children to get care from their grandparents.

Parenting by grandparents often occurs in society, this situation is often caused by several problems that occur in the child's family, namely financial constraints in the family and various other causes. This shift in care, which can be in the form of regular routine care, or as a substitute caregiver for children, in Indonesia is often caused by parents working as TKI (Indonesian Workers) abroad. Apart from temporary

or comprehensive care by grandparents, more or less can have an effect on the formation of prosocial behavior in early childhood. In the village of Nelelamadike, the people still adhere to very strong customs so that polygamous marriages are still found. Living with more than one pair in one house is not a problem, if peruses or traditional rituals have been carried out then the local community can accept this condition. This certainly has a negative effect on the development of children. Children experience confusion and lose care from biological parents, lose self-esteem because they are the talk of friends and become victims of bullying from friends. Furthermore, children imitate the behavior of parents or adults around the child.

#### 4. Conclusion

The 14-day psychosocial support program starts on 3 (three) May 2021 at the Nelelamadike Elementary School post with 43 children. Prior to the activity with the children, we met with the parents to ask permission for the children to be involved with us for ten days (attachment of the permit certificate). The first day we divided the groups according to the child's developmental age. At the age of 3-6 years / Kindergarten & PAUD (15 children), at the age of 7-9 years / SD Class 1-3 (17 children), while at the age of 10-14 years / SD Class 4-SMP (16 children). Flash floods are enough to affect the psychological condition of children, the loss of relatives, friends, places to live and schools. The 14-day psychosocial support program was sufficient to help restore children's happiness and motivate children, which was indicated by a significant change in the behavior of disaster survivors.

#### Acknowledgment

This activity was funded by the Program Studi Psikologi, Fakultas Ilmu-Ilmu Sosial, Universitas Nusa Nipa and also supported by Nelelamadike village, East Adonara as activity partners in the implementation of this community service activity.

#### Author Contribution

The implementation of psychosocial support in Nelelamadike village, East Adonara lasted for 14 days.

#### Funding

In this section, you can acknowledge any support given which is not covered by the author contribution or funding sections. This may include administrative and technical support, or donations in kind (e.g., materials used for experiments).

#### Conflict of Interest

The authors declare no conflict of interest.

#### References

- [1] P. G. J. Janssen et al., "Social cognitive performance in posttraumatic stress disorder: A meta-analysis," *J. Affect. Disord.*, vol. 297, pp. 35–44, Jan. 2022, doi: [10.1016/j.jad.2021.09.082](https://doi.org/10.1016/j.jad.2021.09.082).
- [2] K. A. Lachlan, E. Hutter, C. Gilbert, and P. R. Spence, "Need for cognition and rumination: Alternate explanations for sex differences in disaster information seeking," *Prog. Disaster Sci.*, vol. 11, p. 100180, Oct. 2021, doi: [10.1016/j.pdisas.2021.100180](https://doi.org/10.1016/j.pdisas.2021.100180).
- [3] S. A. Oostlander, V. Bournival, and T. L. O'Sullivan, "The roles of emergency managers and emergency social services directors to support disaster risk reduction in Canada," *Int. J. Disaster Risk Reduct.*, vol. 51, p. 101925, Dec. 2020, doi: [10.1016/j.ijdr.2020.101925](https://doi.org/10.1016/j.ijdr.2020.101925).

- [4] Y. Nara and S. Battulga, "Observations on Residents' Risk Awareness and Practice of Countermeasures against Natural Disasters in Mongolia: Questionnaire Survey Data of Khovd Citizens," *ProcediaComput. Sci.*, vol. 159, pp. 2345–2354, Jan. 2019, doi: [10.1016/j.procs.2019.09.409](https://doi.org/10.1016/j.procs.2019.09.409).
- [5] M. Abunyewah, T. Gajendran, and K. Maund, "Conceptual Framework for Motivating Actions towards Disaster Preparedness Through Risk Communication," *Procedia Eng.*, vol. 212, pp. 246–253, Jan. 2018, doi: [10.1016/j.proeng.2018.01.032](https://doi.org/10.1016/j.proeng.2018.01.032).
- [6] S. P. Meisch, S. Bremer, M. T. Young, and S. O. Funtowicz, "Extended Peer Communities: Appraising the contributions of tacit knowledges in climate change decision-making," *Futures*, vol. 135, p. 102868, Jan. 2022, doi: [10.1016/j.futures.2021.102868](https://doi.org/10.1016/j.futures.2021.102868).
- [7] T. Kobayashi, Y. Takebayashi, A. Goto, K. Nakayachi, and M. Murakami, "May risk communication with non-experts contribute to post-disaster restoration of normalcy? A survey on the disaster-struck prefectures after the Great East Japan Earthquake," *Int. J. Disaster Risk Reduct.*, vol. 65, p. 102564, Nov. 2021, doi: [10.1016/j.ijdrr.2021.102564](https://doi.org/10.1016/j.ijdrr.2021.102564).
- [8] G. B. Sullivan and S. Sagala, "Quality of life and subjective social status after five years of Mount Sinabung eruptions: Disaster management and current sources of inequality in displaced, remaining and relocated communities," *Int. J. Disaster Risk Reduct.*, vol. 49, p. 101629, Oct. 2020, doi: [10.1016/j.ijdrr.2020.101629](https://doi.org/10.1016/j.ijdrr.2020.101629).
- [9] D. Feinstein, "Energy psychology: Efficacy, speed, mechanisms," *EXPLORE*, vol. 15, no. 5, pp. 340–351, Sep. 2019, doi: [10.1016/j.explore.2018.11.003](https://doi.org/10.1016/j.explore.2018.11.003).
- [10] S. Appleby-Arnold, N. Brockdorff, I. Jakovljević, and S. Zdravković, "Applying cultural values to encourage disaster preparedness: Lessons from a low-hazard country," *Int. J. Disaster Risk Reduct.*, vol. 31, pp. 37–44, Oct. 2018, doi: [10.1016/j.ijdrr.2018.04.015](https://doi.org/10.1016/j.ijdrr.2018.04.015).
- [11] N. Eisenbeck et al., "An international study on psychological coping during COVID-19: Towards a meaning-centered coping style," *Int. J. Clin. Heal. Psychol.*, vol. 22, no. 1, p. 100256, Jan. 2022, doi: [10.1016/j.ijchp.2021.100256](https://doi.org/10.1016/j.ijchp.2021.100256).
- [12] T. Dodd-Butera, H. Li, M. L. Beaman, M. Amaral, C. J. Eggleston, and D. Podolske, "Progress on the Sendai framework (2015–2020): Focus on families with children with special health care needs (CSHCN)," *Prog. Disaster Sci.*, vol. 12, p. 100193, Dec. 2021, doi: [10.1016/j.pdisas.2021.100193](https://doi.org/10.1016/j.pdisas.2021.100193).
- [13] Suyadi, Z. Nuryana, and N. A. F. Fauzi, "The fiqh of disaster: The mitigation of Covid-19 in the perspective of Islamic education-neuroscience," *Int. J. Disaster Risk Reduct.*, vol. 51, p. 101848, Dec. 2020, doi: [10.1016/j.ijdrr.2020.101848](https://doi.org/10.1016/j.ijdrr.2020.101848).
- [14] H. Mitsuhashi, C. Tanimura, J. Nemoto, and M. Shishibori, "Failure-enhanced evacuation training using a VR-based disaster simulator: A comparative experiment with simulated evacuees," *ProcediaComput. Sci.*, vol. 159, pp. 1670–1679, Jan. 2019, doi: [10.1016/j.procs.2019.09.337](https://doi.org/10.1016/j.procs.2019.09.337).
- [15] J. Moreno, "The role of communities in coping with natural disasters: Lessons from the 2010 Chile Earthquake and Tsunami," *Procedia Eng.*, vol. 212, pp. 1040–1045, Jan. 2018, doi: [10.1016/j.proeng.2018.01.134](https://doi.org/10.1016/j.proeng.2018.01.134).
- [16] S. Sasaki, T. Saito, and F. Ohtake, "Nudges for COVID-19 voluntary vaccination: How to explain peer information?," *Soc. Sci. Med.*, vol. 292, p. 114561, Jan. 2022, doi: [10.1016/j.socscimed.2021.114561](https://doi.org/10.1016/j.socscimed.2021.114561).
- [17] A. Bartolucci, C. Casareale, and J. Drury, "Cooperative and competitive behaviour among passengers during the costa concordia disaster," *Saf. Sci.*, vol. 134, p. 105055, Feb. 2021, doi: [10.1016/j.ssci.2020.105055](https://doi.org/10.1016/j.ssci.2020.105055).
- [18] J. Dohane, M. de Róiste, R. A. Salmon, and K. Sutherland, "Benefits, barriers, and incentives for improved resilience to disruption in university teaching," *Int. J. Disaster Risk Reduct.*, vol. 50, p. 101691, Nov. 2020, doi: [10.1016/j.ijdrr.2020.101691](https://doi.org/10.1016/j.ijdrr.2020.101691).
- [19] A. E. Bandecchi, V. Pazzi, S. Morelli, L. Valori, and N. Casagli, "Geo-hydrological and seismic risk awareness at school: Emergency preparedness and risk perception evaluation," *Int. J. Disaster Risk Reduct.*, vol. 40, p. 101280, Nov. 2019, doi: [10.1016/j.ijdrr.2019.101280](https://doi.org/10.1016/j.ijdrr.2019.101280).
- [20] E. Randeniya, "Flooding disaster: The effect on the adolescents at AngodaRahula College, Sri Lanka," *Procedia Eng.*, vol. 212, pp. 723–728, Jan. 2018, doi: [10.1016/j.proeng.2018.01.093](https://doi.org/10.1016/j.proeng.2018.01.093).
- [21] B. Jaeger and M. van Vugt, "Psychological barriers to effective altruism: An evolutionary perspective," *Curr. Opin. Psychol.*, vol. 44, pp. 130–134, Apr. 2022, doi: [10.1016/j.copsyc.2021.09.008](https://doi.org/10.1016/j.copsyc.2021.09.008).

- [22] E. M. Ducey and L. M. Stough, "Psychological effects of the 2017 California wildfires on children and youth with disabilities," *Res. Dev. Disabil.*, vol. 114, p. 103981, Jul. 2021, doi: [10.1016/j.ridd.2021.103981](https://doi.org/10.1016/j.ridd.2021.103981).
- [23] M. Eisenbruch, "Why disasters happen: Cultural framings from the Diamond Island stampede in Cambodia," *Int. J. Disaster Risk Reduct.*, vol. 44, p. 101423, Apr. 2020, doi: [10.1016/j.ijdr.2019.101423](https://doi.org/10.1016/j.ijdr.2019.101423).
- [24] M. Filipski, L. Jin, X. Zhang, and K. Z. Chen, "Living like there's no tomorrow: The psychological effects of an earthquake on savings and spending behavior," *Eur. Econ. Rev.*, vol. 116, pp. 107–128, Jul. 2019, doi: [10.1016/j.euroecorev.2019.04.004](https://doi.org/10.1016/j.euroecorev.2019.04.004).
- [25] J. Joerin, F. Steinberger, R. R. Krishnamurthy, and A. Scolobig, "Disaster recovery processes: Analysing the interplay between communities and authorities in Chennai, India," *Procedia Eng.*, vol. 212, pp. 643–650, 2018, doi: [10.1016/j.proeng.2018.01.083](https://doi.org/10.1016/j.proeng.2018.01.083).
- [26] J. O. Dirisu et al., "Thermal-emission assessment of building ceilings from agro-industrial wastes," *Fuel Commun.*, vol. 10, p. 100042, Mar. 2022, doi: [10.1016/j.jfueco.2021.100042](https://doi.org/10.1016/j.jfueco.2021.100042).
- [27] S. Bin Tan, "Measuring community resilience: A critical analysis of a policy-oriented indicator tool," *Environ. Sustain. Indic.*, vol. 12, p. 100142, Dec. 2021, doi: [10.1016/j.indic.2021.100142](https://doi.org/10.1016/j.indic.2021.100142).
- [28] A. N. Zsido, K. Csokasi, O. Vincze, and C. M. Coelho, "The emergency reaction questionnaire – First steps towards a new method," *Int. J. Disaster Risk Reduct.*, vol. 49, p. 101684, Oct. 2020, doi: [10.1016/j.ijdr.2020.101684](https://doi.org/10.1016/j.ijdr.2020.101684).
- [29] L. Mohammadinia, A. Ebadi, H. Malekafzali, K. A. Allen, and H. Sharif Nia, "The design and psychometric evaluation of the Adolescents' Resilience in Disaster Tool (ARDT-Q37): A mixed method study," *Heliyon*, vol. 5, no. 7, p. e02019, Jul. 2019, doi: [10.1016/j.heliyon.2019.e02019](https://doi.org/10.1016/j.heliyon.2019.e02019).
- [30] Y. Liu, S. Zhang, and T. Wang, "Analysis of influence factors of disaster prevention capacity in urban green space based on analytic hierarchy process," *Energy Procedia*, vol. 153, pp. 370–375, Oct. 2018, doi: [10.1016/j.egypro.2018.10.076](https://doi.org/10.1016/j.egypro.2018.10.076).
- [31] A. Vedder, K. Boerner, J. E. Stokes, H. A. W. Schut, P. A. Boelen, and M. S. Stroebe, "A systematic review of loneliness in bereavement: Current research and future directions," *Curr. Opin. Psychol.*, vol. 43, pp. 48–64, Feb. 2022, doi: [10.1016/j.copsyc.2021.06.003](https://doi.org/10.1016/j.copsyc.2021.06.003).
- [32] T. Ali, D. Paton, P. T. Buergelt, J. A. Smith, N. Jehan, and A. Siddique, "Integrating Indigenous perspectives and community-based disaster risk reduction: A pathway for sustainable Indigenous development in Northern Pakistan," *Int. J. Disaster Risk Reduct.*, vol. 59, p. 102263, Jun. 2021, doi: [10.1016/j.ijdr.2021.102263](https://doi.org/10.1016/j.ijdr.2021.102263).
- [33] M. M. Sarabia et al., "The challenges of impact evaluation: Attempting to measure the effectiveness of community-based disaster risk management," *Int. J. Disaster Risk Reduct.*, vol. 49, p. 101732, Oct. 2020, doi: [10.1016/j.ijdr.2020.101732](https://doi.org/10.1016/j.ijdr.2020.101732).
- [34] I. Testoni, L. Mauchigna, G. L. Marinoni, A. Zamperini, M. Bucuță, and G. Dima, "Solastalgia's mourning and the slowly evolving effect of asbestos pollution: A qualitative study in Italy," *Heliyon*, vol. 5, no. 12, p. e03024, Dec. 2019, doi: [10.1016/j.heliyon.2019.e03024](https://doi.org/10.1016/j.heliyon.2019.e03024).
- [35] Z. Auzzir, R. Haigh, and D. Amaratunga, "Impacts of Disaster to SMEs in Malaysia," *Procedia Eng.*, vol. 212, pp. 1131–1138, Jan. 2018, doi: [10.1016/j.proeng.2018.01.146](https://doi.org/10.1016/j.proeng.2018.01.146).
- [36] T. Bjärstig, I. Mancheva, A. Zachrisson, W. Neumann, and J. Svensson, "Is large-scale wind power a problem, solution, or victim? A frame analysis of the debate in Swedish media," *Energy Res. Soc. Sci.*, vol. 83, p. 102337, Jan. 2022, doi: [10.1016/j.erss.2021.102337](https://doi.org/10.1016/j.erss.2021.102337).
- [37] S. Blondin, "Staying despite disaster risks: Place attachment, voluntary immobility and adaptation in Tajikistan's Pamir Mountains," *Geoforum*, vol. 126, pp. 290–301, Nov. 2021, doi: [10.1016/j.geoforum.2021.08.009](https://doi.org/10.1016/j.geoforum.2021.08.009).
- [38] Y. Wang, D. Hulse, J. Von Meding, M. Brown, and L. Dedenbach, "Conceiving resilience: Lexical shifts and proximal meanings in the human-centered natural and built environment literature from 1990 to 2018," *Dev. Built Environ.*, vol. 1, p. 100003, Feb. 2020, doi: [10.1016/j.dibe.2019.100003](https://doi.org/10.1016/j.dibe.2019.100003).
- [39] G. H. Cohen et al., "Improved social services and the burden of post-traumatic stress disorder among economically vulnerable people after a natural disaster: a modelling study," *Lancet Planet. Heal.*, vol. 3, no. 2, pp. e93–e101, Feb. 2019, doi: [10.1016/S2542-5196\(19\)30012-9](https://doi.org/10.1016/S2542-5196(19)30012-9).

- [40] M. K. Rañeses, A. Chang-Richards, J. Richards, and J. Bubb, "Measuring the level of disaster preparedness in Auckland," *Procedia Eng.*, vol. 212, pp. 419–426, Jan. 2018, doi: [10.1016/j.proeng.2018.01.054](https://doi.org/10.1016/j.proeng.2018.01.054).
- [41] P. A. Hancock, "How human factors and ergonomics save lives," *Appl. Ergon.*, vol. 98, p. 103585, Jan. 2022, doi: [10.1016/j.apergo.2021.103585](https://doi.org/10.1016/j.apergo.2021.103585).
- [42] C. Pezzica, V. Cutini, and C. Bleil de Souza, "Mind the gap: State of the art on decision-making related to post-disaster housing assistance," *Int. J. Disaster Risk Reduct.*, vol. 53, p. 101975, Feb. 2021, doi: [10.1016/j.ijdrr.2020.101975](https://doi.org/10.1016/j.ijdrr.2020.101975).
- [43] A. Keating and S. Hanger-Kopp, "Practitioner perspectives of disaster resilience in international development," *Int. J. Disaster Risk Reduct.*, vol. 42, p. 101355, Jan. 2020, doi: [10.1016/j.ijdrr.2019.101355](https://doi.org/10.1016/j.ijdrr.2019.101355).
- [44] S. Clayton, "Psychology and climate change," *Curr. Biol.*, vol. 29, no. 19, pp. R992–R995, Oct. 2019, doi: [10.1016/j.cub.2019.07.017](https://doi.org/10.1016/j.cub.2019.07.017).
- [45] S. J. Robinson, "How can Psychology inform disaster research?," *Procedia Eng.*, vol. 212, pp. 1083–1090, Jan. 2018, doi: [10.1016/j.proeng.2018.01.140](https://doi.org/10.1016/j.proeng.2018.01.140).
- [46] A. Oftedal et al., "Changes in maternal cortisol, cortisol binding globulin and cortisone levels following diagnosis of fetal anomaly," *Psychoneuroendocrinology*, vol. 135, p. 105574, Jan. 2022, doi: [10.1016/j.psyneuen.2021.105574](https://doi.org/10.1016/j.psyneuen.2021.105574).
- [47] E. Mavhura, T. Manyangadze, and K. R. Aryal, "A composite inherent resilience index for Zimbabwe: An adaptation of the disaster resilience of place model," *Int. J. Disaster Risk Reduct.*, vol. 57, p. 102152, Apr. 2021, doi: [10.1016/j.ijdrr.2021.102152](https://doi.org/10.1016/j.ijdrr.2021.102152).
- [48] H. H. WANG and N. HAO, "Panic buying? Food hoarding during the pandemic period with city lockdown," *J. Integr. Agric.*, vol. 19, no. 12, pp. 2916–2925, Dec. 2020, doi: [10.1016/S2095-3119\(20\)63448-7](https://doi.org/10.1016/S2095-3119(20)63448-7).
- [49] M. Hagelsteen and P. Becker, "Systemic problems of capacity development for disaster risk reduction in a complex, uncertain, dynamic, and ambiguous world," *Int. J. Disaster Risk Reduct.*, vol. 36, p. 101102, May 2019, doi: [10.1016/j.ijdrr.2019.101102](https://doi.org/10.1016/j.ijdrr.2019.101102).
- [50] D. Satoh, Y. Takano, R. Sudo, and T. Mochida, "Reduction of communication demand under disaster congestion using control to change human communication behavior without direct restriction," *Comput. Networks*, vol. 134, pp. 105–115, Apr. 2018, doi: [10.1016/j.comnet.2018.01.049](https://doi.org/10.1016/j.comnet.2018.01.049).