



Emotional health and spiritual well-being in trauma survivors of natural disasters in Palu, Central Sulawesi, Indonesia: The role of community resilience

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Abstract: Natural disasters struck Palu, Indonesia, on September 28, 2018. Nevertheless, the problem of post-traumatic stress disorder (PTSD) symptoms remains, even though the Palu community builds resilience communally concerning emotional and spiritual conditions. This research aims to investigate the relevance of community resilience to emotional health and spiritual well-being in trauma survivors of natural disasters in Palu. The qualitative research method involved a photovoice approach involving voices from photographs. The seven participants were all residents of Palu and came from areas that had experienced the greatest impact of natural disasters. Data analysis in the research was based on thematic analysis. The research findings are that community resilience is related to emotional health and spiritual well-being based on eight factors: themes related to emotional health are residential, financial, cultural, and capital; while those related to spiritual well-being are supernatural, ritual, social, and moral. The eight factors emphasize interconnected meanings and describe a model of community resilience. The research contributes to the significance of new insights that motivate governments, social institutions, and policymakers in terms of human empowerment, social advocacy, and sustainable development.

Keywords: community resilience; emotional health; Palu; spiritual well-being; trauma

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Introduction

Palu City (Central Sulawesi) experienced a series of natural disasters on September 28, 2018. Although Palu has a history of natural disasters (Bacques et al., 2020; Gusman et al., 2019), it is sometimes perceived as a safe city to live in (Nole & Sinaga, 2025; Surjono et al., 2021). The tragedy of September 28, 2018, served as a clear indication and reminder that Palu is prone to natural disasters (Nole et al., 2025).

The natural disasters that occurred in Palu on September 28, 2018, were of three types: multiple earthquakes, a tsunami, and flow liquefaction (Jalil et al., 2021; Nole & Sinaga, 2025; Rajindra et al., 2019). Experts state that the city's geology is prone to natural disasters due to the Palu Koro fault and its unique soil, water, and hill slope conditions (Abdullah et al., 2023; Cilia et al., 2021). The natural disaster tragedy of Palu was initiated by a series of earthquakes, which influenced other natural events, namely a tsunami and flow liquefaction in specific locations (Jalil et al., 2021; Nakata et al., 2020; Sabah & Sil, 2023). The tsunami disaster occurred around the city's coastline in the bay, with flow liquefaction within the Petobo and Balaroa sub-districts (Nole, 2024b).

These three natural disasters had negative impacts on the community and environment in Palu, as well as its surrounding areas (Nole, 2024a). These catastrophic natural disasters separated and isolated family members from their home communities (Nole et al., 2024, 2025). The disasters also resulted in communities experiencing social and economic hardship due to the loss of personal belongings, such as property, homes, and jobs (Nole et al., 2024). Several individuals became disabled due to the impact of the disasters (Paseno et al., 2022), which have become embedded in the collective memory of individuals and remain a long-term critical issue affecting communities in Palu.

The impact of natural disasters has been, and continues to be, the responsibility of the Palu City

Government, in the form of various follow-up actions such as assistance and development to address hardships (Hasbullah, 2024; Nole & Sinaga, 2025). Nevertheless, natural disasters can potentially occur again, and their impacts are long-lasting (Darma et al., 2020; Nole, 2024a). The 2018 natural disaster tragedy has not been forgotten, and has left bitter memories related to mental and social aspects of health and well-being (Amanda et al., 2021; Wahyono & Astuti, 2021). A problem that remains unresolved is that there are members of the community who are still suffering from their traumatic experiences years later (Aryuni, 2023). Although the government has made many contributions and created policies related to development and disaster management (Allokendek & Ellisa, 2022; Hasbullah, 2024), the phenomenon of trauma is continuing to occur and has not been sufficiently addressed (Aryuni, 2023; Nole et al., 2024). Community members have fears about potential issues that may arise in the future (Darma et al., 2020). For them, trauma has become a part of life (Nole et al., 2024).

Individuals who have experienced trauma may feel fear and worry created by involuntary thought patterns, feelings, and flashbacks, re-experiencing large shaking objects or loud sounds as reflexes to, or signs or representations of, natural disasters (Aryuni, 2023; Nole et al., 2024). In this regard, long-term mental conditions can develop after traumatic events, such as post-traumatic stress disorder (PTSD). Symptoms include intrusion (re-experiencing); efforts to evade reminders (avoidance); alterations in thinking and emotions (changes in cognition and mood); and the emergence of hypervigilance and irritability (changes in arousal and reactivity) (American Psychiatric Association, 2013).

PTSD arises from the impact of natural disasters on the body and the mind, which affects the emotional health of trauma survivors (Rasido & Patodo, 2020; Wahyono & Astuti, 2021). Such

disasters can also impact spiritual well-being, leading to thoughts of self-blame and distorted self-perception (Aryuni, 2023; Nole et al., 2024). Therefore, emotional health and spiritual well-being are crucial psychological states in human life, which natural disasters can negatively impact (Makwana, 2019; Nole et al., 2024).

When individuals experience an imbalance in their mental, emotional, and spiritual dimensions as a result of a problem, they will naturally try to overcome the difficulties or impact that arises (Barton, 2020; Lipworth et al., 2011). Their response to balance their mental state can be influenced by two main factors: the internal (personality, intelligence level) and the external, such as social support and culture (Clauss-Ehlers, 2008; Ferguson, 2013; Gorji et al., 2017; Kaniasty, 2020; Koamesah et al., 2022). One factor that is also suspected of having a dynamic interplay is resilience (Herrman, 2012).

Areas affected by natural disasters can develop capacity in response to devastating natural phenomena (Kusumastuti et al., 2014), with survivors in Palu, Indonesia demonstrating life continuation, by trying to build resilience. This dynamic process within the Palu population is characterized by ongoing attempts to develop personal competences in achieving goals; self-confidence to continue life; positive acceptance of themselves and the environment; self-control; and reflection of spiritual values (Nole, 2024b; Nole et al., 2024; Razy et al., 2022). Therefore, resilience also involves supportive relationships with others as a way to survive (Lucini, 2014; Madsen & O'Mullan, 2016). Resilience is not just concerned with individual efforts, but there is also a collective resilience in response to natural disasters.

As an extension of Palu, the broader Indonesian population has a sociological collective character, which results in community resilience after natural disasters (Nole et al., 2024; Wardhani et al., 2021). This collective effort signifies the

ability to recover from the hardship caused by the negative impact of natural disasters and the formation of community resilience to crises (Bakic & Ajdukovic, 2021). Community resilience concerns more than simply post-disaster inputs, because people can bounce back while implementing coping, recovery, adaptation, relationship, and solidarity strategies (Ride & Bretherton, 2011). On the other hand, local communities live with context, insight, and socio-cultural life phenomena (Ranimpi et al., 2023). Community resilience involves a dynamic interplay of endurance, strength and empowerment among individuals and communities (Miller-Karas, 2023a). Consequently, survivors of the Palu natural disaster practiced emotional and spiritual community resilience to offer psychosocial and social support (Aten et al., 2015; Miller-Karas, 2023b; Nole et al., 2024; Razy et al., 2022; Taufik & Ibrahim, 2020). This shows that populations can maintain community resilience post-disaster using social capital and cultural practice.

Other researchers have made findings regarding the role of resilience in natural disasters. Such studies include research on the outcomes of community resilience of the Mount Merapi population on the island of Java, Indonesia (Mutiami et al., 2022); the role of ancestral practices, such as social capital related to the effects of the volcano on the settlement of the Colca Valley community in Southern Peru (Zeballos-Velarde et al., 2023); and community empowerment related to the tsunami in the case of Aceh, Indonesia (Sina et al., 2019). These studies are based on different contexts. Recent studies with a reputable international status have also produced findings on community resilience related to the Palu natural disaster.

Such research on the case of Palu has been conducted by reviewing the adaptation and actions of the community at the emergency response stage (Yulianto et al., 2021); the need for

temporary housing and its role in supporting resilience after a natural disaster (Idham & Andriansyah, 2021); and the conceptualization of the community as caregivers, teachers, and teenage students concerning the efforts and priorities for post-disaster resilience recovery (Parrott et al., 2023).

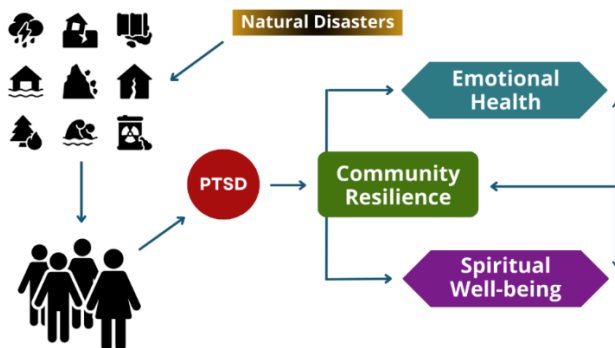
However, these studies have not considered the problem of natural disasters from the perspective of psychological suffering from traumatic experiences. Additionally, these studies exhibit limitations in substance and methodology in their investigation of victims of natural disasters as trauma survivors. Previous studies have focused more on examining the non-psychological conditions of victims of natural disasters, whereas psychological conditions related to emotional health and spiritual well-being are significant.

In a novel approach, this research uses a different method from previous studies: the researchers conduct a qualitative investigation with the photovoice approach, a scientific technique that explores the life experiences of individuals (in this case, the research participants) through the art of photography (Hatzikiriakidis, 2023; Wang, 1999). Through this approach, the research highlights the psychological states and

impact of natural disasters on emotional health and spiritual well-being from the perspective of the research participants. These two variables are highly significant in both the scholarly field and religious communities, and are also relevant for understanding issues related to natural disasters (Math et al., 2015; Nole et al., 2024; Singh et al., 2020; Yoel et al., 2020). The variables always concern the context of human life (Berkes & Ross, 2013; Hall et al., 2023; Khairil et al., 2020; Taufik & Ibrahim, 2020).

In addition to emotional health being part of mental health, the researchers also recognize that spiritual well-being is a important psychological state for the Palu community, which holds strong religious beliefs (Nole et al., 2024). By also giving an important voice to lived experience, the researchers involve the psychological states of natural disaster victims in understanding their social world as trauma survivors (McKinzie, 2018). Community resilience can positively influence mental health (Hall et al., 2023). Therefore, emotional health and spiritual well-being are viewed as important states for community resilience. Figure 1 presents the conceptual dynamic interplay of factors within the community resilience framework of the research.

Figure 1
Conceptual Framework



Source: The Author's Interpretation of the Theoretical Framework

Essentially, resilience includes collective actions that have the power to maximize resilience (King et al., 2022; Lucini, 2014; Madsen & O'Mullan, 2016; Pelupessy et al., 2011). In this study, the researchers view community spirit as an associative and cooperative force for the Palu community in prioritizing psychological states. It is argued that survivors of natural disaster trauma in Palu build unique resilience based on their perspectives and life experiences, ultimately affecting the state of their emotional health and spiritual well-being. Nevertheless, it is necessary to ask how this happens, where community resilience supports emotional health, and what creates spiritual well-being in Palu survivors of natural disaster trauma? Therefore, the specific objective of this research is to investigate the relevance of community resilience for the emotional health and spiritual well-being state of survivors of natural disasters in Palu suffering from trauma.

Methods

A qualitative method was used, based on a multiple case study design. The researchers also employed photovoice, a participatory action research approach that accentuates the engagement of participants to actively participate in the research project, aiming to passionately advance social transformation through photographs that have meaningful voices (Bandauko & Arku, 2023; Bray et al., 2023; Budig et al., 2018; Mayfield-Johnson & Butler, 2017; Najmah et al., 2024; Nole et al., 2025; Sitter, 2017; Vázquez et al., 2023; Wang, 1999). Photovoice involves individuals who are often overlooked or marginalized, empowering them to creatively and innovatively share their experiences and perspectives (Christensen, 2018; Dell et al., 2022; Evans-Agnew et al., 2022; Mortensen & Questiaux, 2025; Payne, 2023; Rivero & Morriña, 2025; Rolbiecki et al., 2016). The approach views participants as subjects who use cameras and take relevant

photos, then discuss and critically reflect on the stories behind these, individually and with others (Malherbe et al., 2023). In this case, the researchers used photos as records and strategies that represented life experiences to obtain rich interview data (Vaughan & Khaw, 2021). Photography does not simply concern memories, but is also helpful in initiating constructive dialogue with research participants regarding their perceptions of specific issues (Walker, 2023).

The researchers employed photovoice to record experiences and observe how the participants represented themselves and their daily lives (Mayan, 2016). Photovoice uses visual images to investigate marginalized communities' subjective and lived experiences, with a focus on those who are current or past sufferers of trauma from natural disasters (Wang & Pies, 2004). Life experiences, including participants' memories, are represented by photos taken at the time of data collection (Kile, 2022). The photos are reminders of meaningful memories, which are then integrated with interviews and discussions, subsequently leading to further questions. Photovoice helps researchers find meaning from participants' perspectives through symbolic representation to produce new insights (Shamrock et al., 2017; Smith et al., 2023). Therefore, the researchers studied the participants by exploring photovoice's psychological, socio-cultural, and religious aspects.

Participants

The data collection period was from the end of July to the end of September 2024. A researcher went to the research location to observe the situation and conditions of the specific communities in Palu. Subsequently, the researcher selected participants based on the criteria that they were residents of Palu City who experienced at least one of the natural disasters on September 28, 2018, and had self-reported symptoms of PTSD using the International Trauma Question-

naire (Nole et al., 2025). Seven participants were chosen as representatives. Furthermore, the researcher took into consideration diverse participant demographics, namely background diversity (see Table 1).

Participant MR is a student working as a fish seller to meet his living needs. He was a survivor of the tsunami in the fishing village area of Palu. However, the tsunami resulted in the loss of his younger sibling and his home, so he was disappointed with the sea. The experience meant he was unable to forget the memory of the 2018 natural disaster. In addition to avoiding certain places, he avoided joining groups discussing the event because the experience would disturb him. However, he appreciated people who asked about his experience and were willing to provide answers.

Participant MY is a housewife and singer. She survived when she was about eight to nine months pregnant with the help of others. However, she lost four family members and her house due to the tsunami in the Pantoloan area. As a result, she suffers severe trauma, such as having strong memories and dreams about natural disasters; hating and avoiding the sea; having a negative view of the world; and being afraid of and easily startled by loud noises.

Participant VA is a housewife and a staple food seller. She was a survivor of flow liquefaction in the Petobo area and lost her house. The natural disaster made it difficult for her to forget the experience. She fears it could happen again and has a negative view of the world. She avoids revisiting the Petobo location because of this fear. In addition to being afraid of strong winds, she is also anxious about hearing the latest information about natural disasters.

Participant MZ is a civil servant and an Islamic preacher. He was a survivor of flow liquefaction in the Balaroa area, but lost his house and has scars from injury of his right knee. He has clear memories of his traumatic experiences, so he cannot forget them. Loud sounds such as rumbling, thunder, and the sound of large trucks trigger flashbacks. He is on guard when sleeping and avoids objects such as cupboards.

Participant AT is a housewife and a seller of snacks and various instant drinks. Because of the tsunami, she lost her youngest child, who liked to help sell the products on the beach. If she goes to the beach, she can remember the tsunami, and her heart beats fast, so she is reluctant to go there for a long time. She is also afraid of loud sounds, thinking they could be an earthquake.

Table 1
Participant Demographics

Initial	Gender	Age	Occupation	Marriage Status	Religion	Location during the natural disasters in 2018 in Palu
MR	Male	21	Student	Single	Protestant Christian	Kampung Nelayan
MN	Female	31	Housewife	Married	Protestant Christian	Petobo
VA	Female	32	Housewife	Married	Protestant Christian	Petobo
MY	Female	41	Housewife	Married	Islam	Pantoloan
RP	Male	45	Civil Servant	Married	Catholic Christian	Besusu Barat
AT	Female	55	Housewife	Married	Protestant Christian	Silae
MZ	Male	56	Civil Servant	Married	Islam	Balaroa

Participant RP is a civil servant. His house is close to the beach and was almost hit by the tsunami. He admitted that his trauma condition still exists. He realized that traumatic memories of the disaster are always there and are consciously remembered, making him anxious and worried. As a result, he is always overly vigilant when he is in a dangerous place. He has flashbacks of earthquakes when he feels the ground vibrations from large cars.

Participant MN is a housewife. As a trauma survivor, she is a victim who survived the flow liquefaction in Petobo, where she lost her house. She has vivid memories of her traumatic experiences. She feels panicky when in an environment that has been hit by natural disasters, such as immediately getting goosebumps when seeing the forests around Petobo. In addition to being afraid of loud noises, she also avoids the location of the incident in Petobo.

Procedure

The research procedure involved participants' willingness to spend time related to the following processes. First, a researcher distributed a questionnaire from the International Trauma Questionnaire (ITQ) to determine and identify the dynamics of trauma (Nole et al., 2025). Second, the researcher submitted a research letter from the faculty and the university to the participants to provide information about the study. Third, the researcher discussed the core of the research with the participants and introduced the photovoice method, with emphasis on how to use the camera, and the provisions, ethics, and benefits. Fourth, the researcher asked the participants to read, understand, agree to, and sign a consent letter for participation in the research (informed consent). Fifth, the researcher discussed the concept and theme of taking pictures related to the research context, then provided the participants with a rented digital camera and training on how to capture meaningful images. Sixth, the participants were asked to collect data using the digital camera

provided, with one camera per person. Seventh, the researcher agreed on the provisions for taking pictures and then gave the participants the opportunity and freedom to photograph relevant objects for one week. Eighth, the researcher asked the participants to select relevant photos from their provided digital camera after object capture had been completed. Ninth, interviews were recorded to obtain information about the meaning of the photographed images, followed by further interviews to obtain more in-depth information. The researcher first asked about the research variables, then complemented this with questions about the photos taken. Tenth, the researcher invited the participants to attend two focus group discussions (FGDs) at a predetermined location to discuss the photos together, so that new understandings could emerge collectively. These discussions marked the beginning of the data analysis process and also reflected the participation of those involved. The researcher discussed the meanings of the photos and then consulted with the participants during the FGD sessions. The outcomes of these discussions further informed the data analysis, leading to the identification of themes, which were developed and constructed into various factors.

Data Collection

The research is based on a qualitative method, with data collected using the photovoice approach. As a humanistic and constructive approach, photovoice aims to provide opportunities for participants to photograph and reflect on the strengths and concerns of their communities; to motivate critical dialogue and knowledge in various communities about important issues through discussion on the photos in large and small groups; and to catalyze change by reaching out to policymakers (Hatzikiriakidis, 2023; Wang, 2006). The researcher was able to achieve the research objectives by conducting the following nine photovoice stages (Hatzikiriakidis, 2023; Kile, 2022; Smith et al., 2023; Sutton-Brown, 2014; Wang, 1999).

In the first stage, a researcher determined the audience, with policymakers or community leaders in the government targeted, to share the research findings with them for further action to be taken related to responses to the natural disasters in Palu. In the second stage, the researcher began the research process by determining the number of participants, which was seven. They were selected using convenience, snowball, and purposive sampling techniques. In the third stage, the researcher held an initial meeting with the participants to discuss the research objectives and the photovoice methodology, which involves camera implementation, regulatory frameworks, ethical implications, and overall usefulness. In the fourth stage, the researcher asked for the participants' willingness to be involved in the research by filling out an ethical agreement (informed consent) form. In the fifth stage, the researcher discussed with the participants the concept of taking photos of present-day objects related to the research objectives. In the sixth stage, training was given on how to take pictures, with emphasis on the meanings of the objects. In the seventh stage, the participants were given the opportunity and freedom to photograph objects in specific locations and at times based on joint decisions. The eighth stage involved meeting the participants again to review and discuss the photos, listen to their messages, understand their emotions, and identify themes through guiding questions. These sessions also included discussions on data analysis to collaboratively refine and validate the emerging interpretations. In the ninth stage, the researcher shared the research findings with policymakers or community leaders in the government.

Data Analysis

The researchers analyzed the data using thematic analysis (Braun & Clarke, 2006), which focuses on human life experiences to reveal manifest meaning (the content of participants' explicit statements) or latent meaning (the

researcher's interpretation of what the research participants said) (Squires, 2023; Willig, 2013).

Thematic analysis is an approach that enables researchers to explore and interpret patterned meanings across data sets (Braun & Clarke, 2012; Terry et al., 2017). Furthermore, researchers can generate codes and themes from qualitative data, as such data analysis is based on an easy-to-understand and systematic procedure (Clarke & Braun, 2017). In this case, there were phases of thematic analysis implementation (Braun et al., 2019; Braun & Clarke, 2019, 2022, 2024): the data were scrutinized, coded, and used to generate initial themes, which were then developed, reviewed, refined, defined, and named. Finally, a report was created and disseminated.

Results

Residential Factors

Losing his home was part of MR's life experience as a trauma survivor. However, he did not lose hope because his closest family came to help him and his family after the natural disaster. Similarly, for other trauma survivors such as MY, VA, MZ, and MN, losing their homes due to the disaster remains a deep and painful memory. Nevertheless, they remain hopeful for the future, especially with the government's provision of permanent housing. Some of their statements are given below (see Figure 2):

"Really, this is a house, I can live now because it was given to us directly by my uncle, a doctor. One of my doctor uncles, because when we were at the scene, our house was really razed to the ground," (MR).

"I have been here for three years, from 2021. I feel very at home. Given a house, given good neighbors, thank God," (MY).

"I am grateful to have a free house like this. Hopefully, there will be assistance for us permanent housing residents," (VA).

Figure 2

Residential Factors



Source: Photovoice Documentation

“With this existing photo, at least for us who are survivors of September 28, 2018, at least, it gives us hope for life again. This is part of the government’s response to the survivors, and we should make the best use of this existing house, as much as possible,” (MZ).

“With the assistance from the government, of course it is very helpful for people who have lost their homes, so of course they are grateful because they are helped by being given a place to live,” (MN).

Financial Factors

Most of the participants understood that the financial factors were a way for them to survive (Figure 3). As a student, MR also has a side activity working to earn money to support his needs, while as a housewife, MY has a job as a singer working at a party venue, which helps her earn wages to make ends meet. Participant VA works selling food from home to earn money, which complements her

husband's business selling tools and building materials, also from home. Participants MZ and RP work as civil servants to earn their living and serve the community. Finally, participant AT is a housewife, but also sells in the front yard of her house. The participants made the following example statements.

"With one of them I often go out of town, take a car, a lot of activities outside, whether in the service, in my daily work that I do, it is enough to make me what is the spirit, enough from there, with the fact that I often go out of town there is that activity," (MR).

"I sang in Tawaeli yesterday (as a form of work). Singing is an income, entertaining, a

hobby too. One week, sometimes once. I like it and it nourishes my emotions," (MY).

"If I am here, yeah, I already work my days, yes, I sell it so that I do not remember what happened yesterday, so that I have something to do," (VA).

"Yes, in my activities as a civil servant in the office, of course, serving as best I can, serving as best I can the people who need services," (MZ).

"Haha, entertaining, eliminating what, hmm, if I am already busy, I usually do not remember (traumatic memories). So, this is the financial aspect, a lifeline," (AT).

"My job is not only to work in the office, but also to help in the church ... making texts for worship celebrations like that," (RP).

Figure 3

Financial Factors



Source: Photovoice Documentation

Cultural Factors

The participants understood that cultural factors are part of resilience after natural disasters (Figure 4). Apart from increasing knowledge and providing entertainment, reading books, for example, is a habit that creates healthy emotions. A habit at home that some participants find comfortable is looking at photos to remember loved ones. One participant enjoys cooking as a hobby and engaging in activities that make them emotionally healthy. One participant's favorite hobby is singing, which helps maintain their emotions. On the other hand, keeping moving and making the most of time by doing activities, such as playing music, is important. Their comments included:

"There is only one item that, until now, we appreciated that which is a unique memory for our family; remembering a beloved family member, too, we have a complete photo. And it does not break at all; there is still glass, comforting," (MR).

"Cooking while singing and also bringing a microphone here, that is what often happens when I play at home, ha, ha. Sweeping, mopping, and cleaning the kitchen until my eyes are sleepy, looking for what can be done in the kitchen," (MY).

"For me, cooking is a hobby. It keeps me busy until I forget the time; sometimes, whatever I can make in the kitchen, I feel comfortable in the kitchen," (VA).

"Yes, I fill my time with reading books while picking up the content and wisdom in them to reassure my heart," (MZ).

"It is comforting when I look at this (photo in frame), like he is here (youngest child), as a buddy. This picture was taken three days before the earthquake," (AT).

"Yes, this (the organ) is still there until now. Yes, I use it for when there is useful training, for singing practice, and so on. It is for every day during this period after the post-disaster. I use it to be part of my activities, not every day, but when needed, I use it," (RP).

"Read books so that thoughts can be diverted to more positive things, and reading is also a separate entertainment because if you like to forget about sad times like that, so the focus is diverted to books. Often to books, because the focus is diverted to books," (MN).

Capital Factors

Vigilance in relation to the occurrence of natural disasters is vital; they can be anticipated by learning from past experiences. Four types of equipment constitute the natural disaster response kit prepared by participant RP, which received a positive response from other participants when discussing the photographs. Participants VA, MZ, AT, and MN agreed that the provision of such equipment is important for the Palu community. They stated (Figure 5):

"So we make sure these are always available, so that if there is a disaster, they can function," (RP).

"They are used to get ready, this is the equipment we need to ... face a disaster like that," (RP).

"Including tents, they are needed when we are in an emergency, far from home, only in the field, we use them," (RP).

"In my opinion, these are very necessary, including tents. Like important letters, if I am now ready, haha, ready in one bag like that, haha," (VA).

"The props that have been shown are all very supportive if we get a disaster. All of these tools are undeniably very necessary when we get a disaster," (MZ).

"Yes, these are also important, for communication with family if it happens. Yes, I also prepare files (a collection of important personal family documents) as well," (AT).

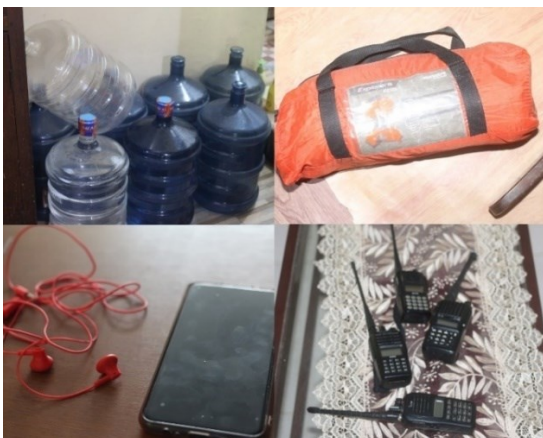
"If we learn from the experiences after the last earthquake, we should prepare assistance tools, emergency tools such as these, cellphones, tents, because we do not know when it could happen again," (MN).

Figure 4
Cultural Factors



Source: Photovoice Documentation

Figure 5
Capital Factors



Source: Photovoice Documentation

Supernatural Factors

The supernatural is a factor that emphasizes the meaning that survivors gain from spiritual well-being based on their respective beliefs (Figure 6). They continue to believe that surrender and faith are significant. After the incident, they expressed gratitude for being allowed to live. The ability to survive after natural disasters proves that God cares and helps. In this case, the attitude of building a relationship with God is an obligation and responsibility. Regarding this factor, gratitude and awareness of the safety of God is the salient point. The participants' testimonies included:

"But back again spiritually, our purpose in life is for service, it is not always in the church, but even in the environment outside the church; we can serve, and the purpose of our life is for God, so in our Christian faith we must think that our life is for God," (MR).

"Wow, I am very grateful, I am still allowed to live and repent. I experienced God's love through other people who helped me (when the tsunami came)," (MY).

"Yes, there are many. God is good in life; the divine has helped, guarded, and even passed through struggles like that. Yes, back from the beginning again like this, yes, everything is because of God's intervention that has helped our lives, very grateful," (VA).

"Of course, first of all, we give a lot of thanks before Allah SWT, and then while we are doing it well, the point is that we are very grateful, God willing, more or less, the sustenance that God gives us, God willing, can calm our hearts. Yes, gratitude is an expression of our gratitude to Allah SWT, *la-in shakartum la-azidan-nakum*, if we are grateful, God willing, Allah's favor will increase for us," (MZ).

"Yes, peace, there is God. Sometimes as humans, we feel heavy with life, with all the struggles, but if you surrender to God, there must be a way," (AT).

"God takes care of us, organizes our lives in various ways, but I am too grandiose to say that. The point is that we exist today, it means that we are still allowed to live," (RP).

"Be grateful, and let go of the past events that happened to the previous disaster victims. Being able to survive is already God's mercy, being able to survive from God's mercy, because God still loves, God still takes care, and maintains," (MN).

Ritual Factors

Having realized the existence of God, the participants reflected on this with dedication to performing religious practices based on their respective beliefs (Figure 6). In this case, the supernatural factors continue into the ritual factors. Various photos related to the ritual factors have a connection with the supernatural. The participants sought to improve their relationship with God through worship, including prayer and reading the scriptures, saying:

"So, in my opinion, when I, come most, after, for example, passing an incident or a glimpse of something that wow I feel this, I am anxious, yes, most I go back to praying. That is immediately safe," (MR).

"The Qur'an is a symbol of Islam. The recitations that give strength are Al-Fatiha and Al-Yasin," (MY).

"For me, the relationship between the Bible and what happened yesterday (September 28, 2018) is very close, and I think from the Bible, there are many things that make me strong and make me get up again, even though yesterday everything was gone, but from there I learned again, started again from the beginning, got up again ... and until now I can get through it all with God's intervention," (VA).

"Yes, this is a fellowship in a mosque when I perform a Friday prayer. So, in the Friday prayer, we are filled with (the sermon), and this is mandatory, listening to the sermon; it appears there, a *khatib* is delivering his sermon, and if we follow it as well as possible, God willing, the implementation of our Friday prayer that day, God willing, is valid and accepted by Allah SWT," (MZ).

Figure 6

Supernatural and Ritual Factors



Source: Photovoice Documentation

“Thankful for reading God’s word as a strength, too. For me, the strength in my life is reading God’s word. I also often listen to devotionals from YouTube; anyway, every time, morning, evening, and night, I open the devotional, it is a strength,” (AT).

“God exists, but we are not silent. Stay ... active, *ora et labora* (work and pray) like that,” (RP).

“For myself, reading is definitely, I mean reading the scriptures, a necessity for us to stay close to God, and indeed we have to build relationships with God, one of which is through reading the Bible and through prayer. The point is that from God’s word, we get closer to God,” (MN).

Social Factors

Social relationships are important in activities at home and in the community for the participants (Figure 7). Individuals build social interaction, which is important in this life, with each other, developing good relationships and caring for neighbors. In this way, neighbors become the closest relatives in the neighborhood who are ready to provide help. Improving positive relationships with neighbors from different backgrounds means doing good and respecting differences, which is important for building good communication and setting an example in

encounters. The following were related statements from the participants:

“And up to here, who supports, encourages, yes, most of the encouragement from family, church environment, friends are the same. It depends on us,” (MR).

“There is, in the form of necessities. This house, permanent residence. Very happy. The neighbors are happy. When I was sick, the neighbors helped,” (MY).

“Respect each other. Doing good, like with neighbors (of different religions), just respect each other,” (VA).

“There are many ways. Of course, first, we communicate a lot, give good examples, then, in everyday life, besides greeting each other, displaying good behavior, we also, as much as possible, invite friends and neighbors to always do good,” (MZ).

“Yes, with good neighbors, ha, ha, who are always. Strengthen each other ... usually also help each other if there are shortcomings ha, ha,” (AT).

“So, the children are gathered, I play music and I train them, they sing to prepare themselves to serve in the church on Sundays,” (RP).

“For interaction at home, watching TV together or other activities at home,” (MN).

Moral Factors

The moral factors are a continuing theme from the photos related to the social factors (Figure 7). In other words, these have a connection to the participants' viewpoints. Social relationships have implications for establishing good behavior. Moral values encompass increasing faith, worshipping diligently, being grateful, self-improvement, performing good deeds, and caring for the surrounding environment. Statements on this from the participants included:

“We need to learn a lot, but about our spirituality is that we have an impact on others,” (MR).

“I want to live well: safe, prosperous, and happy. What I want to do is to improve myself, my faith, and diligently do good,” (MY).

“If we have something, we share it. If we have more, we often share it with our neighbors. That is what I usually do,” (VA).

“Ordinary, serving people well, with excellence, God willing, will be able to comfort our hearts as well,” (MZ).

“The term is no favoritism; everyone is the same. That is why people also like to say I do not play favorites. I have been told by people; I do not play favorites ... I get along with everyone,” (AT).

“People must have communication, compassion, empathy, and so on. Yes, the point is that with that earthquake, I was invited to become a better person, especially after the earthquake; we escaped from COVID-19. You do not know what else will come after COVID-19, we should be better,” (RP).

“Of course, there is a lot of help from various parties from the church and the family, both moral and material support,” (MN).

Eight resilience factors emphasize the importance of the interconnection between emotional and spiritual facets of mental health. The four factors that improved participants' emotional health were residential, financial, cultural, and capital. Residential support was in the form of housing, as some participants needed a place to live because they had lost their homes during the 2018 natural disaster events. Next, financial resilience refers to the participants' efforts to survive and earn an income through work, while cultural activities encompass the participants' hobbies and interests that reveal their habits and preferences for managing healthy emotions, such as reading books, viewing photos, cooking, singing, and playing music. The final factor is capital, which refers to the ability to stay alert and anticipate events by ensuring the availability of essential items, such as sufficient quantities of drinking water, tents, cellphones, and

walkie-talkies. That is done to deal with the occurrence of natural disasters (simple mitigation), which are certainly not expected to happen again.

The four factors that enhance spiritual well-being are the supernatural, ritual, social, and moral aspects. The supernatural is a factor that suggests people have a positive recognition and hope for the existence of the divine after natural disasters, based on their respective beliefs. They also express their beliefs through rituals as a form of worship. Belief also implies an awareness of creating a social sense as a factor that shows interaction with others, including families and other communities. These interactions are based on the moral value of being kind to others, as there continues to be moral

support from religious fellowships after the experience of natural disasters.

Discussion

The impact of trauma caused by natural disasters can lead to the development of a psychological condition known as PTSD. Symptoms can include sudden flashbacks and dreams related to past traumatic events; avoidance of certain objects or places associated with the trauma; negative thoughts and emotions; and heightened anxiety and hypervigilance (Nole et al., 2025). Nonetheless, the participants demonstrated resilience in persevering with their emotional health and spiritual well-being despite reporting PTSD symptoms.

Figure 7
Social and Moral Factors



Source: Photovoice Documentation

The first factor that influences the emotional health of trauma survivors is housing. Participants MR, MY, VA, MZ, and MN are survivors who have experienced trauma due to the impact of the natural disasters that caused their houses to be lost, but they eventually received new housing. From the perspective of survivors, housing is a positive force for survival and recovery (Delgado, 2022). The provision of housing gives them new enthusiasm and hope to continue their lives.

Various parties, including government and social institutions, collaborate and share a communal commitment to and understanding of creating residential development for survivors who need a place to live (Hasbullah, 2024). As a result, survivors MY, VA, MZ, and MN not only benefit from permanent housing, but also feel they are being paid attention to and receiving appreciation by the provision of a residence. On the other hand, MR was given a house by his closest family, which made him feel appreciated. The participants determine their daily activities from home, including economic matters, habits, and simple mitigation.

The 2018 natural disaster caused a significant, localized economic crisis, which was felt by the survivors (Rajindra et al., 2019). However, they continued to contribute to restoring the economy (Hasbullah et al., 2021). The participants in this research demonstrated their efforts to restore the economy, such as MY, who works as a singer. Survivors such as participants VA and AT also use their homes to earn an income. Although the impact of natural disasters disrupts economic stability, people build resilience through micro-enterprises (Prasad et al., 2015). Homes become productive trading spaces for women because they can balance caregiving responsibilities with business (Luckman, 2015). When selling fish, individuals realize their intrinsic ability to serve consumer needs, such as MR. Selling activities are capacity-based on the local economy, and are the key to resilience (Handmer & Choong, 2006).

Two participants, MZ and RP, have jobs related to the government. Office work signifies their service to the government and the community. Finance is a force that helps people's relationships with social and economic life (Khalid, 2021). By engaging in positive activities, participants can support the order of family life (Setiadi & Frederika, 2022). When survivors have jobs to maintain their economic stability, these activities also help heal their emotions, influenced by cultural factors.

Traumatic experiences can cause flashbacks for the victims of natural disasters (Aryuni, 2023; Nasri et al., 2020; Sönmez & Hocaoglu, 2023). To self-manage these symptoms, the participants attempted to recover by establishing various habits to regulate themselves. Habits are cultural factors that include positive daily activities that affect emotional health (Nole, 2025). People who lead various lifestyles demonstrate how they manage their emotions healthily (Walsh, 2011). Positive habits significantly influence mental well-being, with people developing them for their health based on motivation, willpower, and appreciation (Nemec et al., 2015). In this regard, the survivors liked reading books, looking at photos, cooking, singing, and playing music.

Reading activities are part of the lives of MZ and MN, making them resilient and diverting attention away from the impact of natural disaster trauma on their lives. The reading experience is one step in maintaining a healthy mental state with additional internal and external insights (Gray et al., 2016). In addition, participant MR, who lost a younger sibling, and participant AT, who lost her youngest child due to the natural disasters, have the developed resilience to remember moments of returning to loved ones through photos in frames. Photos do not simply represent physical aspects, but also capture moments that sometimes provide comfort (Diehl & Zauberman, 2022). Participant VA enjoyed the habit of cooking. In addition to showing creativity, this supports her well-being as

it can improve one's mood, social relationships, and personal acceptance (Mosko & Delach, 2021). Additionally, participant MY often sings, an activity that helps calm her feelings and thoughts. Psychologically, singing activities can make one's mood healthy (Smith et al., 2022). On the other hand, RP has a talent for playing music to provide training. Research indicates that music can have a positive impact on emotional well-being (Batt-Rawden & Tellnes, 2011).

Participant RP realized the importance of staying alert in a city prone to natural disasters. He therefore prioritizes capital for mitigation equipment, which motivates in-depth discussions with other survivors. The capital factors affirm the ability to conduct equipment-based mitigation. Due to Palu's geographic vulnerability, the community should remain vigilant while also understanding the surrounding environmental situation (Nole, 2024a). An important anticipatory action is to form non-structural mitigation. It begins with preventive actions, such as preparing emergency equipment and disseminating early warning information about potential emergencies (Chen & Wu, 2014). By learning from the experience of the 2018 natural disaster, the community can provide preparedness equipment to cope with emergency conditions and evacuation, such as the provision of drinking water, tents, cellphones, and walkie-talkies.

The provision of drinking water is essential for the community to meet its living needs (Quitana et al., 2020), including the avoidance of resulting problems such as dehydration. The community also needs evacuation facilities with shelter in the form of tents, an affordable and feasible solution which provides security and comfort (Moustafa, 2024). Providing and receiving information about environmental conditions should also be shared for the common good. Cellphones are a practical, affordable, and reliable tool for receiving disaster warnings and risk reduction information (Samarajiva & Waidyanatha, 2009). Through walkie-talkies that utilize push-to-talk (PTT)

technology and applications, individuals can establish direct point-to-point communication when telecommunications networks are temporarily unavailable (Chang et al., 2018).

The participants, who had lived through the trauma of the Palu natural disaster, reflected on their life journey and their beliefs to improve their well-being. Belief in the divine is related to the spiritual well-being of trauma survivors (Milstein, 2019). Performing rituals based on beliefs, establishing social relationships, and realizing moral values are also important (Aten et al., 2019; Nole et al., 2024; Walker, 2020). The way to build resilience comes from efforts to establish relationships with the transcendent and immanent, which have implications for increasing spirituality (Nelson, 2009; Nole et al., 2024). Communities can collectively create spirituality-based resilience that supports spiritual well-being (McElroy-Heltzel et al., 2018). In this regard, survivors of natural disaster trauma believe in establishing resilience to improve their own spiritual well-being.

The supernatural is the most fundamental factor in the recognition of trauma survivors who share their religious testimonies and experiences about the existence of God. After the natural disasters, the participants reflected on the presence of God as meaningful throughout their lives (Milstein, 2019). The Palu community has post-natural disaster strength because of their full belief in the existence of God (Nole et al., 2024; Razy et al., 2022). From a Protestant perspective, MR, VA, AT, and MN have faith in God's work, and their reliance on God influences their spiritual well-being (Nole, 2024b; Nole et al., 2024). Additionally, participant RP, from a Catholic perspective, believes that God also cares and that humans must continue to remember Him, the Sustainer of life (Bembid, 2024). The effort to remember God is a form of awareness of life that is faithful in the current era (Hadi, 2019). Faith is a significant strength for trauma survivors (Bryant-Davis & Wong, 2013).

From an Islamic perspective, survivors MY and MZ consider the post-natural disaster situation by interpreting the opportunity to live with *zikir* to express gratitude to God. Expressions of gratitude to God provide benefits for spiritual well-being (Chalmiers et al., 2023; Ghufron et al., 2024). On the other hand, life after the natural disasters also provides wisdom that humans must be diligent in doing good. In Islam, implementing good deeds is significant, not only for one's interests, but also for those of others, even those of different beliefs (Indainanto et al., 2023). Therefore, the meeting point for survivors from the three religions is the awareness that God works in each person's life in various amazing ways.

The ritual factors are a manifestation of the relationship with the divine and support spiritual well-being. Ritual includes acts of worship, praying, and reading scriptures. Protestant Christian survivors recognize prayer as a source of strength and hope, as well as a means to convey requests to the divine (Nole et al., 2024). A Catholic Christian survivor said that prayer helps to overcome problems and positively influences spiritual well-being (Stöckigt et al., 2021). Reading scriptures provides people with spiritual support that advances and sustains their lives (Grundmann, 2014; Hamilton et al., 2013). Trauma survivors from the Islamic religion also perform their own religious rituals, namely prayer and reading the Qur'an. According to them, prayer is an obligation and part of the pillars of Islam, illustrating a form of worship and devotion, while also positively increasing spiritual well-being (Irawati et al., 2023; Solichah et al., 2025). Prayer encompasses a series of important prayers that convey humility, supplication, and praise, which can foster spiritual values (Majid, 2023). Such devotees also develop a broader understanding of their faith through reading the Qur'an. By reading the holy book, they find meaning in God's commands, which should be observed in everyday life, and receive messages to build resilience for

prosperous spiritual growth (Alfain et al., 2023). A close relationship with God provides inner peace by fostering hope that natural disasters will not recur (Taufik & Ibrahim, 2020). Religious beliefs and behaviors are also related to involvement and participation with others.

After the 2018 natural disaster, social values have become a central point for survival (Razy et al., 2022). Trauma survivors who are Protestant and Catholic Christians believe that internal and external social relationships are key determinants of life growth; for example, the existence of social support and philanthropy as the mainstays of life's order. From their perspective, social support is a crucial action that enhances their ability to cope with mental stress (Krause, 2010).

Muslim survivors also recognize that internal and external social relationships are crucial to their lives. When people experience stressful life events, interactions with God and others provide social support, which becomes a practical resource necessary for survival, whether through prayer in a mosque or engaging in activities in a particular setting (Koenig & Shohaib, 2014). Relationships with others and their presence give life meaning, as it must be shared.

Although they bring suffering, natural disasters offer valuable lessons for experiencing positive change. People affected by such disasters can rebuild their lives because they are agents of change and need empowerment (Archer & Boonyabancha, 2011). The circumstances of life after natural disasters motivate a shift in public awareness to adopt good moral values. Good morality encompasses continuing to strengthen one's faith, worshipping diligently, expressing gratitude, improving oneself, performing good deeds, and being mindful of the environment (Nole, 2024a; Razy et al., 2022; Roslinawati, 2021; Taufik & Ibrahim, 2020; Wirawan et al., 2024).

Following the Palu natural disaster, noble behavior was observed in the communities (Nole

et al., 2024). Moral values were evident after the disaster, creating conditions that work together to help people rise again, based on increased faith and the solidarity of religious communities. Additionally, for participant RP, it is reasonable to implement moral values related to environmental awareness. Humans are concerned about appreciating and studying nature, which gives natural signs. If humans live in nature, then they should care about it (Nole, 2024a).

Eight factors describe the community resilience model (Figure 8), each positively influencing the emotional health and spiritual well-being of survivors of natural disaster trauma in Palu (Miller-Karas, 2023a). The development of these eight factors was made possible by the use of Photovoice, a method that involves participants providing insights by conveying their voices through photographs. Photovoice is also a constructive approach that helps individuals identify the steps to respond to crises and realize collective actions to build resilience (Bray et al., 2023; Dell et al., 2022). Several of the photos provided awareness of how the participants have remained resilient so far.

The use of the photovoice method yields a vigorous and humanistic epistemology in qualitative research and the humanities, in this case, providing a space for natural disaster trauma survivors to express their voices through photographs (Malherbe et al., 2023; Nole et al.,

2025; Wang, 1999). It also has a constructive axiological value in adding new insights that support policies, such as empowerment, social advocacy, and sustainable development. The use of this method motivates practical steps in determining various new policies in the future.

Limitations

The participants who experienced PTSD after the 2018 natural disaster demonstrated resilience. However, they also experienced the impact of, and survived, another major disaster, the COVID-19 pandemic. It also may have influenced their emotional health, recovery, and resilience. The overlapping nature of these crises makes it difficult to isolate the impact of trauma on the Palu natural disaster. Additionally, participants were asked to reflect on their experiences in 2018, which may have introduced recall bias. The single geographic focus on Palu and its specific sociocultural context may limit the applicability of findings to other regions or communities affected by natural disasters. This study's findings lay the groundwork for future research on the relevance and applicability of community resilience to mental health studies, particularly longitudinal studies that assess changes in resilience over time. Multiple crises are not uncommon, and an investigation into the interplay of overlapping disasters and their impact on community resilience is warranted.

Figure 8
Community Resilience Model



Source: Researchers' Findings

Conclusion

Eight factors divided across two elements, emotional health and spiritual well-being, were identified as enablers to community resilience. Emotional health is influenced by residential, financial, cultural, and capital factors. Spiritual well-being is supported by supernatural, ritual, social, and moral factors. Each unique factor emphasizes meaning and plays an important role in strengthening collective resilience. In this case, the Palu natural disaster trauma survivors have developed community resilience that supports their emotional health and spiritual well-being. Their resilience is centered on the spirit of the

community, which reflects associative and cooperative strength in prioritizing psychological conditions. Survivors of natural disaster trauma value life and mobilize their lives forward with resilience. The research also contributes to affirming the significance of community resilience to the government and policymakers, thus motivating empowerment, social advocacy, and development. In addition, this research highlights the importance of social institutions in demonstrating empathy for trauma survivors with PTSD conditions.[]

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Author Contribution Statement

Otniel Aurelius Nole: Conceptualization; Data Curation; Formal Analysis; Investigation; Methodology; Resources; Visualization; Writing Original Draft; Writing, Review & Editing. **Yulius Yusak Ranimpi:** Conceptualization; Funding Acquisition; Methodology; Project Administration; Resources; Validation; Writing, Review & Editing. **Shauna Fjaagesund:** Validation; Writing, Review & Editing.

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