Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

“Living with Disaster After the Disaster”: A Multi-Stakeholder Qualitative Study of Children’s Psychosocial Recovery Following Flooding in Aceh, Indonesia

Sumarti Endah Purnamaningsih Maria Margaretha

sumartiendah@gmail.com

Politeknik Kesehatan Karya Husada Yogyakarta

Iswanti Purwaningsih

Politeknik Kesehatan Karya Husada Yogyakarta

Dhiya Urrahman

Politeknik Kesehatan Karya Husada Yogyakarta

Ida Nur Faizah

Universitas Gadjah Mada

Teuku Tahlil

Universitas Syiah Kuala

Marthoenis Marthoenis

Universitas Syiah Kuala

Research Article

Keywords: children, community-based psychosocial support, disaster recovery, flooding, Indonesia, psychosocial recovery

Posted Date: October 29th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-11090251/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License

Additional Declarations: No competing interests reported.

Abstract

Background

Children’s psychosocial recovery after disasters extends beyond symptom reduction and unfolds within disrupted family, school, community, and service environments. However, integrated evidence remains limited regarding recovery after flooding in Aceh, Indonesia.

Aim

This study explored perspectives on children’s psychosocial recovery after flooding in Aceh Tamiang, Indonesia.

Methods

A qualitative research using case study methods was conducted approximately seven months after the disaster. Data were collected through semi-structured in-depth interviews and focus group discussions with children, caregivers, teachers, health personnel, and cross-sector stakeholders. Sixteen verbatim transcripts, comprising fourteen individual in-depth interviews and two focus group discussions, were analysed inductively. Three researchers conducted the primary analysis, with unresolved interpretations discussed with additional research-team members. Reporting followed the Consolidated Criteria for Reporting Qualitative Research.

Results

Four interconnected themes described children’s recovery across individual, relational, everyday, and system-level dimensions. Distress persisted through environmental reminders, disrupted routines, and continuing material and educational difficulties. Safety was gradually rebuilt through family reassurance, peer relationships, school re-entry, spirituality, and renewed everyday routines. Children also demonstrated agency through learning, helping others, creative activities, play, future aspirations, and preferred forms of expression. Existing psychosocial responses were valued but remained uneven, episodic, and insufficiently connected across community and service structures.

Conclusion

Children’s psychosocial recovery involved rebuilding safety, relationships, routine, agency, and meaningful participation alongside continuing distress. Sustainable support should strengthen existing family, school, community, and primary-care structures within coordinated and developmentally

responsive pathways. These findings provide a contextual foundation for developing community-based psychosocial support for disaster-affected children.

Introduction

Children's post-disaster recovery cannot be understood solely through the presence or absence of PTSD or other psychiatric symptoms. A meta-analysis estimated pooled PTSD prevalence at 26.49% and depression at 32.35% after earthquakes (Olk et al., 2025). Post-disaster difficulties also extend beyond PTSD and depression to emotional and behavioral problems (Tunç et al., 2026). Emotional numbing has been associated with poorer emotional, social, and school functioning among disaster-exposed youth (Li et al., 2020). Longitudinal evidence shows heterogeneous recovery trajectories, including relapsing PTSD and chronic depressive symptoms (Liang et al., 2021). Elevated post-traumatic stress symptoms have also been documented among adolescents after repeated earthquakes in Lombok, Indonesia (Wahab et al., 2021). Together, these findings show that post-disaster child mental health involves diverse symptoms, functional consequences, and recovery trajectories.

Recovery occurs within environments that may remain unstable. Household and interpersonal stressors were associated with post-traumatic stress, depression, and anxiety beyond disaster exposure (Newnham et al., 2022). Poverty, parental separation, and peer bullying were likewise associated with anxiety three years after an earthquake (Tang et al., 2020). Recovery resources are also embedded within children’s relationships and everyday settings. Social support, school participation, and positive teacher-classmate relationships were associated with resilience among adolescent earthquake survivors (Lu et al., 2020). Perceived social support was also related to resilience and general well-being ten years after Wenchuan (Fu et al., 2022). Indonesian teachers described supporting students’ well-being, educational continuity, and return to school following disaster (Parrott et al., 2025). These findings position recovery within interconnected social relationships, daily activities, and supportive environments. Accordingly, post-disaster recovery extends beyond psychopathology to encompass well-being, participation, relationships, and everyday functioning.

Existing disaster research has extensively documented psychological symptoms and protective factors, but less is known about how children themselves experience recovery when psychological recovery unfolds alongside continuing material disruption and perceived risk of recurrence. Multi-stakeholder evidence is particularly important because children's internal experiences may not be visible to adults, while parents, teachers, and service providers observe different dimensions of recovery. School- and community-based programs can broaden access when specialist mental health resources are limited (Gibbs et al., 2021). PFA provides early support emphasizing safety, calming, efficacy, connectedness, and hope (Gilbert et al., 2021). Stepped care differentiates universal, targeted, and specialist interventions according to children’s levels of need (Gibbs et al., 2021). Multidisciplinary school-based programs can combine child groups with support for parents, teachers, and professionals (McGill et al., 2024). Evidence for child-focused PFA remains limited, particularly regarding long-term outcomes (Gilbert et al., 2021). Family-centered interventions emphasize caregiver involvement and developmental

tailoring across childhood and adolescence (Rhamelani et al., 2026). Teacher-delivered interventions can extend reach when supported by structured training and ongoing professional supervision (Fukuchi et al., 2026). Indonesian experience also highlights multi-stakeholder collaboration and culturally sensitive training adapted to language, age, and religion (Sokang et al., 2024). Together, these approaches support layered, developmentally responsive, culturally grounded psychosocial care rather than one standardized intervention.

Indonesia has established MHPSS structures across national and local disaster-management systems (Trinidad & Protacio-De Castro, 2020). Community initiatives in Palu trained trusted religious volunteers to provide psychosocial support for children (Sokang et al., 2024). However, implementation remains influenced by coordination, resources, workforce capacity, and effective referral pathways (Trinidad & Protacio-De Castro, 2020). Teachers in Central Sulawesi provided psychoeducational, practical, and culturally embedded support following disaster (Parrott et al., 2025). Palu implementation also emphasized continuous training, stakeholder collaboration, and adaptation to language, age, and religion (Sokang et al., 2024). Flooding in Jakarta disrupted school access, facilities, attendance, and educational continuity (Lassa et al., 2023). Long-term Aceh evidence linked perceived recovery with education, infrastructure, social support, and psychological care (Siddiq et al., 2026). Together, Indonesian studies highlight multiple recovery resources, yet they examine different actors and system components separately.

What remains insufficiently understood is how children's subjective experiences of safety, distress, agency, and everyday functioning intersect with the relational and institutional environments through which recovery is sustained. This gap is particularly relevant in Aceh Tamiang, where flooding is not only a past traumatic event but part of an environment in which future flooding remains conceivable.

Developing contextually appropriate psychosocial interventions requires understanding local needs, resources, preferences, and implementation constraints. In Java, multi-stakeholder needs assessment informed intervention content, format, delivery, and implementation priorities (Brooks et al., 2021). Stakeholder inquiry can also identify facilitator preferences, parental involvement, group delivery, scheduling, and engagement needs (Coetzee et al., 2022). Iterative development can reveal cultural, material, provider, and engagement challenges persisting during implementation (Gellatly et al., 2022). Disaster-specific evidence from Palu similarly highlights language, age, religious values, trusted volunteers, and community participation (Sokang et al., 2024). These findings suggest that culturally responsive design requires more than transferring standardized programmes between settings. It requires locally grounded evidence from children and the interconnected family, school, community, and service systems surrounding them. Accordingly, how is psychosocial recovery experienced and supported by children and key stakeholders following flooding in a context of continuing environmental and social disruption?. The findings were intended to inform development of a culturally appropriate, community-based psychosocial intervention model.

Methods

Study design and reporting

This study employed a qualitative design using case study methods to explore children's psychosocial recovery following disaster in Aceh, Indonesia. The qualitative approach was selected to capture experiences, meanings, recovery processes, and contextual influences that could not be adequately represented through predetermined categories. An inductive analytical orientation allowed codes and themes to be developed from participants' accounts rather than from an a priori theoretical framework. Reporting was guided by the Consolidated Criteria for Reporting Qualitative Research (COREQ) for studies using interviews and focus groups (Tong et al., 2007).

Research team and reflexivity

Data collection was conducted alternately by five researchers with previous experience in qualitative research. Depending on the data-collection session, researchers served as interviewers, moderators, or co-moderators. None of the researchers had a prior relationship with participants before recruitment or data collection. Before each session, researchers introduced themselves, explained the purpose and procedures of the study, and clarified confidentiality and voluntary participation.

The primary qualitative analysis was undertaken by SEPMM, IP, and DU, all of whom had previous experience conducting qualitative research. Throughout analysis, the three analysts discussed how their interpretations could be influenced by professional knowledge, previous research experience, and expectations concerning post-disaster recovery. Analytical interpretations were therefore repeatedly examined through collaborative discussion rather than being determined by a single researcher. When disagreements could not be resolved among SEPMM, IP, and DU, TT and MAjoined the discussion to support resolution. All authors subsequently reviewed the developing thematic interpretation and the final analytical structure.

Study setting

The study was conducted in Aceh Tamiang Regency, Aceh Province, Indonesia, following severe flooding that affected communities in late 2025. Qualitative data collection was undertaken in July 2026, approximately seven months after the disaster, when affected communities were transitioning from emergency response toward longer-term recovery. The setting allowed exploration of recovery within interconnected family, school, community, health-service, and local-government environments. This context was particularly relevant because children's everyday lives, educational activities, family circumstances, and local support systems had all been disrupted by the disaster.

Participants and recruitment

Participants were purposively selected to capture information-rich perspectives from stakeholders occupying different positions within children's post-disaster recovery environments. The sampling strategy was guided by the study aim rather than by a predetermined numerical target. Five stakeholder groups were included: disaster-affected children, parents or caregivers, teachers, district health personnel, and cross-sector government stakeholders.

Seven adolescent children (aged around 14 years old, attending junior high school) were included to obtain firsthand accounts of their emotional experiences, perceived safety, coping, everyday functioning, and preferences regarding psychosocial support. Seven parents or caregivers (aged between 44 and 51 years old) were included to provide perspectives on children's behaviour, family responses, and changes observed in the home environment. The focus group with teachers included ten educators from two affected junior high schools, comprising subject teachers, school counselors, and a vice-principal, with teaching experience ranging from 3 to 23 years.Individual in-depth interviews were conducted with children and parents or caregivers, allowing participants to describe experiences in greater depth and with greater privacy. Separate focus group discussions were conducted with teachers and with health or cross-sector stakeholders, enabling discussion of shared experiences, existing practices, and system-level challenges.

Recruitment continued until the research team considered that the relevant stakeholder perspectives had been sufficiently represented to address the study aim and that additional recruitment was unlikely to substantially broaden the range of perspectives relevant to the emerging thematic structure. The study did not use formal data saturation as a predetermined stopping criterion, and saturation is therefore not claimed as the basis for sample adequacy. Instead, adequacy was considered in relation to the purposive inclusion of multiple stakeholder groups, the information richness of the accounts, and the contribution of each participant group to understanding children's psychosocial recovery across individual, relational, educational, community, and service-system contexts. The characteristics of the stakeholder groups, data-collection methods, sample sizes, and key perspectives are summarized in Table 1.

Tabel 1. Characteristics of Participants

Stakeholder group	Data collection	N participants	Key perspective
Children	Indepth interview	7	Firsthand recovery experiences
Parents/caregivers	Indepth interview	7	Observed changes and family support
Teachers	Focus Group Discussion	10	School functioning and peer context
Health personnel	Focus Group Discussion	3	Psychosocial services and referral
Cross-sector stakeholders	Focus Group Discussion	10	Coordination and sustainability
Total		**37**	

Data collection

The use of different data-collection formats was intentional and reflected the type of knowledge sought from each stakeholder group. Individual interviews with children and parents or caregivers were used to facilitate private and in-depth discussion of personal and potentially sensitive experiences. In contrast, focus group discussions with teachers and institutional stakeholders were used to elicit shared experiences, existing practices, coordination processes, and system-level challenges that could be illuminated through interaction among participants with related professional roles.

Although the data were collected through different formats, the interview and focus group guides covered common domains relevant to the study aim, including experiences following the disaster, emotional and behavioural changes, disruption to everyday life, coping and recovery resources, support received, unmet needs, and priorities for future psychosocial support. The analysis therefore focused on the meaning and content of participants' accounts rather than treating the data-collection formats as equivalent sources. Differences and convergence across stakeholder groups were examined as part of the analysis.

Data analysis

All verbatim transcripts were analysed using inductive thematic analysis. The primary analysis was conducted by SEPMM, IP, and DU. Analysis began with repeated reading of complete transcripts to familiarise the analysts with participants' accounts and the broader context of each interview or focus group. Meaningful segments relevant to children's psychosocial recovery were identified, and initial codes were generated inductively from participants' accounts without applying a predetermined coding framework or thematic structure.

Initial codes were subsequently compared within and across transcripts and stakeholder groups. The analysts examined not only recurring experiences but also differences, exceptions, and contrasting

interpretations across children, caregivers, teachers, health personnel, and cross-sector stakeholders. Related codes were grouped into preliminary categories, which were then examined in relation to the broader patterns of meaning they represented. Categories that addressed related aspects of psychosocial recovery were developed into candidate themes.

Theme development was iterative rather than a linear process. As transcripts were compared, emerging data were used to expand, combine, separate, or modify codes, categories, and candidate themes where necessary. Particular attention was given to whether themes captured a coherent pattern across the dataset while remaining conceptually distinct from one another. Differences between stakeholder accounts were retained when they provided meaningful information about the context or visibility of children's recovery rather than being treated as inconsistencies requiring resolution.

Candidate themes were subsequently reviewed against the coded data and the complete transcripts to assess their internal coherence, distinctiveness, relevance to the study aim, and adequacy of supporting evidence. Themes were then refined, defined, and named through analytic discussions among SEPMM, IP, and DU. Where disagreements could not initially be resolved, TT and MA joined the discussion to examine alternative interpretations. All authors subsequently reviewed the final thematic structure and interpretation before reporting.

The analysis was inductive in the sense that themes were developed from participants' accounts rather than imposed from a predetermined theoretical framework. However, the interpretation was informed by the study's broader focus on psychosocial recovery and by comparison across stakeholder perspectives.

Trustworthiness

Several procedures were used to strengthen the credibility and transparency of the qualitative analysis. First, stakeholder triangulation was undertaken by comparing accounts from children, caregivers, teachers, health personnel, and cross-sector stakeholders. Triangulation was used not to establish consensus across participants, but to examine convergence, divergence, and the contextual conditions under which different understandings of recovery emerged.

Second, analyst triangulation was supported through the involvement of SEPMM, IP, and DU throughout coding, interpretation, and thematic development. Unresolved analytical issues were discussed with TT and MA, and all authors reviewed the developing thematic interpretation and final thematic structure. This process provided opportunities to question assumptions, consider alternative interpretations, and refine theme boundaries.

Third, divergent and disconfirming accounts were actively considered during analysis. Rather than excluding accounts that differed from dominant patterns, the analysts examined whether such differences provided additional insight into the variability and context-dependence of children's psychosocial recovery. Complete transcripts were retained throughout analysis to preserve the contextual meaning of coded segments.

The study did not use formal inter-rater reliability coefficients, participant member checking, or a formal saturation criterion. These procedures are therefore not presented as components of trustworthiness. Instead, credibility was supported through stakeholder triangulation, analyst triangulation, iterative thematic development, examination of divergent accounts, and review of themes against the complete dataset.

Ethical considerations

Ethical approval was obtained from the with approval number. All participants received information about the study before participation and completed informed-consent procedures. Adult participants provided informed consent, while participation involving children included parental or guardian informed consent and child assent before data collection. Permission for audio recording was also obtained before each interview or focus group.

Participants were informed that involvement was voluntary and that they could decline questions or discontinue participation without consequences. Confidentiality was maintained throughout data collection, analysis, and reporting, with identifying information removed from analytical materials. Participant codes or pseudonyms are used when presenting quotations in the manuscript. Audio recordings and verbatim transcripts were handled confidentially and were accessible only according to the study's approved data-management procedures.

Additional safeguards were applied when interviewing children because discussion of disaster experiences could evoke emotional distress. Interviewers monitored children's emotional responses throughout the interview and paused questioning when signs of distress appeared. Children were allowed time to regulate their emotions and were not required to continue discussing distressing experiences. Interviews resumed only when the child indicated readiness and willingness to proceed.

Results

Qualitative analysis of 16 transcripts, comprising two focus group discussions and fourteen in-depth interviews with children and parents, generated four interrelated themes. The findings described how distress persisted beyond the acute disaster, how children rebuilt safety through relationships and everyday routines, how they actively participated in recovery, and how existing psychosocial responses remained insufficiently integrated for sustained community delivery. The four themes and their corresponding subthemes are summarized in Table 2.

Table 2
Themes and subthemes

Theme	Subthemes
Living with disaster after the disaster: persistent distress amid disrupted everyday life	Environmental reminders and fear of recurrence
	Hidden and variable expressions of distress
	Continuing material, educational, and social disruption
Rebuilding safety through relationships, routine, and belonging	Family togetherness and reassurance as psychological safety;
	Trusted peers and teachers as sources of support;
	School re-entry restoring routine, belonging, and future orientation
Recovering through agency, expression, and meaningful participation	Agency, responsibility, meaning-making, and future orientation;
	Interest-responsive play, sport, art, and creative participation;
	Opportunities rather than pressure to express difficult experiences
4. From episodic trauma healing to a sustainable community psychosocial support system	Existing psychosocial responses were valued but uneven and episodic;
	Gaps in frontline capacity, monitoring, and referral
	Opportunities for integration across schools, primary care, and community structures
	Preparedness, planning, and financing for sustainability

The four themes were: (1) Living with disaster after the disaster: persistent distress amid disrupted everyday life; (2) Rebuilding safety through relationships, routine, and belonging; (3) Recovering through agency, expression, and meaningful participation; and (4) From episodic trauma healing to a sustainable community psychosocial support system. Together, these themes describe the interconnected nature of children's recovery, encompassing persistent distress, relational and environmental sources of safety, children's active participation in recovery, and the broader conditions required to sustain psychosocial support.

Living with disaster after the disaster: persistent distress amid disrupted everyday life

The disaster remained psychologically present long after the floodwaters had receded. Rainfall, the sound of water, strong winds, thunder, rising river levels, and power outages repeatedly emerged as environmental reminders that reactivated fear. One child who had nearly been swept away identified the sound of water as the most frightening reminder of the event.

“What frightens me most is hearing the sound of water.” (C1, IDI–Child)

Another child described how heavy rain and power outages immediately brought back memories of the disaster and generated fear that it would recur.

“When it rains heavily and the electricity goes out, I immediately remember it. I am afraid it will happen again.” (C2, IDI–Child)

Teachers observed similar reactions among students. Some children became frightened even during light rain, while one teacher described a student who became afraid of bathing or being exposed to water following the flood. These responses indicated that ordinary environmental cues had acquired meanings associated with danger.

Distress was not always outwardly visible. Some children had resumed school, friendships, and everyday activities while still carrying difficult memories. One child explained that she generally felt normal unless the disaster was discussed. When memories resurfaced, she tended to remain silent or sleep rather than talk about them.

“If we do not talk about it, I feel normal. But when we talk about it, I feel sad.” (C3, IDI–Child)

Parents also described children who became quieter, more withdrawn, or more watchful when the weather changed. One parent observed that her child became markedly silent and frequently stared into space following the disaster, particularly when rain or thunder occurred. The findings therefore showed that apparent return to normal functioning did not necessarily indicate an absence of continuing distress.

Children's emotional experiences also occurred within prolonged disruption to everyday life. Families reported damaged or destroyed homes, displacement, food and water shortages, disrupted livelihoods, transport difficulties, and prolonged efforts to restore living conditions. School recovery remained incomplete, with damaged classrooms and shortages of desks, chairs, books, and other learning materials. Teachers also described economic hardship contributing to irregular attendance, school transfers, and, in some cases, children beginning to work rather than attending school consistently. Thus, post-disaster distress was intertwined with continuing material, educational, and social disruption.

Rebuilding safety through relationships, routine, and belonging

A sense of safety was rebuilt primarily through trusted relationships. Family togetherness was repeatedly described as particularly important when environmental conditions revived fears of another flood. One father explained that family members intentionally remained together during the recent disaster after having experienced separation during an earlier flood. When children became frightened, family members gathered, comforted them, and reinforced their sense of protection.

“We embrace them and explain that this is a trial. When there is strong wind or something happens, we gather here together. That is how we protect the children from their fear.” (P1, IDI–Parent)

Children also identified peers as important sources of comfort and strength. Spending time with friends, laughing, cycling, playing football, and simply being together provided relief from sadness and fear. One child explicitly identified both friends and his mother as the people who made him feel stronger.

“What makes me stronger is being with my friends and my mother.” (C1, IDI–Child)

Peer support extended beyond emotional companionship. Teachers described classmates repeatedly encouraging students who had stopped attending school to return. Parents also described friends helping with transport or maintaining contact after displacement. These relationships allowed children to reconnect with familiar social worlds despite disrupted living arrangements.

School re-entry represented another important turning point. A parent described her child as spending long periods at home silent and withdrawn before the school began inviting students back. Returning initially involved helping clean the damaged school rather than formal lessons. Meeting classmates again coincided with increased enthusiasm and communication.

“When she was asked to come back and clean the school, she became a little more enthusiastic. Before the school reopened, she mostly stayed at home and did not want to go anywhere.” (P2, IDI–Parent)

School therefore represented more than the resumption of academic learning. Returning restored routines, friendships, student identity, opportunities for meaningful activity, and a sense that life was progressing again. Children themselves described valuing school because it allowed them to meet friends after prolonged disruption and relocation. At the same time, teachers were also disaster survivors and were attempting to support students while managing damaged facilities, family losses, and their own emotional responses. Schools consequently functioned both as affected institutions and as central environments for recovery.

Recovering through agency, expression, and meaningful participation

Children were not only recipients of assistance but active participants in recovery. They helped family members, returned to school, maintained achievements, supported peers, and continued to imagine future possibilities. Some interpreted their experiences through reflection and spirituality. One child

described becoming more engaged in worship and study following the disaster and expressed gratitude for having survived.

“Since the disaster, I have prayed more often. I study more too, and I am grateful that I am still alive.” (C2, IDI–Child)

Children also maintained future-oriented aspirations. They spoke about continuing education, pursuing particular professions, protecting their families, and even contributing to disaster-risk reduction. Such accounts showed that continuing distress and adaptive agency could coexist rather than representing opposite outcomes.

Meaningful activities differed substantially across children. Participants described football, cycling, games, drawing, colouring, music, dance, writing, public speaking, digital learning, and informal time with peers. For some, these activities provided enjoyment; for others, they restored confidence, identity, or motivation to participate in school.

One child described drawing and colouring as activities she had enjoyed long before the disaster and continued to find meaningful afterwards. She proposed that future programmes should accommodate children's different talents and interests.

“Maybe there could be competitions based on children's talents. If they like drawing, they can draw; if they like singing, they can sing.” (C3, IDI–Child)

Another child described playing and spending time with friends as particularly helpful, including football, cycling, games, and simply sitting together and laughing. These accounts indicated that meaningful participation was highly individual and could not be reduced to a single standard activity.

Verbal expression was also valued, but preferences differed. One child explicitly requested opportunities to share experiences with other children, including stories about the disaster, school, home, and what to do if water rose again.

“I would like us to share stories with each other—about the disaster, school, home, and what we should do if the water rises again.” (C1, IDI–Child)

However, another child became visibly distressed while recounting the destruction of her home and described remaining silent or sleeping when difficult memories returned. The findings therefore showed that expression was important when children were ready to engage, but that recovery should not depend on compulsory verbal disclosure. Children appeared to require multiple, age-appropriate ways of participating and expressing difficult experiences.

From episodic trauma healing to a sustainable community psychosocial support system

Psychosocial responses were already present following the disaster. District Health Office participants described the establishment of a Trauma Healing Team after external volunteers provided basic training. Two staff members from each of 15 Puskesmas were trained, alongside District Health Office personnel, and subsequently implemented activities in their respective areas.

"We asked for two staff from each Puskesmas. We have 15 Puskesmas, so about 30 staff, plus us—around 35 people were trained for trauma healing." (H1, FGD–District Health Office)

Families also reported psychosocial activities provided by volunteers and external organisations. Activities included play, singing, informal learning, conversations, entertainment, and group interaction. Some parents perceived that children became happier and more socially engaged after participating. However, access differed across communities and families. Some children participated in repeated psychosocial activities, while others received mainly material assistance or did not access dedicated psychological support. This variation indicated that support was available but unevenly distributed.

District Health Office participants also described limitations in the structure of the response. Training was short and basic rather than a standardised programme with formal evaluation. There was no systematic reporting of the number of people receiving trauma-healing activities. Financial sustainability was another limitation because psychosocial activities did not have a dedicated budget and were incorporated into existing services such as Posyandu.

"There is no dedicated budget for the trauma-healing programme. It is inserted into existing activities, for example when staff go to Posyandu." (H1, FGD–District Health Office)

The intensity of trauma-healing activities also diminished over time. A District Health Office participant explained that these activities were no longer routinely conducted approximately eight months after the disaster as children returned to school and emergency assistance decreased.

Teachers independently identified gaps in frontline capacity. They wanted practical skills to recognise trauma-related difficulties, provide appropriate initial support, identify the limits of their role, and know when and where children should be referred.

"We would like teachers to be taught how to handle children who may be traumatised—what initial response we should give, and if it becomes severe, where we should refer them to someone more qualified." (T1, FGD–Teacher)

Despite these limitations, participants identified multiple existing structures that could support longer-term delivery. These included schools, teachers, Puskesmas, Posyandu, cadres, school health programmes, community leaders, and existing mental-health and school-health activities. The central gap was therefore not a complete absence of psychosocial resources, but the absence of a consistently connected pathway across these resources.

Preparedness was also embedded in participants' descriptions of psychosocial recovery. Families often reassured children by explaining where they would evacuate, how they would respond, and whom they could contact if water levels rose again. Parents and teachers similarly advocated stronger community-level preparedness. These accounts suggested that greater predictability and readiness were closely linked to restoring a sense of safety in an environment where future flooding remained possible.

Taken together, participants described the need to move beyond short-term, externally supported trauma-healing activities toward a sustained community psychosocial support system connecting early support, identification of children requiring additional care, referral, schools, primary health care, community structures, preparedness, monitoring, planning, and financing.

Discussion

This study identified four interconnected dimensions of children's psychosocial recovery following disaster in Aceh Tamiang. Children continued experiencing distress while everyday routines, relationships, and material conditions remained disrupted. Recovery was supported by relational safety, meaningful participation, personal agency, and opportunities to resume valued activities. Recovery also depended on whether community and service systems could provide sustained and coordinated support. Together, these findings position recovery beyond symptom reduction toward restored safety, belonging, agency, everyday functioning, and continuity.

Persistent distress coexisted with apparent functioning and gradual return to daily activities. Post-disaster stress can remain associated with household and interpersonal stressors beyond direct disaster exposure (Newnham et al., 2022). Indonesian adolescents have also shown elevated post-traumatic stress symptoms following repeated earthquakes (Wahab et al., 2021). Flood-related disruption can affect school access, facilities, attendance, and educational continuity (Lassa et al., 2023). Earthquake-affected students have similarly reported academic, psychological, social, and physiological difficulties during recovery (Şam et al., 2025). These findings help explain why returning to school or routine does not necessarily indicate complete psychosocial recovery. Our findings similarly showed that children could resume activities while retaining fear, sadness, avoidance, or sensitivity to disaster reminders. Multi-informant assessment may therefore be valuable because observable functioning may not fully reflect children's internal experiences.

Relationships, routine, and belonging emerged as central resources for rebuilding safety. Family, peer, and broader social support have been associated with resilience among adolescent earthquake survivors (Lu et al., 2020). Indonesian teachers have described supporting students' well-being, educational continuity, and return to school after disaster (Parrott et al., 2025). Teacher perspectives from Iran also identified family and community structures as important influences on adolescent disaster resilience (Rezaei & Mohammadinia, 2025). Our findings extend this relational perspective by showing how reassurance, companionship, spirituality, and school routines helped restore everyday security. School re-entry appeared meaningful not only educationally, but also through renewed peer

contact, routine, identity, and future orientation. These findings suggest that resilience should not be understood solely as an individual capacity. Psychosocial interventions may be strengthened when trusted relationships and everyday environments are incorporated into recovery support.

Agency and meaningful participation represented another important dimension of recovery. Therapeutic play can facilitate emotional expression and improve psychosocial outcomes among earthquake-affected preschool children (Topal et al., 2025). Play-therapy literature also identifies psychoeducation, therapeutic play, and community involvement across different disaster-response phases (Nilsson et al., 2024). Indonesian disaster-mitigation research emphasizes child empowerment and meaningful participation within school-based preparedness activities (Rofiah et al., 2021). Our findings similarly showed children valuing play, drawing, music, storytelling, learning, helping family, and future-oriented activities. These activities provided opportunities to express emotions, reconnect with interests, contribute to family life, and regain a sense of competence. However, meaningful participation should not require children to repeatedly narrate traumatic experiences. Interventions should therefore provide varied expressive options while preserving choice, developmental appropriateness, and individual interests.

The findings also indicate a need to move from episodic trauma-healing activities toward sustainable community psychosocial support. Stepped-care approaches can organize universal, targeted, and specialist responses according to differing levels of psychosocial need (Gibbs et al., 2021). Community intervention development also benefits from identifying local priorities, delivery preferences, and implementation constraints (Brooks et al., 2021). Palu experience shows that trained, trusted community volunteers can contribute to culturally grounded psychosocial support (Sokang et al., 2024). Multidisciplinary programs can further connect child, family, school, and professional supports across different levels of care (McGill et al., 2024). Our findings show that Aceh Tamiang already possesses local resources rather than lacking psychosocial responses entirely. The main challenge concerns continuity, coordination, supervision, referral, monitoring, and sustainable financing beyond the emergency period. Strengthening existing structures may therefore be more appropriate than creating a parallel psychosocial system.

These findings provide several directions for developing a community-based psychosocial intervention model. Universal activities could strengthen safety, routine, peer connection, emotional expression, and meaningful participation within schools and communities. Targeted support could address children experiencing persistent distress, withdrawal, functional disruption, or difficulties re-engaging with everyday activities. Stepped-care principles can help match intervention intensity with differing levels of need (Gibbs et al., 2021). Culturally responsive adaptation should also reflect local language, age, religious values, and community participation (Sokang et al., 2024). Caregiver involvement can strengthen developmental responsiveness and continuity between intervention activities and children's everyday environments (Rhamelani et al., 2026). Task-sharing requires structured training, supervision, and professional support when psychosocial activities are delivered beyond specialists (Fukuchi et al., 2026). The model should therefore connect children, families, schools, community actors, primary care,

and referral services within a coordinated pathway. Preparedness activities may additionally support predictability and perceived control in communities facing recurrent disaster risk.

This study has several strengths and limitations. Including children, caregivers, teachers, health personnel, and cross-sector stakeholders enabled comparison across multiple layers of children's recovery environments. Direct interviews with children also reduced reliance on adult interpretations of children's experiences. However, the findings reflect one post-disaster setting and should not be assumed to represent all communities in Aceh. Data were collected approximately seven months after disaster, and experiences may differ during earlier or later recovery phases. Interviews relied on retrospective accounts, which may reflect recall, current circumstances, or participants' comfort discussing distressing experiences. The study did not evaluate the clinical effectiveness of existing trauma-healing activities or the proposed psychosocial intervention model. Future research should examine intervention feasibility, acceptability, implementation, and effectiveness across different levels of psychosocial need.

Conclusion

Children's post-disaster psychosocial recovery in Aceh Tamiang extended beyond symptom reduction and involved rebuilding safety, relationships, routine, agency, and participation. Persistent distress could coexist with resumed daily functioning, highlighting the importance of attending to children's own experiences. Recovery was supported by families, peers, schools, meaningful activities, spirituality, and opportunities for children to regain control. Existing psychosocial responses were valued, but their continuity, coordination, monitoring, referral, and financing remained inconsistent. Community-based intervention development should therefore strengthen existing local structures while providing layered, developmentally appropriate, and culturally responsive support. These findings provide a contextual foundation for developing and subsequently evaluating a sustainable psychosocial support model for disaster-affected children.

Declarations

Consent to Participate and Consent to Publish

All adult participants provided informed consent before participation. For participants under 18 years of age, parental or guardian informed consent and child assent were obtained before data collection. Participants were informed about the purpose and procedures of the study, the voluntary nature of participation, confidentiality, and their right to decline questions or discontinue participation without consequences. Permission for audio recording was obtained before each interview or focus group. All quotations presented in this manuscript are anonymised, and no personally identifiable information is reported.

Competing Interests

The authors declare that they have no competing interests.

Author Contributions

Author 1 contributed to the conception and design of the study, data collection, data analysis, interpretation of findings, and manuscript preparation.

Author 2 contributed to the conception and design of the study, data collection, data analysis, interpretation of findings, and manuscript preparation.

Author 3 contributed to the conception and design of the study, data collection, data analysis, interpretation of findings, and manuscript preparation.

Author 4 contributed to the conception and design of the study, data collection, data analysis, interpretation of findings, and manuscript preparation.

Author 5 contributed to interpretation of findings, critical review of the manuscript, and refinement of the final analytical interpretation.

Author 6 contributed to interpretation of findings, critical review of the manuscript, and refinement of the final analytical interpretation.

All authors reviewed and approved the final version of the manuscript and agreed to be accountable for the work.

Availability of Data and Materials

The qualitative data generated and analysed during the current study are not publicly available because the interview and focus group transcripts contain potentially identifiable and sensitive participant information. Data may be available from the corresponding author upon reasonable request, subject to ethical and confidentiality restrictions.

Clinical Trial Number

Clinical trial number: not applicable.

References

1. Brooks, H., Syarif, A. K., Pedley, R., Irmansyah, I., Prawira, B., Lovell, K., Opitasari, C., Ardisasmita, A., Tanjung, I. S., Renwick, L., Salim, S., & Bee, P. (2021). Improving mental health literacy among young people aged 11–15 years in Java, Indonesia: The co-development of a culturally-appropriate, user-centred resource (The IMPeTUs Intervention). *Child and Adolescent Psychiatry and Mental Health, 15*, 56. https://doi.org/10.1186/s13034-021-00410-5

2. Coetzee, B. J., Gericke, H., Human, S., Stallard, P., & Loades, M. (2022). What should a universal school-based psychoeducational programme to support psychological well-being amongst children and young people in South Africa focus on and how should it be delivered? A multi-stakeholder perspective. *School Mental Health, 14*, 189–200. https://doi.org/10.1007/s12310-021-09465-3
3. Fu, H., Wang, B., Xin, Y., Duh, S., & Deng, Y. (2022). Social support and well-being of adolescents in worst-stricken areas 10 years after Wenchuan Earthquake: A mediating role of resilience. *PsyCh Journal, 11*(1), 106–113. https://doi.org/10.1002/pchj.500
4. Fukuchi, N., Harada, N., Shoji, W., Konno, C., & Suzuki, E. (2026). Building community resilience: Development and validation of a school-based framework for post-disaster child mental health support. *International Journal of Disaster Risk Reduction, 135*, 106056. https://doi.org/10.1016/j.ijdrr.2026.106056
5. Gellatly, R., Knudsen, K., Boustani, M. M., Michelson, D., Malik, K., Mathur, S., Nair, P., Patel, V., & Chorpita, B. F. (2022). A qualitative analysis of collaborative efforts to build a school-based intervention for multiple common adolescent mental health difficulties in India. *Frontiers in Psychiatry, 13*, 1038259. https://doi.org/10.3389/fpsyt.2022.1038259
6. Gibbs, L., Marinkovic, K., Nursey, J., Tong, L. A., Tekin, E., Ulubasoglu, M., Callard, N., Cowlishaw, S., & Cobham, V. E. (2021). Child and adolescent psychosocial support programs following natural disasters—A scoping review of emerging evidence. *Current Psychiatry Reports, 23*, 82. https://doi.org/10.1007/s11920-021-01293-1
7. Gilbert, R., Abel, M. R., Vernberg, E. M., & Jacobs, A. K. (2021). The use of psychological first aid in children exposed to mass trauma. *Current Psychiatry Reports, 23*, 53. https://doi.org/10.1007/s11920-021-01270-8
8. Lassa, J., Petal, M., & Surjan, A. (2023). Understanding the impacts of floods on learning quality, school facilities, and educational recovery in Indonesia. *Disasters, 47*(2), 412–436. https://doi.org/10.1111/disa.12543
9. Li, G., Wang, L., Cao, C., Fang, R., Chen, C., Qiao, X., Yang, H., Hall, B. J., & Elhai, J. D. (2020). An item-based analysis of PTSD emotional numbing symptoms in disaster-exposed children and adolescents. *Journal of Abnormal Child Psychology, 48*, 1303–1311. https://doi.org/10.1007/s10802-020-00677-w
10. Liang, Y., Zhou, Y., & Liu, Z. (2021). Consistencies and differences in posttraumatic stress disorder and depression trajectories from the Wenchuan earthquake among children over a 4-year period. *Journal of Affective Disorders, 279*, 9–16. https://doi.org/10.1016/j.jad.2020.09.107
11. Lu, Y., Yang, D., Niu, Y., Zhang, H., Du, B., & Jiang, X. (2020). Factors associated with the resilience of Tibetan adolescent survivors five years after the 2010 Yushu earthquake. *PLOS ONE, 15*(4), e0231736. https://doi.org/10.1371/journal.pone.0231736
12. McGill, N., Curtin, M., Hodgins, G., Parnell, T., Verdon, S., Crockett, J., & Davison, W. R. (2024). Supporting children's recovery from bushfires: Stakeholders' views about the impact of a

community-based intervention program on children. *Australian Journal of Rural Health, 32*(1), 42–52. https://doi.org/10.1111/ajr.13060

13. Newnham, E. A., Gao, X., Guragain, B., Jiao, F., Nathan, E., Boyes, M., & Leaning, J. (2022). Daily stressors and mental health following disaster: A school-based assessment of adolescent disaster survivors in China and Nepal. *Journal of Traumatic Stress, 35*(6), 1721–1733. https://doi.org/10.1002/jts.22876
14. Nilsson, N., Hadiprodjo, N., & Parson, J. (2024). The role of the play therapist in supporting children and families following a natural disaster: A scoping review. *Australian Journal of Rural Health, 32*(5), 877–889. https://doi.org/10.1111/ajr.13186
15. Olk, K., Osmani, V., & Klug, S. J. (2025). Post-traumatic stress disorder and depression among children and adolescents after earthquake disasters: A systematic review and meta-analysis. *Journal of Affective Disorders, 388*, 119750. https://doi.org/10.1016/j.jad.2025.119750
16. Parrott, E., Lomeli-Rodriguez, M., Burgess, R., Rahman, A., Direzkia, Y., & Joffe, H. (2025). The role of teachers in fostering resilience after a disaster in Indonesia. *School Mental Health, 17*, 118–136. https://doi.org/10.1007/s12310-024-09709-y
17. Rezaei, M. A., & Mohammadinia, N. (2025). The role of society and family in adolescents' disaster resilience: A qualitative study. *BMC Public Health, 25*, 1013. https://doi.org/10.1186/s12889-025-22197-2
18. Rhamelani, P., Cahaya, A. P., Yunita, S., Wijayanti, R., Nirwana, J. P., Nasution, N., Widiawati, A., Oktaviani, R., Sijabat, Y. S., Febrian, N., Rahayu, R., Rohnenti, O., & Priambodo, A. P. (2026). Family-centered psychosocial interventions for disaster-affected children across developmental stages: A scoping review. *Risk Management and Healthcare Policy, 19*, 1–21. https://doi.org/10.2147/RMHP.S622846
19. Rofiah, N. H., Kawai, N., & Hayati, E. N. (2021). Key elements of disaster mitigation education in inclusive school setting in the Indonesian context. *Jàmbá: Journal of Disaster Risk Studies, 13*(1), a1159. https://doi.org/10.4102/jamba.v13i1.1159
20. Şam, M., Sever, G., Yildiz Yüksel, H., & Aliyev, R. (2025). Earthquake effects on youth: Understanding psychological challenges and support needs. *BMC Psychology, 13*, 72. https://doi.org/10.1186/s40359-025-02373-0
21. Siddiq, I., Javernick-Will, A., & Stine, E. (2026). Growing up after the waves: The factors shaping long-term post-disaster orphan recovery. *International Journal of Disaster Risk Reduction, 142*, 106236. https://doi.org/10.1016/j.ijdrr.2026.106236
22. Sokang, Y. A., Omega, P. D., Novianty, A., Garey, E., Dawan, A., Hutapea, R. D., & Siantoro, A. (2024). Lesson learned from post-disaster psychosocial support for children in Palu, Central Sulawesi—Indonesia. *Journal of Disaster Research, 19*(4), 678–690. https://doi.org/10.20965/jdr.2024.p0678
23. Tang, W., Xu, D., & Xu, J. (2020). Impact of earthquake exposure, family adversity and peer problems on anxiety-related emotional disorders in adolescent survivors three years after the Ya'an earthquake. *Journal of Affective Disorders, 273*, 215–222. https://doi.org/10.1016/j.jad.2020.04.044

24. Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (COREQ): A 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care, 19*(6), 349–357. https://doi.org/10.1093/intqhc/mzm042
25. Topal, S., Yalnızoğlu Çaka, S., Uysal, G., Alabay, E., Demir, Y., & Cömertoğlu Arslan, S. (2025). The effect of therapeutic play-based intervention programme applied to earthquake victim preschool children on psychosocial well-being: A randomised controlled trial. *BMC Psychology, 13*, 981. https://doi.org/10.1186/s40359-025-03317-4
26. Trinidad, A. C., & Protacio-De Castro, E. (2020). The institutionalization of mental health and psychosocial support in emergencies in Indonesia. *International Journal of Disaster Risk Reduction, 51*, 101918. https://doi.org/10.1016/j.ijdrr.2020.101918
27. Tunç, Y., Çelik, O. T., & Kaçmaz, C. (2026). Post-earthquake emotional and behavioral problems in children: Parent experiences, coping strategies, and predictive factors. *Frontiers in Psychology, 16*, 1629996. https://doi.org/10.3389/fpsyg.2025.1629996
28. Wahab, S., Yong, L. L., Chieng, W. K., Yamil, M., Sawal, N. A., Abdullah, N. Q., Muhdisin Noor, C. R., Wd Wiredarma, S. M., Ismail, R., Othman, A. H., & Damanhuri, H. A. (2021). Post-traumatic stress symptoms in adolescents exposed to the earthquake in Lombok, Indonesia: Prevalence and association with maladaptive trauma-related cognition and resilience. *Frontiers in Psychiatry, 12*, 680393. https://doi.org/10.3389/fpsyt.2021.680393