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Trauma-Informed Practices in Early Childhood Education: Supporting Emotional Recovery and Classroom Reintegration After Disaster

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Abstract

Disasters disrupt not only children's psychological security but also the stability of early learning environments. In early childhood education settings, post-disaster trauma may directly affect emotional regulation, classroom participation, and learning engagement. This study aimed to examine manifestations of trauma among children aged 3–6 years in a post-disaster context and to analyze how classroom-based psychosocial interventions support emotional stabilization and educational reintegration. A descriptive qualitative design was employed in a kindergarten functioning as a child-friendly psychosocial support setting. Data were collected through participatory classroom observation, semi-structured interviews with caregivers and educators, and children's expressive activities, including drawing and symbolic play. Thematic analysis was conducted to identify patterns of trauma expression and changes in learning engagement. Findings indicate that trauma was primarily expressed through non-verbal behaviors, including regression, separation anxiety, sleep disturbances, hyperarousal, and reduced attention span, which interfered with structured classroom participation. Play-based and expressive strategies integrated into daily routines facilitated emotional regulation, peer interaction, and gradual re-engagement in learning activities. Recovery was most effective when family involvement and consistent caregiver–teacher collaboration supported classroom routines. The study highlights the importance of trauma-informed, developmentally appropriate practices embedded within early childhood education settings to promote both psychological recovery and educational continuity in post-disaster contexts.

Introduction

Disasters are complex events that disrupt ecological, social, and economic systems, generating not only physical destruction but also profound psychological consequences. While disaster impacts are often measured through infrastructure damage, displacement, and economic loss, they also reshape individuals' sense of safety, predictability, and control, thereby influencing developmental and mental health trajectories across the life course. Disasters may originate from natural hazards, human activities, or the interaction of both, resulting in widespread social disruption and human suffering (Lan et al., 2023; Sukumaran, 2022; Zhang et al., 2023). Within this context, early childhood education settings become critical arenas for recovery, as children aged 0–6 years are in a period of rapid, experience-dependent development that relies heavily on stable caregiving and predictable learning environments.

Early childhood is frequently described as a foundational developmental stage characterized by accelerated synaptogenesis, neural pruning, and the maturation of systems supporting emotion regulation, attention, executive functioning, language, and social learning. Disasters introduce acute threats such as frightening sensory exposure, injury, evacuation, and loss,

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alongside chronic stressors including displacement, disrupted schooling, economic insecurity, and caregiver strain. These conditions may overwhelm children's coping capacities and compromise the relational and environmental supports that sustain early learning. When protective caregiving and structured educational routines are disrupted, adversity may function as toxic stress, altering stress-response systems and potentially affecting children's capacity for emotional regulation and classroom engagement. Evidence indicates that stress processes may even begin prenatally; maternal stress during pregnancy, including stress related to severe environmental events, has been associated with later differences in offspring cognitive development and temperament (Sandman et al., 2011; Zhu et al., 2014). Such findings highlight the developmental sensitivity of early childhood and underscore the importance of stable postnatal environments, including early education settings, in buffering adversity.

Postnatal disaster exposure may influence development through multiple pathways, including caregiving disruption, reduced environmental stimulation, nutritional compromise, and increased exposure to environmental hazards. Biological mechanisms such as inflammation and cellular stress have been proposed as pathways linking early adversity to neurodevelopment. Chronic low-grade inflammation has been associated with differences in neural processing and later cognitive performance in infants and toddlers (Xie et al., 2019), while endoplasmic reticulum stress related to environmental toxicant exposure has been linked to neurodevelopmental risk (Park et al., 2020). Although these findings are not specific to a single disaster context, they collectively suggest that early adversity can become biologically embedded, with implications for emotional regulation, attention, and learning capacity. In educational contexts, such disruptions may manifest as difficulties in concentration, participation, and peer interaction.

Empirical studies consistently report that young children exposed to disasters experience fear, separation anxiety, sleep disturbances, irritability, behavioral regression, and trauma-related dysregulation (Cadamuro et al., 2021; Dönmez & Koc, 2025; Koçak, Kiliç, & Serin, 2024; Kurt, Topan, & Akkoç, 2024; Ozturk et al., 2023). Importantly, trauma in early childhood is often expressed non-verbally rather than through coherent verbal narratives due to limited cognitive and linguistic capacities. Distress may appear through somatic complaints, withdrawal, dysregulated affect, alterations in play, and clinging behaviors, requiring developmentally informed interpretation by caregivers and educators (Kerns et al., 2014; Strauven et al., 2024). While some symptoms may diminish over time, others may persist or re-emerge during later developmental transitions, including adolescence, when cognitive and social demands intensify (Campbell, Edwards, & Gray, 2025; Weems, McCurdy, & Scozzafava, 2023; Witt, Sachser, & Fegert, 2024). These manifestations have direct implications for classroom functioning, school readiness, and sustained participation in early learning activities.

Early childhood development is embedded within interconnected ecological systems, including families, educational institutions, and communities. Disasters disrupt routines and relational stability, often impairing caregiver emotional availability due to grief, economic strain, and psychological distress. Reviews of early health inequalities demonstrate that parental stress and household stability significantly influence children's socio-emotional outcomes (Hoffmann et al., 2021). Longitudinal perspectives further indicate that long-term mental health outcomes are shaped by exposure severity, caregiver distress, family functioning, and ongoing secondary stressors (Felix et al., 2012; Forresi et al., 2021; Rosen et al., 2021). For early childhood education, this ecological understanding implies that children's recovery and learning engagement are inseparable from caregiver well-being and the restoration of supportive microsystems.

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Within educational settings, psychosocial interventions are increasingly recognized as essential components of post-disaster recovery. Beyond addressing psychological safety and emotional stabilization, such interventions aim to restore children's capacity to participate in structured learning, interact socially, and re-engage in developmentally appropriate classroom routines. Approaches including child-friendly spaces, psychological first aid, play therapy, and strengthened family–school collaboration have been reported as beneficial for children's recovery and resilience (Gilbert et al., 2021; Maliadani & Asmawati, 2024; Nilsson, Hadiprodjo, & Parson, 2024; Wang et al., 2024). These strategies align with core principles of disaster mental health practice while simultaneously supporting educational continuity.

Play-based and expressive modalities hold particular relevance in early childhood education because play is both a primary communication medium and a central mechanism of learning. Symbolic play, storytelling, drawing, and art-based activities allow children to externalize fear and uncertainty while gradually rebuilding attention, social participation, and confidence within structured learning environments. Developmental science indicates that cognitive and socio-emotional trajectories are shaped by the interaction between biological vulnerability and environmental input, including stimulating learning environments and responsive caregiving (McCormick et al., 2020). Emerging neuroscience further suggests that early experiences influence normative developmental pathways, and disruptions caused by stress may shift functional trajectories (Yin et al., 2025). Accordingly, post-disaster educational responses should prioritize stable, nurturing, and developmentally enriching classroom contexts rather than focusing solely on symptom reduction.

Despite growing recognition of psychosocial needs in disaster contexts, significant gaps remain in early childhood education research. Many studies emphasize general disaster impacts or focus on older children, leaving limited developmentally specific guidance for children aged 0–6 years. Intervention designs frequently center on the child alone, even though caregiver–child relationships and family functioning are decisive determinants of recovery (Hoffmann et al., 2021; Felix et al., 2012; Rosen et al., 2021). Moreover, evidence isolating disaster-related toxic stress in infants and toddlers remains methodologically constrained (Sandman et al., 2011; Xie et al., 2019; Park et al., 2020). Ongoing methodological efforts to quantify early neurodevelopmental trajectories in high-risk settings indicate the need for context-sensitive and longitudinal educational research (Surani et al., 2023).

In response to these gaps, the present study examines psychosocial recovery within an early childhood education setting in a post-disaster context. The study conceptualizes trauma not only as a psychological condition but also as an educational challenge that affects classroom participation, emotional regulation, and learning engagement. Grounded in the premise that early childhood trauma is frequently non-verbal and relational, the study explores how developmentally informed, play-based psychosocial interventions implemented within educational environments can support both emotional stabilization and learning reintegration. By integrating behavioral observations with caregiver and practitioner perspectives, this research aims to contribute to the development of trauma-informed educational practices that are responsive to the developmental needs of young children in post-disaster contexts.

Methods

Research Design and Educational Orientation

This study employed a descriptive qualitative design to develop an in-depth, context-sensitive understanding of trauma manifestations and psychosocial recovery within an early childhood education setting in a post-disaster context. A descriptive qualitative approach is appropriate

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when the objective is to document and interpret social and psychological phenomena as they occur naturally, without experimental manipulation of variables (Bogdan et al., 2023; Dhungana & Curato, 2021; Van, 2023). In early childhood education contexts, such an approach enables close examination of how children's emotional regulation, participation, and learning engagement are expressed in everyday classroom interactions.

In disaster-affected settings, particularly with children aged 0–6 years, qualitative inquiry offers methodological advantages because young children frequently communicate distress through behavior, affect, play, and relational patterns rather than through structured verbal narratives. Accordingly, the study design was oriented toward capturing multi-modal indicators of both distress and educational reintegration, including classroom participation, peer interaction, play engagement, and caregiver–teacher narratives. The methodological orientation prioritized developmental appropriateness, contextual sensitivity, and ecological understanding of the classroom as a recovery environment.

Research Site

The research was conducted at TK Mutiara Hati, a kindergarten that functioned simultaneously as an early childhood education institution and a psychosocial support setting in a post-disaster context. The site was selected purposively because it actively implemented child-friendly spaces and recovery-oriented educational activities. As an educational environment, TK Mutiara Hati provided structured daily routines, group learning sessions, and play-based classroom activities, allowing systematic observation of how psychosocial interventions were integrated into early learning processes and how children re-engaged with classroom routines.

Research Participants

Participants were selected through purposive sampling to ensure relevance to the study's educational objectives and to capture multiple perspectives within the recovery ecosystem. Three participant categories were included: 1) Early childhood learners (3–6 years), who were the primary focus of non-intrusive behavioral and interactional observation during classroom and psychosocial activities; 2)Parents or caregivers, who provided longitudinal information regarding changes in children's daily functioning, emotional regulation, sleep patterns, dependency behaviors, and responses to disaster-related reminders; 3) Psychosocial volunteers and early childhood educators (PAUD teachers), who served as practitioner informants and provided insights into classroom adaptation, instructional adjustments, intervention sequencing, and observed changes in children's participation and learning engagement.

The inclusion of these groups supported an ecological and education-centered understanding of recovery by linking observable classroom behavior with caregiver context and instructional practice.

Data Collection Procedures

Data collection followed child-centered and trauma-sensitive procedures designed to minimize distress and avoid re-traumatization. Data were gathered through participatory observation, semi-structured interviews, and projective or expressive techniques. This combination strengthened credibility through methodological triangulation.

Participatory Observation

Participatory observation was conducted in child-friendly classroom and activity settings (Ruang Ramah Anak). The researcher engaged in or closely accompanied daily routines and structured activities while documenting children's emotional expressions, peer interactions, responses to instructional transitions, and engagement in group learning tasks.

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Observation focused not only on trauma-related indicators such as withdrawal, clinginess, irritability, hyperarousal, and reduced play engagement, but also on educational indicators including sustained attention, participation in circle time, cooperation during group tasks, and gradual reintegration into classroom routines. This approach enabled analysis of how emotional stabilization intersected with learning participation.

This method was particularly appropriate because preschool-aged children may not be able to articulate internal states verbally. Systematic attention to non-verbal cues and relational dynamics allowed for developmentally informed interpretation within authentic classroom contexts.

In-Depth Semi-Structured Interviews

Semi-structured interviews were conducted with caregivers, educators, and psychosocial volunteers to obtain a comprehensive understanding of children's post-disaster conditions and the support provided within educational and household settings. The interviews explored observed trauma-related symptoms and functional changes following the disaster, changes in classroom engagement and learning participation, caregiver stress and coping strategies, and the stability of routines at home. Participants were also asked about the intervention components implemented in educational settings, their perceived effectiveness, and the contextual barriers affecting school attendance, continuity of learning, and the reinforcement of routines at home. Caregiver narratives were interpreted not only as descriptions of children's behavioral and emotional conditions but also as contextual indicators of household stability and caregivers' emotional availability. Meanwhile, interviews with educators focused on instructional adaptations, classroom management strategies, coordination with families, and the sequencing of psychosocial activities within regular educational routines.

Projective and Expressive Techniques

Given the limited verbal capacity of many children, data were also collected through drawings, storytelling, and symbolic play, including puppet-based activities. These expressive techniques provided indirect yet meaningful access to children's affective states and perceptions of safety within the classroom.

Expressive products were not treated as stand-alone diagnostic tools. Instead, they were interpreted alongside observational notes, classroom context, and caregiver or teacher accounts. This approach reduced interpretive bias and ensured that children's expressive outputs were understood within the broader educational and relational environment.

Research Instruments

Consistent with qualitative research principles, the researcher served as the primary instrument responsible for collecting, interpreting, and documenting the data. Several supporting tools were used to strengthen the consistency and accuracy of the data collection process, including observation guidelines and behavioral checklists to standardize attention to trauma-related and learning-related indicators, as well as semi-structured interview guides for caregivers and educators. Audio recording devices were employed to ensure the accurate capture of interview data, while photographic documentation was used to record classroom activities and, where ethically appropriate and supported by informed consent, children's expressive products. In addition, field notes were systematically maintained to document classroom structure, the sequencing of activities, children's levels of engagement, and notable interactions relevant to psychosocial stabilization and educational reintegration.

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Psychosocial Intervention Stages within the Educational Setting

The study documented psychosocial intervention delivery across three sequential stages implemented within the kindergarten context: 1) Stabilization Stage: Classroom arrangements and activities prioritized physical and psychological safety, predictability, and emotional calming to reduce acute fear and re-establish routine; 2) Education and Play Stage: Recovery-oriented learning and play activities were integrated into daily instructional routines to facilitate emotional expression, rebuild peer interaction, and support developmental stimulation; 3) Termination Stage: Educators and volunteers evaluated children's readiness to sustain regular classroom routines, monitored residual distress, and coordinated continued family-based and community-based support.

These stages provided an analytic framework for examining how emotional recovery processes intersected with classroom participation and structured learning.

Data Analysis

Data were analyzed using thematic analysis. The analytic process involved systematic data reduction, organization, and interpretation of observational records, interview transcripts, and expressive materials. Coding focused on five interrelated domains: 1) Trauma manifestations; 2) Indicators of emotional stabilization; 3) Changes in classroom participation and learning engagement; 4) Perceived mechanisms of intervention effectiveness; 5) The role of family and social support in sustaining educational reintegration.

Coding proceeded iteratively. Initial codes were generated through repeated reading of transcripts and field notes, followed by clustering into higher-order themes. Themes were refined through comparison across participant groups and data types to identify convergence and divergence. Particular attention was given to how emotional regulation influenced attention, peer interaction, and participation in structured classroom activities.

Trustworthiness

To enhance credibility and trustworthiness, several strategies were employed. First, data source triangulation integrated children's observed classroom behaviors with caregiver narratives and educator perspectives. Second, methodological triangulation combined observation, interviews, and expressive techniques. Third, member checking was conducted with key informants to verify interpretations.

Analytic transparency was maintained through systematic documentation of coding decisions and theme development, supporting dependability and confirmability. Interpretations of children's expressive products were grounded in observational context and corroborated with additional evidence rather than treated as definitive indicators.

Ethical Considerations

Ethical principles were strictly observed throughout the research process. Informed consent was obtained from parents or legal guardians prior to data collection. The anonymity and confidentiality of participants were maintained, and all research procedures were designed to prioritize the psychological safety and well-being of the children involved.

Results and Discussion

Trauma Manifestations and Their Implications for Classroom Participation

Findings indicate that trauma among children aged 3–6 years following disaster exposure was predominantly expressed through non-verbal, somatic, and relational behaviors rather than

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explicit verbal narratives. Behavioral regression emerged as a central pattern, with approximately 60–70% of observed children exhibiting bedwetting, thumb-sucking, increased dependency, refusal to eat independently, and reduced participation in previously mastered self-care tasks. These patterns are consistent with descriptions of post-disaster regression in preschool populations (Kerns et al., 2014; Strauven et al., 2024; Natalia et al., 2019).

Within the classroom context, regression was closely associated with decreased autonomy during learning routines. Children who previously managed transitions independently required repeated reassurance, displayed reluctance to join group activities, and demonstrated shortened attention spans during structured sessions. Sleep disturbances reported by caregivers, including nightmares and night awakenings, were reflected in daytime irritability, reduced concentration, and difficulty sustaining engagement in circle time and collaborative tasks.

Somatic complaints such as stomachaches and headaches without identifiable medical causes were also observed. These embodied expressions of distress were frequently accompanied by withdrawal from peer interaction and avoidance of structured classroom tasks. Separation anxiety was particularly prominent; children showed intense distress during caregiver separation and were hesitant to engage in group activities without visible parental proximity. In educational terms, these behaviors disrupted routine participation and required additional emotional scaffolding from teachers to maintain classroom stability.

From a developmental neurobiological perspective, these manifestations align with toxic stress frameworks and stress-related alterations in regulatory systems described in early childhood trauma research (Liberzon et al., 2015; Arnsten et al., 2021; Munisamy & Elze, 2019; Williams et al., 2023). Although biological markers were not measured, behavioral indicators such as hyperarousal, impulsivity, and reduced concentration suggest disruption in emerging self-regulatory capacities. In classroom settings, such dysregulation translated into difficulty following instructions, limited persistence in tasks, and fluctuating engagement in play-based learning.

Hyperarousal and Disruption of Learning Engagement

Hyperarousal was expressed primarily through physiological and behavioral channels, including exaggerated startle responses, muscle tension, irritability, impulsive reactions, and difficulty calming after emotional activation. Unlike older children who may verbalize intrusive memories, preschool-aged children externalized distress through tantrums, clinginess, and somatic signals (Kerns et al., 2014; Strauven et al., 2024).

In the educational environment, hyperarousal directly interfered with learning engagement. Children displayed difficulty remaining seated during structured activities, reduced tolerance for peer conflict, and increased need for teacher proximity. Episodes of emotional escalation interrupted group instruction and required teachers to shift from instructional roles to co-regulatory support. These findings highlight the interdependence between emotional stabilization and instructional continuity in early childhood classrooms.

Barriers to Educationally Embedded Psychosocial Interventions

Several contextual barriers influenced recovery trajectories and classroom reintegration. The most significant barrier was unresolved parental trauma. Caregivers experiencing anxiety, grief, or post-traumatic stress symptoms reported difficulty maintaining emotional availability and consistent routines.

> "*It is difficult to help children recover when their mothers are still experiencing severe trauma. Interventions must target both the child and the caregiver.*"

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Children whose caregivers demonstrated emotional dysregulation showed slower stabilization and more persistent separation anxiety. These findings align with disaster and family stress research emphasizing relational spillover processes (Felix et al., 2012; Merdjanoff et al., 2021; Fyfe-Johnson et al., 2025; Kao et al., 2019; Greenberg et al., 2021). In educational settings, inconsistent home routines were reflected in irregular attendance, fluctuating engagement, and difficulty maintaining newly established classroom coping strategies.

Environmental instability further constrained learning continuity. Overcrowded evacuation shelters exposed children to adult discussions of loss and insecurity.

> "*In the shelters, children constantly hear adults talking about losses and financial problems. This makes them more anxious and harder to calm.*"

Socio-economic stressors, disrupted schooling, and unstable housing limited attendance consistency and reduced caregivers' capacity to reinforce coping routines at home. These findings support ecological models emphasizing the interaction of microsystem and exosystem stressors in shaping child outcomes (Hoffmann et al., 2021; Cohen & Yaeger, 2021).

Effective Classroom-Based Psychosocial Strategies

Play-based and expressive modalities emerged as the most effective strategies for supporting both emotional recovery and learning reintegration. Storytelling with puppets, drawing, structured games, and cooperative group play facilitated emotional expression while simultaneously rebuilding peer interaction and classroom participation. Over time, children's expressive products shifted from repetitive, fear-laden imagery toward brighter and socially oriented themes, suggesting gradual emotional integration.

Interventions were most effective when structured routines were combined with flexibility to accommodate children's emotional states. Sessions typically began with calming rituals, songs, or grounding exercises before transitioning into expressive or collaborative learning activities. This phased structure reflects trauma-informed principles emphasizing safety and attunement (Forkey et al., 2021; Rovnaghi et al., 2025).

Play functioned not only as a therapeutic medium but also as a pedagogical bridge, enabling children to regain attention, agency, and cooperative skills within structured classroom contexts. These findings are consistent with empirical support for play-based and relational trauma interventions in early childhood (Love & Fox, 2017; Lee et al., 2016; Karcı & Özel, 2024; Maddox et al., 2024; Gerge et al., 2019). Art-based activities supported multisensory regulation and gradual re-engagement in instructional routines.

The Role of Family–School Co-Regulation

Sustained recovery and improved classroom engagement were most evident among children whose caregivers demonstrated emotional stabilization and consistent involvement. Active caregiver participation in sessions and reinforcement of calming routines at home were associated with faster reductions in regression and separation anxiety.

> "*When parents continue the calming routines at home, children become more confident and less clingy*"

These findings reinforce attachment-informed and multisystem resilience frameworks highlighting caregiver co-regulation as a protective factor (Masten et al., 2015; Ungar, 2021; Kerns et al., 2014; Rosen et al., 2021). In educational practice, collaboration between families and teachers enhanced consistency of emotional support across home and school contexts, strengthening children's capacity to sustain participation in learning activities.

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Embedding psychosocial programming within educational settings and coordinating support across community structures further enhanced continuity. Classroom-based interventions served as stabilizing anchors within broader instability, demonstrating that early childhood education environments can function as protective microsystems during disaster recovery.

Synthesis and Educational Implications

Overall, the findings demonstrate that post-disaster trauma in early childhood is relationally mediated and directly affects classroom functioning. Regression, hyperarousal, and separation anxiety were not only psychological responses but also educational challenges that influenced attention, participation, peer interaction, and instructional continuity.

Recovery was shaped by the interaction of caregiver regulation, family stability, socio-economic conditions, and the availability of structured and emotionally safe classroom environments. Play- and art-based psychosocial strategies, when embedded within routine instructional structures and supported by family engagement, facilitated both emotional stabilization and learning reintegration.

These results support the integration of trauma-informed practices within early childhood education settings, aligning with multisystem resilience perspectives (Garfin et al., 2014; Lee et al., 2016; Lestari et al., 2024; Cohen & Yaeger, 2021). Institutionalizing psychosocial support within early childhood education systems may enhance both emotional recovery and educational continuity in post-disaster contexts.

Limitations and Future Directions

This study relied on qualitative and observational data without standardized scales or biological markers, limiting causal inference regarding neurobiological mechanisms. Longitudinal follow-up was not conducted, restricting conclusions regarding the durability of educational reintegration over time. Future research should integrate multi-informant assessments and longitudinal designs to examine sustained learning outcomes and developmental trajectories.

Conclusion

This study demonstrates that post-disaster trauma in early childhood is not only a psychological condition but also a pedagogical challenge that directly affects classroom participation, learning engagement, and instructional continuity. Trauma among children aged 3–6 years was predominantly expressed through non-verbal behaviors, including developmental regression, separation anxiety, hyperarousal, sleep disturbances, and reduced attention span. Given young children's limited verbal capacities, behavioral changes within classroom routines became the primary indicators of distress. Trauma-related dysregulation interfered with concentration, peer interaction, and sustained participation in structured learning activities. These manifestations reflect exposure to toxic stress and highlight the vulnerability of emerging self-regulatory systems that underpin early learning processes. Without developmentally responsive support, such disruptions may compromise both emotional well-being and educational trajectories.

Play-based and expressive interventions embedded within daily classroom routines facilitated emotional stabilization and gradual reintegration into learning activities. Storytelling, symbolic play, drawing, and structured cooperative games functioned not only as therapeutic tools but also as pedagogical bridges that restored attention, social engagement, and classroom confidence. Flexible and context-responsive approaches proved more effective than rigid procedural models. Sustainable educational recovery was strongly associated with family–school collaboration; children whose caregivers demonstrated emotional stabilization and

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consistent involvement showed faster improvements in classroom participation. These findings underscore the need to integrate trauma-informed practices within early childhood education systems rather than treating psychosocial recovery as a separate clinical domain.

From a policy perspective, early childhood education institutions should be formally incorporated into disaster management frameworks as protective educational microsystems. The provision of child-friendly spaces in evacuation contexts should be aligned with structured early learning routines to ensure both emotional safety and educational continuity. For educators, trauma-informed classroom practices require institutional support through professional development in Psychological First Aid, emotional co-regulation strategies, and play-based recovery approaches. Teacher education programs should incorporate disaster-responsive pedagogy as a core competency in early childhood training. For families, strengthening parental emotional regulation and maintaining stable home routines are essential for sustaining classroom reintegration; school-based recovery programs should therefore include family-focused psychosocial education to ensure consistency across home and school environments. Future research should employ longitudinal and mixed-method designs to examine sustained learning outcomes and developmental trajectories following disaster exposure, and to further clarify how trauma-informed educational practices influence long-term academic readiness, socio-emotional development, and resilience in early childhood populations.

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