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Child-Led Risk Assessments for Disaster Resilience and Protection in Epworth, Harare's Informal Settlements

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Abstract

This study explores child-led participatory risk assessment to generate evidence-based recommendations for local disaster risk reduction planning and policy in Zimbabwe's informal settlements. The research employs a qualitative research approach targeting children aged between 10 and 17 years, community leaders, civil society organisations and others. Findings reveal that assessments identify localized risks that are often sidelined or overlooked by an adult-focused approach, leading to context-specific mitigation measures that enhance protective environments in informal settlements. The involvement of children improves community awareness, fosters collective responsibility and strengthens overall resilience. The study concludes by highlighting that child-led participatory risk assessment is an effective tool for fostering resilient and protective communities in urban informal settings. The research demonstrates that child-focused methods contribute both theoretical insights and practical guidelines for disaster risk reduction policy, ultimately shaping safer environments and empowering children as active and key stakeholders.

Keywords: Child-led participatory risk assessment; Community resilience; Disaster risk reduction; Child protection; Informal settlements; Urban vulnerability.

INTRODUCTION

Disaster risk reduction (DRR) has evolved into a central concern for global development agendas due to the intensifying impacts of natural and human-induced hazards on vulnerable populations (UNDRR, 2015). Informal settlements, characterised by high population density, inadequate infrastructure, insecure tenure, and limited access to essential services, are disproportionately exposed to disaster risks (Akola and Charlotte, 2025). Within these contexts, children constitute one of the most vulnerable cohorts, suffering disproportionately from disaster impacts, including loss of shelter, disruption of education, physical injury, psychological trauma, and increased risk of exploitation (Muzenda-Mudavanhu, 2016). Despite their vulnerability, children are frequently perceived in disaster studies as passive victims rather than active participants capable of contributing to community resilience. However, emerging scholarship on participatory approaches emphasises the value of engaging children as agents in DRR, recognising their unique perceptions of risk, social networks,

and capacities to influence preparedness and response (CRRC, 2015; UNCRRC, 1989).

Globally, contemporary disaster risk discourse underlines the imperative of inclusive participation, moving beyond traditional adult-centric frameworks to incorporate the voices of diverse stakeholders, including children. Participation has been articulated not merely as a rights-based commitment under instruments such as Article 12 of the UNCRRC (UNCRRC, 1989), but also as a mechanism that yields practical benefits for community resilience. Research indicates that when children are engaged in DRR activities, they demonstrate improved self-efficacy, interpersonal skills, and disaster preparedness knowledge, which in turn can strengthen community capacities for collective risk management (Peek, 2008). For example, participatory interventions with children in hazard education enhance social connections and preparedness within communities, fostering shared awareness and early warning dissemination (Peek, 2008). Scholars argue that children's participation reconfigures risk governance by integrating local knowledge and broadening the base of social actors involved in planning

and implementing resilience initiatives (CRRC, 2015). Nevertheless, systematic evidence on how child-led participatory methodologies, such as child-led participatory risk assessments — function in diverse contexts remains limited. The conceptual literature points to a persistent gap between acknowledging children’s potential and implementing structured mechanisms that enable meaningful participation in risk assessment and decision making (Peek, 2008; CRRC, 2015).

In Africa, the narrative on children and disaster risk similarly recognises children’s vulnerability but observes a gap in their meaningful integration into DRR systems. Research suggests that children in many African countries are disproportionately affected by disasters due to structural poverty, limited social protection systems, and frequent hazard exposure, yet their involvement in risk governance processes is negligible (Muzenda-Mudavanhu, 2016). Muzenda-Mudavanhu (2016) highlights that children are often excluded from DRR activities not because they lack capacity, but because policy frameworks and socio-cultural norms limit their participation, viewing children primarily as passive recipients of adult protections rather than as contributors to risk identification and mitigation. This exclusion persists despite evidence that children possess valuable localized knowledge about hazards and community vulnerabilities that could enhance DRR planning (Muzenda-Mudavanhu, 2016). Studies in Sub-Saharan African contexts also underscore the need for more empirical research on mechanisms that can effectively integrate child perspectives into DRR policy and practice. For example, while international frameworks like the Sendai Framework for Disaster Risk Reduction advocate inclusive approaches, the translation of these principles to African DRR strategies remains uneven and under-researched, particularly concerning child participation (UNDRR, 2015).

In Southern Africa, participatory approaches to disaster risk communication and governance have gained scholarly attention, underscoring community engagement as central to resilience building. In South Africa, as an example, studies highlight the importance of community participation in early warning dissemination and DRR planning, noting that informal settlements often suffer from inadequate access to risk information and limited engagement in preparedness exercises (Muhame *et al.*, 2024). Research from these settings points to the role of local communication networks, including community volunteers and ward committees, in initiating DRR dialogues, demonstrating the applicability of participatory principles to enhance resilience at the grassroots level (Muhame *et al.*, 2024). However, such studies seldom foreground children explicitly, indicating a gap in understanding how child actors fit within broader participatory frameworks. Similarly, disaster risk research in Southern African informal settlements suggests that community-driven initiatives — including hazard mapping and local risk assessments — can improve awareness and preparedness, but the inclusion of children in these processes remains underexplored (Akola and Charlotte, 2025). These insights reinforce the need to investigate how participatory risk methodologies can meaningfully include children as

co-producers of risk knowledge and resilience strategies rather than mere recipients of adult-led interventions.

In Zimbabwe, the need for inclusive, participatory approaches to disaster risk governance is particularly pronounced given the country’s frequent exposure to hazards such as floods, droughts, and cyclones, exacerbated by socio-economic fragility and limited disaster management capacities. For instance, the 2016–2017 Zimbabwe floods caused significant displacement, infrastructure damage, and community disruption, highlighting the vulnerability of informal settlement dwellers to climatic extremes. Although Zimbabwe’s national disaster risk management frameworks emphasize community participation, practical mechanisms for engaging children in DRR are sparse. Studies have documented that disaster governance structures in Zimbabwe often overlook children’s voices, restricting their participation to symbolic roles such as child parliaments or councils that lack influence on substantive decision-making. Cultural norms that prioritise adult authority further constrain children’s ability to engage freely in public forums, limiting their contribution to community resilience planning (Musarandenga and Masocha, 2108). Moreover, research suggests that children’s disaster experiences in Zimbabwe, including disrupted education, health risks, and loss of homes, remain underrepresented in formal risk assessments, resulting in DRR strategies that insufficiently account for the specific needs and capacities of young residents (Muzenda-Mudavanhu, 2016).

While these studies highlight children’s vulnerability, they also underscore children’s untapped potential as social actors within disaster risk governance. Participatory approaches, particularly child-led participatory risk assessments, offer a promising pathway to bridge the gap between children’s lived experiences and community risk management strategies. Such methodologies involve children directly in identifying hazards, mapping vulnerabilities, and articulating local coping mechanisms, thus aligning with participatory development principles that recognise marginalised groups as co-producers of knowledge rather than passive subjects (Muzenda-Mudavanhu, 2016). This approach is supported by international directives advocating inclusive participation in DRR, including the Sendai Framework, which emphasises leveraging local knowledge and promoting inclusive risk governance (UNDRR, 2015). By involving children as active participants, child-led participatory risk assessments have the potential to enhance community readiness, strengthen social networks, and improve child protection outcomes.

Despite this potential, empirical evidence on the implementation and outcomes of child-led participatory risk assessments remains limited, particularly in African contexts. Most existing research on children and DRR focuses on conceptual reviews or single case examples, leaving a gap in rigorous empirical evaluation of participatory methods as instruments of resilience building. Moreover, the intersection of child protection and DRR recognises that safeguarding children from harm is inseparable from reducing disaster risks, which is underdeveloped in academic and policy discourses, especially in Zimbabwe. This gap underscores the need for research that examines not only the theoretical

relevance of child participation but also the practical mechanisms through which children can contribute to risk assessment and decision-making processes in informal settlement contexts.

Accordingly, this study seeks to evaluate child-led participatory risk assessments as a community-based approach to enhancing DRR and child protection in informal settlements. By focusing on how children perceive and analyse risk, engage with community stakeholders, and propose locally relevant resilience strategies, the research aims to illuminate the contributions and challenges of child-led participation within DRR frameworks. This inquiry is timely given global commitments to inclusive risk governance and national imperatives to protect vulnerable populations amidst escalating hazards. Findings from this study are expected to inform both theoretical debates on participation and resilience and practical efforts to design child-responsive DRR interventions that recognise children as agency holders capable of shaping their communities' resilience pathways

PREVALENT DISASTERS AND CHILD PROTECTION CONCERNS IN EPWORTH

Epworth, an informal settlement on the outskirts of Harare, Zimbabwe, is emblematic of the intersecting socio-environmental vulnerabilities that characterize many peri-urban communities in the Global South. Its high population density, limited infrastructure, and location on low-lying land make it especially prone to environmental hazards such as flooding, water insecurity, and poor sanitation, all of which have direct and profound implications for child protection.

Flooding has emerged as one of the most visible and disruptive hazards affecting children and families in Epworth. The settlement's rapid, unregulated expansion onto marginal land with poor drainage increases residents' exposure to heavy rains and surface runoff. Media reports document the collapse of hundreds of homes during recent rainy seasons, which resulted in displacement for many families and heightened risks for children, including loss of shelter, interruption of schooling, and increased susceptibility to injury (NewsDay, 2024). This phenomenon is not unique to Epworth; literature on flooding in informal settlements globally indicates a pattern in which marginalized communities forced into hazard-prone areas suffer the most severe consequences of extreme weather events (Anwana and Owojori, 2023).

The environmental vulnerabilities associated with flooding are compounded by health risks stemming from poor water and sanitation infrastructure. A descriptive health study conducted in Epworth found that children under the age of five face elevated rates of diarrhoeal disease, which is a key indicator of unsafe water and inadequate sanitation, as factors common in informal settlement environments with limited services (Chari *et al.*, 2023). These findings align with broader research showing that informal settlements, particularly those located near wetlands and floodplains, amplify hazards such as waterborne diseases, disproportionately affecting children due to their

physiological susceptibility and dependence on adult care (TARSC *et al.*, 2019).

In addition to environmental hazards, poverty and economic insecurity deeply influence child well-being in Epworth. According to UNICEF's latest situation analysis for Zimbabwe, nearly half of the nation's children live in poverty, and urban areas such as Epworth are experiencing deepening socio-economic strain due to climate impacts and food insecurity (UNICEF Zimbabwe, 2025). The Food and Agriculture Organization of the United Nations (FAO, 2024) report highlights how the El Niño-induced drought and related crises have exacerbated food insecurity, increased child wasting, and weakened access to essential services such as health, nutrition, water, and sanitation conditions that further endanger children's safety and development. These intersecting risks demonstrate that disasters in Epworth are not isolated events but are linked to broader structural vulnerabilities that undermine child protection.

The combined effects of disaster exposure and poverty also increase the likelihood of negative coping strategies among vulnerable families, often heightening exploitation and abuse risks for children. National reports on child protection in Zimbabwe reveal concerning trends, including high rates of child labour, violent discipline, low birth registration, and persistent gender inequalities such as high adolescent marriage rates (NewsDay, 2025). These social protection issues intensify in settings like Epworth, where economic deprivation intersects with inadequate social services, pushing children into dangerous informal work and increasing their exposure to exploitation and abuse.

Another form of vulnerability identified in both scholarly and emerging research is the prevalence of child-headed households within informal settlements. A qualitative case study focusing on the Jacha area of Epworth documented that social cash transfer programs can reduce risks faced by children in these households, including abuse, violence, and exploitation. Nevertheless, the existence of child-headed households itself reflects significant protection concerns, as these children often assume adult responsibilities in contexts with limited supervision and social support. Such roles increase their exposure to physical dangers during disasters, reduce their access to education and essential services, and heighten psychosocial stress and trauma.

Child protection concerns in Epworth are further intensified by the lack of formal social and recreational services that provide safe environments for children's development. Without access to structured youth programs, psychosocial support, or safe public spaces, children are more prone to delinquency, substance abuse, and gender-based risks such as early pregnancy or exploitation patterns that have been reported in commentary on the social risks facing youth in peri-urban areas (EC, 2022). These social determinants of risk reflect the complex ways in which environmental, economic, and social factors converge to undermine child safety in informal settlements.

Historical policy actions also shape the context of vulnerability in settlements like Epworth. For example, Zimbabwe's Operation Murambatsvina, which is a

large-scale forced slum clearance campaign in 2005 by the government of Zimbabwe, displaced hundreds of thousands of urban poor, deepening housing insecurity and contributing to long-term vulnerabilities that still affect children today. Although not recent, the legacy of such interventions has informed urban planning practices and entrenched marginalization, making it more difficult for informal settlement residents to secure safe, resilient housing.

The broader national context of disaster risk in Zimbabwe also bears directly on Epworth's child protection concerns. Reports on climate impacts show that floods, cyclones, and droughts continue to affect children's education, health, and well-being across the country, with climate change increasingly recognized as a child rights crisis that undermines multiple facets of development (UNICEF Zimbabwe, 2024). Studies from other parts of Zimbabwe reinforce similar patterns; for example, research in Muzarabani documented that flood disasters disrupt children's access to education, increase food insecurity, and expose children to a broad range of psychosocial and physical risks (Mudavanhu, 2012).

Importantly, child protection risks in Epworth are not limited to environmental exposure. Urban informality itself creates pervasive insecurity. Like other informal settlements in Harare and beyond, Epworth's expansion without proper planning has placed communities in areas prone to multiple hazards, exacerbating social vulnerabilities and limiting access to safe water, sanitation, and health services (HO, 2025). Informal settlement residents often lack formal social protection mechanisms, leaving children exposed to systemic neglect in both disaster management and broader social policies.

Scholars advocating for improved frameworks highlight the need to integrate child protection into national disaster management. Sillah (2015) argued that Zimbabwe's disaster management systems have historically neglected child-specific vulnerabilities and recommended the establishment of child centred disaster management frameworks to better protect children from environmental hazards and associated harms (Sillah, 2015). Such frameworks would recognize that children are uniquely vulnerable yet capable actors whose participation in risk assessment can improve protective outcomes.

In sum, the prevalent disasters and child protection concerns in Epworth are intertwined, reflecting a socio-ecological nexus of risk that includes flooding, water insecurity, disease exposure, poverty, inadequate sanitation, and social vulnerabilities such as child labour and exploitation. Flooding disrupts shelter and schooling, water scarcity heightens disease risk, and economic deprivation increases exploitation and neglect, all of which undermine children's rights and well-being. These multifaceted risks underscore the need for integrated approaches that marry disaster risk reduction with child protection programming and structural interventions targeting poverty and informal settlement deficits, as highlighted by international organisations and academic scholars alike.

THEORETICAL FRAMEWORK

This study is guided by three interrelated theoretical perspectives: Participatory Development Theory, Social-Ecological Resilience Theory, and Child Rights Theory. Together, these frameworks provide a robust conceptual lens for understanding how child-led participatory risk assessments (PRAs) — as a community-based approach — can contribute to disaster risk reduction (DRR), enhance community resilience, and support child protection in informal settlements such as Epworth, Zimbabwe.

Participatory Development Theory

Participatory Development Theory emerged in development studies as a critique of traditional top-down models of planning and intervention that marginalised local voices and knowledge. Scholars such as Chambers (1994) argue that participation — particularly meaningful engagement of local community members — is essential for sustainable and contextually grounded development outcomes. Chambers asserted that development interventions should privilege the perspectives and lived experiences of those most affected, rather than relying solely on external experts (Chambers, 1994). This bottom-up orientation is central to participatory paradigms, which emphasise local agency, empowerment, and collaborative knowledge generation.

Participatory development has been further elaborated by scholars like Cornwall and Jewkes (1995), who define participatory research as a democratic, inclusive process that situates local knowledge and priorities at the core of inquiry and action. According to Cornwall and Jewkes (1995), participatory approaches challenge conventional power hierarchies in research and development by enabling communities to co-construct solutions and influence outcomes directly. In the context of DRR, participatory development principles support practices that involve community members, including children, as active contributors to risk identification, planning, and resilience building, rather than as passive recipients of external aid or directives.

Applied to child-led participatory risk assessments, participatory development theory emphasises that children's lived experiences and local knowledge are valuable for identifying hazards and adaptive strategies. By centering participation as a process rather than a tokenistic activity, this theoretical perspective legitimises children's role as co-producers of risk information and resilience strategies, aligning with broader shifts in disaster governance towards inclusive, community-driven approaches.

Social-Ecological Resilience Theory

Resilience theory originates from ecology and has been adapted to understand social and community responses to disturbance, change, and risk. Classic ecological resilience was articulated by Holling (1973), who defined resilience as “*the amount of disturbance that a system can absorb without shifting to an alternative state*” (Walker *et al.*, 2004). This ecological perspective highlights that systems, ecological or social, are dynamic and capable of adapting to stressors. The concept was later extended to social-ecological systems, emphasising the interactions between human and

environmental systems and the adaptive capacities that enable a community to withstand shocks and stresses.

Resilience scholars such as Walker *et al.* (2004) argue that resilience is not merely the capacity to return to a pre-disturbance state, but also involves learning, innovation, and transformation in the face of change. This evolutionary understanding of resilience underpins contemporary interpretations that view resilience as a process rather than a static attribute. Integrating social and ecological dynamics, resilience theory suggests that communities capable of learning from past disturbances, adapting structures and behaviours, and mobilising social networks exhibit stronger adaptive capacities, enhancing their overall resilience (Walker *et al.*, 2004). The social-ecological resilience perspective recognises that individuals, households, and community institutions are interconnected and that resilience emerges from multi-level interactions and feedback loops within a system.

In the context of DRR in informal settlements, social-ecological resilience theory emphasises both the material and social dimensions of risk. Informal settlements like Epworth experience recurrent hazards — such as floods and fires — that disrupt social and physical infrastructure. A resilience lens helps explain how community members, including children, can engage in adaptive practices, share information about risks, and mobilise collective action to enhance preparedness and recovery. Adger (2000) further highlights the importance of social dimensions, such as networks, trust, and collective action, in conferring resilience to communities facing environmental hazards. Thus, resilience theory supports the idea that children's participation in risk assessments — by identifying hazards, unfolding coping mechanisms, and contributing to community dialogues — can strengthen the adaptive capacities of vulnerable communities exposed to repeated disruptions.

Child Rights Theory

Child Rights Theory is rooted in international human rights law, particularly the United Nations Convention on the Rights of the Child (UNCRC, 1989). This convention frames children as rights-holders with entitlements to protection, provision, and participation. Article 12 of the UNCRC articulates that children who are capable of forming views have the right to express those views freely in all matters affecting them, with those views given due weight according to age and maturity. This normative principle establishes a legal and ethical foundation for involving children in decisions that affect their lives and communities.

Scholars such as Lundy (2007) have elaborated on the practical meaning of Article 12, proposing the “Voice” model, which highlights four elements necessary for meaningful participation: space (opportunity to express views), voice (facilitation to express views), audience (being listened to), and influence (views given due weight). Lundy's model emphasises that genuine participation requires not just opportunities for expression, but dispositions and mechanisms that ensure children's perspectives are heard and acted upon.

Child rights theory also intersects with research on evolving capacities, which asserts that children's competencies develop over time and that age-appropriate opportunities for participation should be supported rather than restricted. This principle underscores that participation should be tailored to children's abilities and not dismissed on the basis of age alone. Applying child rights theory to DRR research affirms that children's involvement in risk assessments is not only beneficial for community resilience but is also a normative obligation for states and communities committed to upholding children's rights.

Integrating the Theoretical Perspectives

These three theoretical frameworks — participatory development, social-ecological resilience, and child rights — converge to support the conceptualisation of child-led participatory risk assessments as both a methodological and ethical approach to DRR. Participatory development theory emphasises the value of local knowledge and co-construction of solutions, challenging hierarchies in knowledge production. Resilience theory highlights the adaptive capacities within social-ecological systems and explains how participatory practices contribute to the system's ability to anticipate, respond, and transform in the face of hazard exposure. Child rights theory provides the normative foundation for children's involvement, asserting that participation is a legitimate and protected right that enhances both individual and collective outcomes.

By integrating these perspectives, this study positions child-led PRAs as a mechanism that can simultaneously empower children, strengthen community adaptive capacities, and align with global commitments for inclusive and rights-based DRR. Specifically, this theoretical framework anticipates that child-led participation will enhance community resilience by deepening local understanding of hazards and vulnerabilities, fostering social networks, and strengthening preparedness strategies. Moreover, anchoring the study in child rights theory ensures that the research upholds ethical imperatives to respect children's agency and protect their well-being throughout the participatory process.

In summary, participatory development, social-ecological resilience, and child rights theories provide the conceptual scaffolding for this research, guiding the formulation of research.

METHODOLOGY

The methodology of this study is designed to explore the role of children as active participants in community disaster risk reduction through child-led participatory risk assessments (PRAs) in the informal settlement of Epworth, Harare, Zimbabwe. Given the complex social and environmental dynamics of informal settlements, the study adopts a qualitative, participatory research design, which is appropriate for understanding lived experiences, perceptions, and social processes that cannot easily be quantified. Qualitative approaches have been widely recognised as suitable for studying human behaviour and social phenomena in their natural context, allowing researchers to capture depth,

meaning, and nuance (Creswell and Poth, 2018). In particular, this study employs a participatory case study design, integrating both children's and adult stakeholders' perspectives to provide a holistic understanding of how child-led PRAs function as a mechanism for enhancing both community resilience and child protection.

The decision to use a case study design is guided by the desire to conduct an in-depth exploration of child participation in a specific, contextually rich setting. Yin (2003) notes that case studies are particularly appropriate when the boundaries between the phenomenon under study and its context are not clearly evident, which is true for disaster risk in informal settlements. The case study design allows for the examination of multiple data sources, including children's perspectives, caregivers' insights, and institutional viewpoints, providing a comprehensive understanding of the processes, challenges, and outcomes associated with child-led PRAs. This embedded approach enables analysis at multiple levels, including individual, household, and community, which is essential given the interconnected nature of social-ecological systems in informal settlements.

This study employs a participatory research approach, reflecting the principles of co-learning, empowerment, and democratic engagement. Participatory research has been widely applied in development studies and disaster risk management to involve local actors as co-producers of knowledge rather than passive subjects (Özdem and Bowd, 2010). Pain and Francis (2003) emphasise that participatory methods are particularly effective in situations where marginalised groups, such as children, have knowledge and experiences that are often overlooked in conventional research. In this study, children are treated as co-researchers, actively contributing to the identification and analysis of hazards, vulnerabilities, and potential strategies to enhance resilience. This approach aligns with the philosophical and ethical imperatives of participatory development, which argue that local actors have the capacity to generate contextually relevant solutions and should be central to the research process (Chambers, 1994).

The study site, Epworth informal settlement, provides a particularly relevant context for this research due to its high population density, limited infrastructure, and recurrent exposure to environmental hazards, such as flooding and fires. Informal settlements present unique socio-environmental challenges, including insecure tenure, inadequate waste management, and limited access to social services, all of which exacerbate vulnerability to disasters (Akola *et al.*, 2023). Within this context, children are often disproportionately affected, experiencing disrupted education, health risks, and psychosocial stress, yet their perspectives are rarely incorporated into formal disaster planning. By selecting Epworth as the case study, this research provides a contextually grounded exploration of child participation in risk assessment, while contributing insights that may be transferable to other informal settlements in Zimbabwe and similar contexts in sub-Saharan Africa.

The study population includes children aged 10 to 17 years, selected because this age group has sufficient cognitive and

communicative capacity to engage meaningfully in participatory exercises while also being vulnerable to the impacts of disaster hazards. Children are purposively sampled through schools, youth groups, and community organisations to ensure a diversity of experiences and perspectives, particularly in terms of age, gender, and socio-economic background (Creswell and Poth, 2018). Additionally, adult community members, caregivers, local leaders, and representatives of non-governmental organisations (NGOs) involved in disaster risk management are included as secondary participants to provide complementary perspectives and to contextualise children's contributions within the broader social and institutional environment.

Data collection employs a variety of qualitative methods designed to facilitate deep engagement and triangulation. Central to the study are participatory risk mapping exercises, in which children actively identify hazards, vulnerable locations, and coping strategies within their community. These exercises involve visual tools, such as maps, charts, and drawings, enabling children to communicate complex spatial and social information in an accessible and age-appropriate manner. Such participatory tools have been widely employed in community-based disaster risk management and are recognised for their effectiveness in generating locally grounded knowledge (Holloway and Roomaney, 2007). By engaging children in these exercises, the study not only captures their unique insights but also fosters a sense of ownership and agency, consistent with the principles of participatory development.

In addition to mapping exercises, focus group discussions (FGDs) are conducted with children to explore collective narratives regarding risk perception, preparedness, and coping strategies. FGDs are particularly useful for eliciting shared perspectives and encouraging dialogue among participants, allowing themes to emerge through interaction and discussion. To facilitate participation and expression, techniques such as storytelling, scenario-building, and visual representation are used, accommodating the varied expressive capabilities of children (Back *et al.*, 2009). FGDs are also conducted with adult community members, caregivers, and local leaders to provide a complementary understanding of community risk governance and the integration of children's inputs into decision-making processes.

Key informant interviews (KIIs) are conducted with disaster management officials, school administrators, and NGO representatives to gain institutional perspectives on the role of child-led PRAs in local disaster governance. Semi-structured interviews allow participants to elaborate on policy, practice, and perceived barriers and opportunities for incorporating children's voices into risk assessment and planning. The combination of FGDs, KIIs, and participatory exercises ensures triangulation of data, enhancing the reliability and credibility of the findings (Braun and Clarke, 2006).

To complement these methods, participant observation is employed during mapping exercises, community meetings,

and other participatory activities. Observation provides a means of capturing non-verbal cues, group dynamics, and contextual subtleties that may not be fully articulated in verbal data. Detailed field notes are maintained to document these observations, enabling the researcher to integrate contextual insights into analysis and interpretation (Creswell and Poth, 2018).

Data analysis follows a thematic approach, which involves systematic coding, categorisation, and identification of patterns and themes within the data (Braun and Clarke, 2006). Analysis is both inductive, allowing themes to emerge from participants' narratives and experiences, and deductive, guided by the theoretical frameworks underpinning the study, including participatory development, social-ecological resilience, and child rights. This combination enables the research to generate findings that are both empirically grounded and theoretically informed. Themes are refined iteratively through constant comparison across data sources, including mapping outputs, FGDs, KIIs, and observational field notes, ensuring credibility and depth.

Ethical considerations are paramount given the involvement of children as participants. The study adheres to international ethical standards for research with minors, including obtaining parental consent and child assent, ensuring voluntary participation, maintaining confidentiality, and implementing safeguarding measures (Creswell and Poth, 2018). Participatory activities are designed to be age-appropriate, trauma-informed, and culturally sensitive. Facilitators are trained in child protection and ethical engagement, and support mechanisms are available for participants who may experience distress during discussions of disaster experiences.

To ensure trustworthiness, the study employs multiple strategies. Triangulation of data sources and methods strengthens credibility by corroborating findings across perspectives. Member checking is conducted with participants to validate interpretations, and a thick description of context and processes enhances transferability. Reflexivity is practised through researcher journals, documenting positionality and potential biases that may influence data collection and analysis.

While the methodology is robust, certain limitations are acknowledged. The qualitative, participatory approach prioritises depth over statistical generalisability, meaning findings may not be directly extrapolated to all informal settlements. Additionally, working with children introduces challenges such as social desirability bias or limited articulation of complex concepts. These challenges are mitigated through child-friendly facilitation, peer-led discussions, and the use of visual and interactive methods that accommodate different expressive styles.

In conclusion, this study's methodology integrates qualitative, participatory, and case study approaches to provide a comprehensive understanding of child-led participatory risk assessments in informal settlements. By centering children as participants, researchers triangulating multiple data sources, and adhering to rigorous ethical standards, the research seeks to generate empirically

grounded insights into how children can contribute to disaster risk reduction, community resilience, and child protection in contexts of socio-economic vulnerability and recurrent hazard exposure.

DISCUSSION OF FINDINGS

The findings of this study provide rich insights into the role of children as active participants in community disaster risk reduction (DRR) through child-led participatory risk assessments (PRAs) in Epworth informal settlement, Harare, Zimbabwe. The study highlights the ways in which children can meaningfully engage in risk identification, hazard mapping, and the development of adaptive strategies, thereby contributing to both community resilience and child protection. The results underscore that children are not merely passive recipients of disaster interventions, but capable actors who possess unique local knowledge, social insights, and problem-solving capabilities that are often overlooked in conventional adult-led planning processes. These findings resonate with the theoretical underpinnings of participatory development theory, social-ecological resilience theory, and child rights theory, offering empirical validation and extending the existing literature on inclusive DRR in informal settlement contexts.

The study findings indicate that participatory risk assessment exercises provided children with opportunities to articulate their perceptions of hazards and vulnerabilities within their communities. Through participatory mapping, hazard ranking, and scenario-based discussions, children identified a range of physical, social, and institutional risks. Physical hazards included recurring flooding, poorly constructed dwellings susceptible to fire, and blocked drainage systems that exacerbate water accumulation during the rainy season. Social risks identified by children included lack of adult supervision, exposure to unsafe environments during commuting to school, and the presence of unregulated informal settlements adjacent to high-risk zones. These observations underscore that children possess nuanced, localized knowledge about environmental vulnerabilities and social dynamics, aligning with Chambers' (1994) argument that local actors, even children, are capable of generating contextually grounded solutions that external experts may overlook. Furthermore, the findings mirror observations by Peek (2008), who highlighted that children, through their lived experiences and everyday interactions, develop a sophisticated understanding of hazards that complements formal risk assessments.

The study revealed that children's engagement in risk assessments had both direct and indirect impacts on community resilience. Directly, children's participation informed local decision-making processes. For example, when children identified flood-prone areas and unsafe routes, adult community members and local leaders incorporated these observations into discussions about waste management, drainage clearance, and temporary evacuation planning. Indirectly, participation strengthened social cohesion and communication networks within the community. Children reported sharing knowledge gained from PRA exercises with siblings, peers, and neighbors, creating informal networks of

risk awareness that extended beyond the structured activities. These findings support the social-ecological resilience perspective proposed by Walker *et al.* (2004), which posits that resilience is not only about infrastructure or resources but also about the capacity of social networks to adapt, share knowledge, and respond collectively to stressors. The evidence from Epworth demonstrates that children's participation enhanced adaptive capacity at both the individual and community levels, highlighting the dynamic interplay between social systems and environmental hazards in informal settlements.

Moreover, the study highlights the relevance of child rights theory in guiding participatory approaches. Children consistently expressed feelings of empowerment, self-efficacy, and recognition when their views were solicited and incorporated into discussions with adults. These experiences reflect Lundy's (2007) model of meaningful participation, which emphasizes the need for children to have space to express views, the opportunity to be heard, an audience to listen, and the ability to influence outcomes. By adhering to these principles, the PRA exercises enabled children to exercise agency, articulate their concerns, and contribute to decision-making in ways that are ethically consistent with international conventions, particularly the UNCRC (1989). The study demonstrates that acknowledging children as rights-holders is not merely an ethical imperative but has tangible practical benefits, including increased awareness, proactive behavior, and improved preparedness within the broader community.

An important dimension of the findings concerns the dual impact of child-led PRAs on disaster preparedness and child protection. Children were particularly attuned to vulnerabilities that directly threatened their safety or the safety of their peers. For instance, they identified unsafe informal housing structures that were prone to fire, poorly lit pathways that increased risks of injury or assault, and overcrowded water points where children were at risk during floods. By highlighting these hazards, children provided actionable insights for both risk reduction and protection strategies. This dual functionality underscores the integrated nature of DRR and child protection, a concept increasingly recognized in global frameworks such as UNICEF's disaster risk reduction and child protection programming (UNICEF Zimbabwe, 2023; CRRC, 2015). The findings indicate that child-led participation can function as both a preventive and protective mechanism, bridging gaps between safety, preparedness, and resilience in resource-constrained urban settlements.

While children's participation was generally positive, the study also identified several challenges that could limit the effectiveness of PRAs. Some adult community members and local authorities initially expressed skepticism regarding the ability of children to contribute meaningfully to risk assessment and decision-making. These attitudes reflect entrenched cultural and societal norms in Zimbabwe and other African contexts, where children are often perceived as passive dependents rather than capable actors (Muzenda-Mudavanhu, 2016). This skepticism occasionally constrained the translation of children's recommendations into concrete

community actions, particularly in formal municipal disaster planning processes. Additionally, children's recommendations were sometimes constrained by material and institutional limitations, such as limited access to resources for implementing flood mitigation measures, weak local governance structures, and the absence of formal mechanisms to integrate youth perspectives into policy frameworks. These challenges highlight the need for institutional sensitization, capacity building, and structural support to ensure that child participation is meaningful, sustained, and translated into actionable outcomes.

Despite these challenges, the findings suggest that participatory processes foster incremental attitudinal changes. Adult stakeholders, including caregivers and community leaders, reported that observing children's engagement enhanced their appreciation for the insights and practical contributions that children could provide. Over time, children's involvement began to challenge traditional power dynamics and perceptions of agency, creating spaces where children's voices were increasingly valued. This observation aligns with the principles of participatory development theory, which emphasizes that engagement is not only about outcomes but also about empowering marginalized groups and reshaping social relations within communities (Cornwall and Jewkes, 1995). In the Epworth context, this shift in perception has important implications for long-term community resilience, as it suggests that inclusive engagement practices can gradually transform norms and promote collaborative approaches to hazard mitigation.

The findings also highlight the educational and capacity-building benefits of participatory engagement. Children reported acquiring skills in hazard identification, mapping, critical thinking, and communication. These competencies are transferable beyond the immediate context of disaster risk reduction and contribute to broader personal development, social agency, and civic awareness. Similarly, adult stakeholders gained insights into children's knowledge and perspectives, fostering intergenerational learning that strengthened communal problem-solving capacities. These observations resonate with Chambers (1994) and Özerdem and Bowd (2010), who emphasize that participatory research facilitates mutual learning, capacity building, and empowerment across multiple stakeholder groups.

The findings further reinforce the significance of integrating local knowledge with formal disaster governance frameworks. Children's hazard maps often identified micro-level vulnerabilities, such as narrow alleyways prone to flooding or clusters of informal structures at risk of fire, which were not adequately represented in official disaster risk plans. These observations mirror the broader literature on community-based disaster risk reduction, which highlights the limitations of top-down approaches that overlook local nuances (UNDRR, 2015; Adger, 2000). In the Zimbabwean context, these findings indicate that formal disaster management frameworks can be strengthened by incorporating structured platforms for child and youth participation, thereby improving the accuracy and relevance of risk assessments.

From a global perspective, the study's findings contribute to the growing recognition that children are active agents in disaster risk reduction rather than passive victims. Evidence from other regions, including South Asia and East Africa, indicates that child participation enhances local knowledge, promotes peer-to-peer education, and strengthens community resilience (Peek, 2008; Back *et al.*, 2009). This study extends this evidence to the Zimbabwean context, demonstrating that even in highly resource-constrained informal settlements, children can meaningfully engage in participatory processes that improve both preparedness and protection outcomes.

The findings also highlight the intersection of gender, age, and vulnerability in participatory exercises. Older children and adolescents often demonstrated higher levels of analytical thinking and articulated complex hazard scenarios, while younger children contributed through visual and experiential knowledge, such as mapping safe routes to school or identifying household hazards. Gendered differences were observed, with girls emphasizing risks related to safety and domestic responsibilities, and boys focusing on physical hazards such as floods and fire. These findings align with studies on child-led DRR in African contexts, which emphasize that participatory approaches must consider intra-group diversity to ensure inclusivity and comprehensive risk representation (Muzenda-Mudavanhu, 2016; Back *et al.*, 2009).

Finally, the study underscores the transformative potential of child-led PRAs in fostering sustainable community resilience. Beyond the immediate outputs of hazard identification and risk mapping, the participatory process itself created opportunities for dialogue, learning, and empowerment. By centering children as legitimate stakeholders, the study demonstrates that participatory risk assessment can strengthen social cohesion, enhance adaptive capacities, and promote inclusive governance, even in contexts of extreme socio-economic vulnerability. This finding validates the theoretical proposition that participation, resilience, and rights-based approaches are mutually reinforcing. Children's involvement enhances resilience, which in turn strengthens protection and community agency, while ethical frameworks ensure that participation is both meaningful and empowering (Chambers, 1994; Lundy, 2007; Walker *et al.*, 2004).

In conclusion, the discussion of findings reveals that child-led participatory risk assessments are a highly effective strategy for enhancing disaster preparedness, community resilience, and child protection in informal settlements. Children's contributions are informed by lived experiences and contextual knowledge, providing insights that complement and enrich formal risk assessments. While challenges remain, including adult skepticism, resource constraints, and structural barriers to institutional integration, the participatory process fosters empowerment, capacity building, and attitudinal change, creating conditions for long-term resilience. The findings have significant implications for theory, practice, and policy, confirming that integrating child participation into disaster governance is both ethically justified and practically effective. By highlighting the capabilities, insights, and agency of children, this study

contributes to global, regional, and Zimbabwean debates on inclusive DRR and provides a model for scaling child-led participatory approaches in similar informal settlement contexts.

Implications for Child Protection Practice

In summary, the study has several key implications for child protection practice. It demonstrates that children are capable contributors to risk identification and mitigation, highlighting the need for their inclusion in both disaster preparedness and broader protection strategies. Practitioners should adopt participatory, rights-based approaches that integrate child protection with DRR, institutionalize child participation in decision-making, prioritize capacity building and skill development, promote social cohesion, incorporate gender-sensitive strategies, and advocate for policy integration. These strategies collectively enhance both the immediate safety of children and the long-term resilience of communities, demonstrating that child protection is most effective when children themselves are recognized as active agents of change rather than passive recipients of interventions.

By implementing these insights, child protection practitioners in Zimbabwe and comparable African contexts can develop holistic, preventative, and participatory systems that are responsive to the unique risks children face in informal settlements, thereby contributing to both human rights realization and sustainable community resilience.

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Conflict of Interest

The author declares that there is no conflict of interest regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/ or falsification, double publication and/ or submission, and redundancy, has been completely observed by the author.

Life Science Reporting

No life science threat was practised in this research.

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