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Inclusive Disaster Risk Reduction for Children with Disabilities in Remote Archipelagic Regions: A Systematic Literature Review

MA Muazar Habibi

muazar.habibi@unram.ac.id

Mataram University: Universitas Mataram https://orcid.org/0000-0001-8771-5583

Jundu Muhammad Mufakkirul Islami

University of Mataram https://orcid.org/0009-0009-1896-125X

Systematic Review

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Abstract

Children with disabilities in remote archipelagic regions face disproportionate disaster risks, yet evidence on inclusive Disaster Risk Reduction (DRR) remains fragmented. This systematic literature review synthesizes 78 empirical and theoretical studies following PRISMA 2020 guidelines. Despite increased research since the Sendai Framework, children with disabilities continue to be largely excluded from DRR planning and practice. Geographic isolation, multiple hazard exposure, and limited access to specialized services further intensify their vulnerability. The review identifies indigenous knowledge, family engagement, and Universal Design as emerging strategies for strengthening resilience, although their implementation remains limited. Based on these findings, the study proposes the **Inclusive Disaster Risk Reduction for Children with Disabilities in Archipelagic Regions (IDRR-CDAR) Framework** to guide policy, practice, and future research. It also highlights critical methodological and contextual gaps, offering directions for advancing inclusive DRR in low- and middle-income countries and Small Island Developing States

1. Introduction

Disasters rank among the most impactful factors that determine the future prospects of children with disabilities worldwide, which number about 200 million (Peek & Stough, 2010). Natural and climate-related hazards such as earthquakes, tsunamis, volcanic eruptions, tropical storms, floods, and landslides expose these vulnerable children disproportionally to harm, with fatality rates of children with impairments recorded to be two to four times higher than those without (Stein & Stein, 2021). According to estimates, on an annual basis, seven million children with disabilities worldwide are impacted by disasters (Ronoh et al., 2015). The Sendai Framework for Disaster Risk Reduction 2015, 2030, for the first time, recognized persons with disabilities as active stakeholders instead of mere recipients of assistance. However, according to the UNDRR 2023 Global Survey on Persons with Disabilities and Disasters which was based on 6, 342 responses from 132 countries, only limited progress was made in the decade after the adoption of the Sendai Framework. Moreover, no major regional differences in levels of inclusion were found (Reduction, 2023).

The most severe expression of this compounding vulnerability is found in remote archipelagic regions where the combination of tectonic activity, sea-level rise, tropical cyclones, and limited infrastructure coincides with high poverty levels, poorly resourced education systems, and centralized disaster governance which rarely reaches isolated communities (Chong et al., 2025; Thomas et al., 2020). Indonesia, the Philippines, Japan, Fiji, Vanuatu, Papua New Guinea, the Solomon Islands, and the Caribbean Small Island Developing States are major disaster areas whose geographic fragmentation leads to unique challenges for inclusive DRR. Locating at the meeting point of the Eurasian, Indo-Australian, Pacific, and Philippine Sea plates, Indonesia regularly experiences a series of earthquakes, tsunamis, and volcanic eruptions; in fact, it has the largest number of active volcanoes in the world at 127 (Rofiah et al., 2021). The Philippines, being part of the Pacific Ring of Fire and the typhoon belt, was the country most affected by disasters in 2009, with 191 disasters causing 903 deaths and affecting

2.8 million families (Orencio & Fujii, 2012). However, even with this risk profile, disaster education is still not a compulsory subject in Indonesia, and the participation of children with disabilities is only partial at best (Desilia et al., 2023).

The level of inclusive education policy varies dramatically across Southeast Asia. Beamish et al. concluded that across the whole Asia-Pacific region the most significant barrier was the lack of both initial and ongoing teacher training and professional development for special educational needs students (Beamish et al., 2024). In Indonesia, the decentralization of inclusive education has led to disparities among regions whereas Malaysia's approach, being more centralized, has produced smaller scale but better equipped programs (Ridwan et al., 2025). Prots and Holub point out that inclusive educational reforms in Southeast Asia are quite recent and the institutional role of SEAMEO and its SEAMEO SEN regional center is crucial (Prots & Holub, 2023).

Mounting the challenge of island vulnerability with that of disability and climate change, the triple intersection not only results in disease outbreaks that directly impact persons with disabilities to a greater extent but also significantly marginalizes them in terms of access to health services (Stein & Stein, 2021). Viewed from a perspective of environmental justice, disability inclusion in climate change debates should be addressed through distribution, recognition, and participation dimensions (Kosanic et al., 2022). Based on the paper by Stein et al., a human rights-based disability approach to the climate-resilient development framework was developed. Drawing upon the expertise of disability, developmental, environmental, and human rights experts, they emphasized the urgency for the disability-inclusive climate actions (Stein et al., 2024). Kim et al. emphasize the necessity of disability-inclusive epidemiological research, highlighting not only their diversity as a population but also their health impacts in changing climate contexts (Kim et al., 2026).

As Watermeyer and Botha state, the traditional medical and charity model conceptualizations of disability still haunt the concept of disability today, and this conceptual heritage influences how DRR experiences and needs of persons with disabilities are portrayed (Watermeyer & Botha, 2025). Their article introduces "lazy intersectionality" as a concept and they argue that an intersectional analysis starting with disability is essential for producing DRR measures that are available, accessible, and safe for all. Highlights from Bennett's review include the intertwining of disability with other dimensions of vulnerability as a major theme, alongside the call for sufficient disaster preparedness and the requirement to change negative cultural attitudes (Bennett, 2020).

Theoretical constructs of resilience can guide the development of inclusive DRR. Bronfenbrenner's bioecological theory has been identified as a multilevel framework that can be used to understand community resilience to natural disasters while taking into account micro-, meso-. exo- and macrosystemic levels (Boon et al., 2011). Given that disasters are multisystemic events, Masten and colleagues proposed that resilience research has to integrate across disciplines and system levels (Masten & Obradović, 2008), (Masten & Motti-Stefanidi, 2020). Emphasizing that children encounter adversities in multiple, nested environments that are optimizing the social ecology of their lives,

Noffsinger et al. consider children's ecologies as consisting of such dynamically interconnected nested environments (Noffsinger et al., 2012). Inclusive DRR in archipelagic locales, where systemic, geographic, and cultural factors intersect, requires a theoretical underpinning such as these.

The Sendai Framework (SFDRR) and its antecedent, the Hyogo Framework for Action (2005, 2015), have recognized community participation as an important factor in DRR (Delicado et al., 2017). The conference on disaster risk reduction in 2015 achieved the formulation of disability-accessible and inclusive environment recommendations, with the main themes of disability such as accessibility, inclusion, and universal design woven throughout the SFDRR document (Stough & Kang, 2015). Article 11 of the UN Convention on the Rights of Persons with Disabilities stipulates that states parties must ensure the protection and safety of persons with disabilities in situations of risk, including the occurrence of natural disasters (Ronoh et al., 2015). However, Stough and Kang observe that although the Sendai Framework recognizes people with disabilities as stakeholders, it does not refer to them as experts or resources in DRR (Stough & Kang, 2015).

Rofiah et al. pointed out in their study on disaster education that children with disabilities often do not get sufficient support in DRR activities and are sometimes just completely left out (Rofiah et al., 2021). Furthermore, they encounter physical obstacles during emergency evacuation procedures (Pamungkas et al., 2020). Recently, Rofiah and Kawai carried out a quasi-experiment involving nine inclusive schools in Yogyakarta and found out that disaster education could raise preparedness level of students with disabilities, thus, it was in line with the limited existing body of work in inclusive DRR in low- and middle-income countries (Rofiah & Kawai, 2025). Surveying 769 teachers in Indonesia, Sheehy et al. revealed that the country is in dire need of disaster risk reduction education that is delivered through inclusive, accessible, and engaging pedagogy across mainstream, inclusive, and special schools (Sheehy et al., 2022). Investigating school safety framework implementation in special education schools in Indonesia, Cabatay and Gonzales detected a major lag with a large divide between public and private special education units. They also noted limited teacher training and knowledge about DRRM (Cabatay & Gonzales, 2024).

This review has a goal to fill an important gap in the academic literature. Systematic reviews on the educational aspect of DRR to children exist (Güvelioğlu & Erden, 2023; Masocha et al., 2025; Mutanda & Ngcamu, 2026; Yusuf et al., 2022), on children with disabilities becoming vulnerable to disasters (Mann et al., 2021), and on inclusive school preparedness (Cabatay & Gonzales, 2024; Cabatay & Pujaningsih, 2025) have been published. None, however, has systematically synthesized work on the specific intersection of inclusive DRR and children with disabilities living in remote archipelagic regions. Most previous literature reviews regarding island contexts have either been general or have treated islands as part of broader Asia-Pacific or SIDS groupings and therefore have not focused on the specific compounded vulnerabilities of disability in geographically fragmented settings.

Hence this review holds three major significances. First, it integrates disaster studies, disability studies, and inclusive education at the theoretical level by targeting a geographical and sociopolitical setting that

has been largely ignored since these disciplines merged. Second, it offers extensive evidence to support the implementation of disability-related priorities of the Sendai Framework in island settings where development has been behind global averages. Third, it conceptualizes and explicates a new framework, the IDRR-CDAR Framework, that aims to direct policy, programming, and research in remote archipelagic regions.

1.1 Review Objectives

The main goals of this review are:

1. Provide an overview of; published research on inclusive DRR for children with disabilities in remote archipelagic regions of the world.
2. Pinpoint disaster types, disability categories, and geographic places that define the pool of evidence being looked at.
3. Look at theoretical, methodological, and pedagogical approaches used in the concerned studies.
4. Examine policy and other implementation challenges and factors, such as teacher readiness, family involvement, and indigenous knowledge systems.
5. Interpret the evidence using the perspectives of SFDRR, UNCRPD, SDGs, and current theoretical frameworks.
6. Point out research gaps and propose the focus of future research.
7. Develop and share a new conceptual framework, IDRR-CDAR, to lead inclusive DRR in remote archipelagic regions.

1.2 Research Questions

Four key research questions form the basis of this research:"

First, what do the publications in the global scholarly field offer as insights about risks, preparedness, and children with disabilities experiences in disaster situations of remote archipelagic regions?

Second, in the context of infectious disease control and environmental sanitation, how far have inclusive DRR actions, such as school-based programs, family preparedness plans, early warning systems, and evacuation procedures, been planned, put together, and evaluated?

Third, what theoretical, policy, and environmental factors may be a barrier or a facilitator to inclusive DRR in remote archipelagic areas?

Finally, which areas of the current evidence would benefit from a more comprehensive conceptual framework, and how does such a framework help to address the gaps in the evidence?

2. Literature Review

2.1 Disability and Disaster Vulnerability: Theoretical Foundations

Different views have been put forward in relation to the disability-disaster connection. A significant social vulnerability viewpoint from Peek and Stough revealed the different dimensions of children's vulnerability in disasters due to disabilities not only physically but psychologically and educationally as well. They indicated that disabled children highly live in poverty, are more exposed to risks, may be more vulnerable to the trauma of loss or separation from caregivers in disasters and experience postdisaster disparities unless social protections are in place (Peek & Stough, 2010). Perspectives on inclusion differ based on the medical, economic and social models of disability; the medical model sees disability as a defect in the person that requires correction whereas the social model regards disability as the by-product of the way society is structured (Ronoh et al., 2015). From a disability intersectionality perspective, Watermeyer and Botha insist that DRR initiatives should begin with disability and also consider the diversity of the population (Watermeyer & Botha, 2025).

Mladenov and Brennan offer a social vulnerability conceptual framework which not only merges disaster risk management and disability studies but also focuses on the social factors determining vulnerability rather than the individual's impairment (Mladenov & Brennan, 2021).

Numerous are the reports on the difference in disability-disaster mortality rates pointing out people with disabilities as the group with the highest mortality rates in disasters (Smythe & Kuper, 2023). Apart from that, discrimination against persons with disabilities is also magnified by their intersection with one or more points, for example, gender, age, Indigeneity, socioeconomic status (Kim et al., 2026), (Stein et al., 2024). Apart from that, Ngcamu's systematic literature review revealed that climate change impacts have mostly resulted in a decrease in the well-being of persons with disabilities, particularly those who do not have access to emergency support (Ngcamu, 2023).

Incheon Strategy, the first set of regionally agreed disability-inclusive development goals for the Asia-Pacific region, was released by the UN Economic and Social Commission for Asia and the Pacific (Watfern & Carnemolla, 2024). The seventh goal of the Incheon Strategy specifically call for "disability-inclusive disaster risk reduction and management, " which means that even emergency communications, protocols, and evacuation buildings need to be made more accessible to people with disabilities. Incheon Strategy, therefore, together with the CRPD, the Sendai Framework, and the SDGs, is one of the primary policy instruments that has contributed to disability-inclusive DRR in the Asia-Pacific archipelagic contexts.

2.2 International Policy Architecture: From Sendai to the SDGs

The first worldwide disaster risk reduction (DRR) framework to explicitly and systematically take into account the needs of persons with disabilities was the Sendai Framework for Disaster Risk Reduction

2015–2030 (Bennett, 2020; Stough & Kang, 2015). The four main areas of the Framework understanding disaster risk, strengthening disaster risk governance, investing in disaster risk reduction for resilience, and enhancing disaster preparedness for effective response and "Build Back Better" in recovery are the areas where inclusive DRR has to be implemented. However, as part of a five-year review report, Bennett highlighted that even the smallest variations in the definitions of disasters or disabilities could lead to further exclusion of marginalized groups, and three significant issues have been identified: oneminor, intersecting inequalities should get the most attention; two persons with disabilities are empowered if they have the skills to prepare for disaster; and three changing cultural attitudes negatively is the need (Bennett, 2020). Mizutori's reflections on Sendai's five years centered on disaggregated data, risk assessment at the local level, and political commitment as the three main factors to facilitate risk-informed development (Mizutori, 2020).

A Global Survey on Persons with Disabilities and Disasters by UNDRR in 2023 revealed that disability inclusion has barely progressed over the last decade, and no meaningful regional differences were noted (Reduction, 2023). The UN survey in 2013 revealed that 85% of persons with disabilities from 137 countries indicated that they were not involved in the community disaster management and risk reduction processes and policies (Pirmasari & McQuaid, 2023).

The SDGs offer a parallel normative framework. Disability is a cross-cutting dimension in SDGs 1, 3, 4, 10, 11, and 13 (Ngcamu, 2023), (Akponzele et al., 2025). Most importantly, SDG 11.5 seeks to reduce the number of deaths caused by disasters and the people affected, with an emphasis on the poor and vulnerable populations. SDG 4 focuses on ensuring quality education for all, while SDG 13 calls for disability-inclusive climate action (Ngcamu, 2023). Akponzele et al. advocate for the integration of SDGs 1, 3, 10, and 11 into the disability and disaster policies, pointing out that their program of Ghana's disability and disaster legal review lays the groundwork (Akponzele et al., 2025).

2.3 Children, Island Contexts, and Disaster Risk Reduction

Research on children and disaster risk reduction (DRR) has increased, yet the development has been irregular. For instance some theorists have argued that children are not only passive victims of disasters but also can be actively involved in DRR (Pfefferbaum et al., 2018).

Disaster risk reduction education and child-centered disaster risk reduction have separated into two distinct fields despite the fact that to a great extent their literatures attempt to bridge the two (Amri et al., 2017). Ronan et al. have started to help us understand how to create, evaluate, implement and scale up CCDRR programs that have a lasting impact (Ronan et al., 2016). Lownsbery's comprehensive review that synthesized four separate literature reviews of DRRE for children reports this field as very fragmented; lacking a single focus and clear direction. Also, very little attention has been given to the learning process (Lownsbery, 2025).

Following UNCRC, permission to engage children in DRR has raised a lot of interest. CUIDAR review was conducted by Mort, Cuthbert, Johnson, and Millington to find out the sectors documenting children's

direct and indirect engagement in DRR, which identified 261 programs worldwide (Maggie et al., 2020). Zimbabwe along with other countries according to Mudavanhu et al. have to some extent realized children's participation in DRR although the latter is just a rhetorical recognition and no empirical evidence exists (Mudavanhu et al., 2015). Cumiskey et al. has revealed the problems young people's consultation with safe spaces and adequate resources such as funds are still met with legal barriers besides other issues (Cumiskey et al., 2015). Le Dé et al. performed a study on the ways through which recreation platforms and tools like LEGO, Minecraft, and Magic Games were used for engaging children in DRR participatory initiatives (Dé et al., 2021).

Scholars have even pointed out that SIDS, though very different from one another, share many common features and their vulnerability to climate change is one of these (Thomas et al., 2020). Climate justice, loss and damage, as well as adaptation planning and implementation have been considered as the main themes (Thomas et al., 2020). The Indian Ocean tsunami in 2004 and other such events in Vanuatu, Samoa, etc. are testimonies to the effectiveness of indigenous knowledge for survival and recovery from disasters (Mercer et al., 2007; Mercer, Kelman, Suchet-Pearson, et al., 2009; Mercer, Kelman, Taranis, et al., 2009; Walshe & Nunn, 2012). Walshe and Nunn's research concerning the Pentecost Island tsunami of 1999 in Vanuatu disclosed that only five people lost their lives out of a population of approximately 300 threatened which they attributed to both indigenous kastom knowledge and the information that was obtained from a tsunami video that was shown three weeks earlier (Walshe & Nunn, 2012). Gero et al. have indicated that local knowledge needs to be harnessed in participatory processes for both community-based DRR and climate change adaptation in the Pacific and other places (Gero et al., 2011).

2.4 Children with Disabilities in Disasters

Several leading academic researchers have already discussed the topic of children with disabilities in disasters. Ronoh, Gaillard, and Marlowe point out that children with disabilities are most times excluded from DRR projects and in fact, their vulnerabilities physically, psychologically and even educationally can be much more severe, on top of that, their possible contribution to DRR planning is still mostly overlooked by both researchers and policymakers (Ronoh et al., 2015). In disaster settings, children with disabilities are the ones who will most probably get their networks of support broken, their equipment (like the wheelchair) damaged, the emergency shelters and warning messages not only might be inaccessible to them, but also, in fact, they will be the people facing their biggest difficulties in getting those basic humanitarian aids (Stough & Kang, 2015). The World Health Organization states that children comprise 30–50% of all natural disaster fatalities, and due to climate change, this figure is set to climb even higher (Chan, 2017).

Bennett has identified the three recurring issues through the assessment of the Sendai Lighting Framework's four focus areas and subsequent running of a disability-inclusive disaster risk reduction approach first theme was the importance of intersectionality, the second theme was the both progressive in the sense of more room for improvement and of limiting the inseparability of preparedness to the availability of resources while still requiring demand and third theme was to change cultural attitudes (Bennett, 2020). Stough and Kang agree that the Sendai Framework for Disaster Risk

Reduction considers people with disabilities and their advocacy organizations as legitimate stakeholders in the design and implementation of disaster risk reduction policies. However, the language of the framework does not acknowledge people with disabilities as experts or resources (Stough & Kang, 2015). In their critical discussion of the notion of 'vulnerability' and 'disability' Connon and Hall developed the idea that these two phenomena should be understood not as individual deficits but as the result of social processes, arriving situational changes that determine in which ways and to what extent a person becomes disabled or vulnerable (Connon & Hall, 2021).

Within the context of families, Wolf-Fordham et al. from their research on 314 parents of children with developmental disabilities in the United States have found that even parents who identified themselves as "very well prepared" had completed less than half of the 11 recommended action steps, and they also bemoaned the lack of widespread availability of preparedness support and training (Wolf-Fordham et al., 2015). Via a scoping review method, Hipper et al. have highlighted that families with children having special healthcare needs require additional information, education/training for their effective preparation and that at present there is very little evidence on channel preferences (Hipper et al., 2018). Smith et.al. by rapid scoping review illustrated the significance of communication during pandemics for families with children with medical complexity and special healthcare needs and they advocate that emergency information form should be accessible in different formats (Smith et al., 2024). In their scoping review of children and adolescents with disabilities' responses to exposure to disasters, terrorism, and the COVID-19 pandemic, Mann et al. highlighted a focus on preparedness to the neglect of recovery (Mann et al., 2021).

In view of their role as a pillar of the socio-economic system, schools (and other education centers) constitute one going concern of the safety and well-being of children (most vulnerable ones, e.g. children with disabilities, especially). Boon et al. found that disasters children with disabilities and special needs may be the most vulnerable among individuals; however, schools have the capability to lessen the impact through disaster preparedness and community-based risk reduction activities (Boon et al., 2011). Their research into school emergency response planning in Australia in 2011 uncovered a near-total disregard for the needs of students with disabilities and this negligence, coupled with the vagueness of the terms such as "special needs, " has led to a complex situation (Boon et al., 2012). Good has warned that disabled children are at higher risk of displacement during rapid evacuations and their reunification with families after a disaster will be slow. Also, he has come to the conclusion that individual safety plans are not usually part of Individualized Education Programs (IEPs) (Good, 2016). Edmonds believes that formation of preparation plans for emergencies involving children with autism is rarely done in practice and these children, in terms of preparedness education, emergency, will be the least considered (Edmonds, 2016).

2.5 Psychological and Mental Health Dimensions

The severe psychosocial impacts of disasters on children with disabilities and their families are often overlooked and unacknowledged. In fact, after conducting a scoping review of psychosocial support programs for children and adolescents affected by natural disasters, Gibbs et al. found that the largest

improvements were being made by well-qualified professionals. However, the review also pointed out that several groups at highest risk who were further neglected still included preschool children, ethnically diverse groups, persons with disabilities, and socially disadvantaged (Gibbs et al., 2021). Besides recognizing the necessity of family disaster preparedness, Wolf-Fordham et al. found that parents of children with developmental disabilities show signs of being uncomfortable about it (Wolf-Fordham et al., 2015).

Aslan, a recent editor of the journal, believes that the main post-disaster strategies are safe space creation, family training, multi-disciplinary support, and detailed monitoring systems (Aslan, 2024). As per Smith et al., re-integrating children with medical complexities into normal daily life entails the return to school and continuation of specialized health care programs, which naturally results in scaling up of the care teams (Smith et al., 2024). Besides one of its main features, the COVID-19 pandemic has been a source of further inequality for children with disabilities, thus leading to the aggravation of their already multiple vulnerabilities in the provision of essential services and supports (Adugna et al., 2020).

3. Methodology

3.1 Review Protocol and Design

We followed PRISMA 2020 guidelines for reporting our systematic literature review set out by Page et al. (Page et al., 2021). Our review protocol specified the objectives, eligibility criteria, search methods, screening, quality assessment, data collection, and analysis techniques. We even registered it before starting to minimize the chance of selective reporting.

3.2 Eligibility Criteria

Refer to Table 2 for the summary of inclusion and exclusion criteria. A study might have been included if (i) the main topic was disaster risk reduction, disaster preparedness, disaster response, or disaster recovery; (ii) the target group was children with disabilities, children with special educational needs, or children covered by inclusive policies; (iii) the setting was archipelagic, island, coastal, or geographically isolated, or the findings were transferable to such settings; (iv) the time frame was from January 2015 to May 2026 but mostly literature from 2021–2026 was very likely to be considered; and (v) the type of publication was journal article peer-reviewed, systematic review, scoping review, institutional report, or key theoretical paper. A study may have been excluded if it was focused only on adult population without reference to children, dealt with disability outside DRR contexts, or were non-English materials that didn't have a translation.

3.3 Information Sources and Search Strategy

Our search strategy was a comprehensive Boolean search which was conducted across eight electronic databases: Scopus, Web of Science, ScienceDirect, SpringerLink, Wiley Online Library, Taylor & Francis, ERIC, and ProQuest. UNDRR, UNICEF, UNESCO, WHO, and World Bank websites were sources for grey

literature. The Boolean search combined four thematic groups disability, DRR, island/archipelagic context, and age with education and inclusion terminology. For a detailed search strategy, see Table 1.

Table 1
Search Strategy

Cluster	Search Terms
Disability cluster	("disabilit*" OR "special educational needs" OR "SEND" OR "impairment" OR "inclusion")
DRR cluster	("disaster risk reduction" OR "DRR" OR "disaster preparedness" OR "emergency preparedness" OR "school safety" OR "disaster education")
Context cluster	("archipelago*" OR "island" OR "small island" OR "SIDS" OR "remote" OR "geographically isolated" OR "coastal community" OR "Pacific" OR "Caribbean")
Age cluster	("child*" OR "adolescent*" OR "youth" OR "student*" OR "school*" OR "preschool" OR "early childhood")

Initially, the clusters were linked by the operator AND, additional words were applied to check for contextual relevance. The search date was set to 2015, 2026, but the main focus of the search was on 2021, 2026.

3.4 Screening Process

The PRISMA 2020 flow diagram illustrates the screening steps.

Initially, we identified 6, 418 records through database searching. First, we eliminated the duplicates (n = 1, 724). Afterwards, 4, 694 records were screened based on title and abstract at that stage.

As a result, 4, 283 were excluded since they did not fit the inclusion criteria. Afterwards, the 411 remaining full texts were assessed for eligibility, 333 were excluded for the following reasons: lack of emphasis on children with disabilities, the geographical focus of the study was not archipelagic, or methodological problems.

At the very end, we added 78 items. This collection includes 64 peer-reviewed empirical journal articles, 8 systematic or scoping reviews, 4 institutional reports, and 2 major theoretical works.

Table 2
Inclusion and Exclusion Criteria

Criterion	Inclusion	Exclusion
Population	Children with disabilities, special educational needs, or inclusive vulnerability contexts	Studies on adults with disabilities without child focus
Phenomenon	Disaster risk reduction, preparedness, response, recovery, evacuation	Studies on disability unrelated to hazards
Context	Archipelagic, island, coastal, SIDS, geographically isolated	Studies in landlocked or non-relevant contexts
Time frame	2015–2026, prioritizing 2021–2026	Studies before 2015 unless seminal
Sources	Peer-reviewed articles, reviews, institutional reports, theoretical works	Opinion pieces, conference abstracts without full text
Language	English	Non-English without translation

3.5 Quality Appraisal

Methodological quality was assessed by us using the Mixed Methods Appraisal Tool 2018, and for systematic reviews we used the Joanna Briggs Institute critical appraisal checklists. We examined each paper for the clearness of the research questions, the appropriateness of the design, representativeness of the sample, the rigor of data collection, clarity of analysis, and ethical considerations. Quality scores ranged from low to high. Those sources rated low were triangulated with higher-quality evidence.

3.6 Data Extraction and Synthesis

We prepared a standard form for data extraction that recorded the study characteristics (author, year, country, design, sample), participant features (age, type of disability), intervention, outcomes, disaster type, and main findings. Thomas and Harden's three-step method which involves line coding of results, grouping into descriptive themes, and generation of analytical themes was adopted for thematic synthesis.

Synthesis was based on SFDRR priorities and used the Bronfenbrenner bioecological framework as a guide.

Table 3
PRISMA Screening Summary

Stage	Records (n)
Records identified through database searching	6,418
Records after duplicate removal	4,694
Records screened by title/abstract	4,694
Records excluded at screening	4,283
Full-text articles assessed for eligibility	411
Full-text articles excluded (with reasons)	333
Studies included in qualitative synthesis	78

3.7 Risk of Bias Considerations

The main biases that could have influenced the research were identified and ways of counteracting them were suggested. For instance, in order to limit publication bias, apart from well-known databases, the researchers also opted for databases holding grey literature. To a lesser extent, language bias was mitigated through the inclusion of key non-English works referred to by their translated versions. Also, the bias in terms of locales was discussed as only slightly over half of the studies are from Indonesia, Philippines, and Pacific Islands which signifies the concentration of pertinent scholarship in these areas, which is a very crucial insight.

Moreover, the sample sizes were, in general, quite small (with many studies single-province or single-school) which at the same time limits the degree of generalize ability of their findings.

4. Results

4.1 Publication Trends and Geographic Distribution

The publishing trend shows a dramatic increase in scholarly work from 2021, with 2024–2026 being the years with the most annual output of documents. Publications before 2020 were largely conceptual and review paper types, while from 2021 onwards there has been an increase in empirical and intervention-based research. Geographically, Indonesia accounts for the major number of studies (n = 24, 30.8%), followed by Pacific Island nations (n = 14, 17.9%), the Philippines (n = 11, 14.1%) and global or cross-regional studies (n = 18, 23.1%). Other island regions including Caribbean SIDS, Japan, and Mediterranean islands total the remaining 11 studies. Figure 2 illustrates the concentration in this region and at the same time reveals the Caribbean, Indian Ocean, and Micronesian archipelagic contexts as very absent.

Table 4
Selected Characteristics of Included Studies

Author(s)	Country/ Region	Disaster Type	Disability Focus	Design
Ronoh et al. (Ronoh et al., 2015)	New Zealand	Multi-hazard	Mixed	Critical review
Stough & Kang (Stough & Kang, 2015)	Global	Multi-hazard	All ages	Policy analysis
Bennett (Bennett, 2020)	Global	Multi-hazard	All ages	Review
UNDRR (Reduction, 2023)	Global (132 countries)	Multi-hazard	All ages	Survey
Rofiah et al. (Rofiah et al., 2021)	Indonesia	Multi-hazard	SEND	Mixed methods
Sheehy et al. (Sheehy et al., 2022)	Indonesia	Multi-hazard	SEND	SLR + survey
Rofiah & Kawai (Rofiah & Kawai, 2025)	Indonesia	Multi-hazard	Intellectual	Quasi-experimental
Cabatay & Gonzales (Cabatay & Gonzales, 2024)	Indonesia	Multi-hazard	SEND	Qualitative
Cabatay & Pujaningsih (Cabatay & Pujaningsih, 2025)	Indonesia	Multi-hazard	SEND	Ex post facto
Capuyan (Capuyan, 2026)	Philippines	Multi-hazard	SEND	Correlational
Utama et al. (Utama et al., 2025)	Indonesia	Earthquake	SEND	Participatory training
Yamawaki et al. (Yamawaki et al., 2025)	Japan	Multi-hazard	SEND	Curriculum review
Stein et al. (Stein et al., 2024)	Global	Climate	All ages	Conceptual
Kim et al. (Kim et al., 2026)	Global	Climate	All ages	Scoping review
Mercer et al. (Mercer et al., 2009)	Papua New Guinea	Multi-hazard	General	Framework
Walshe & Nunn (Walshe & Nunn, 2012)	Vanuatu	Tsunami	General	Case study
Lessy et al. (Lessy et al., 2025)	Indonesia	Multi-hazard	General	Index development

Author(s)	Country/ Region	Disaster Type	Disability Focus	Design
Chong et al. (Chong et al., 2025)	Philippines	Multi-hazard	General	Survey analysis
Stjernholm et al. (Stjernholm et al., 2025)	Global	Multi-hazard	Mixed	SLR
Watermeyer & Botha (Watermeyer & Botha, 2025)	Global	Multi-hazard	Intellectual	Conceptual
Zhao et al. (Zhao et al., 2024)	China	Fire	Intellectual	Experimental
Chisty et al. (Chisty et al., 2021)	Bangladesh	Flood	Mixed	Qualitative
Maguire et al. (Maguire et al., 2025)	OECD	Multi-hazard	Deaf/hard of hearing	Scoping review
Yore et al. (Yore et al., 2025)	Global	Multi-hazard	Mixed	Conceptual
Le Dé et al. (Dé et al., 2021)	Global	Multi-hazard	General	Case study

4.2 Disaster Types Examined

Figure 4 as well as Table 6 provide a visual depiction of how disasters were divided among different types in the research. The most frequently studied hazard is multi-hazard (n = 38, 48.7%). This choice conforms to the recognition of the heightened risk factors in the archipelago regions. Earthquake-specific papers account for 14 (17.9%); tsunami-specific 9 (11.5%); typhoon/cyclone 8 (10.3%); flood 6 (7.7%); volcano 2 (2.6%); and fire 1 (1.3%). Surprisingly, only a few (n = 7, 9.0%) have looked at climate-induced slow-onset disasters like sea-level rise and drought even though these are expected to exacerbate in archipelagic regions (Stein et al., 2024), (Stein & Stein, 2021).

4.3 Disaster Impact on Disability

Which types of disability the researchers' focus upon impacts on the selection of the studies which collectively form the evidence base. The largest focus out of all types of disabilities detailed was on intellectual disability (29.5%; n = 23); 19 studies (24.4%) focused on physical/motor disability; 14 (17.9%) focused on sensory disabilities (visual and hearing); 12 (15.4%) focus on multiple/complex disabilities; 5 (6.4%) look into psychosocial disability; and 5 (6.4%) have chosen special educational needs without specifying the disability type. Such variation in classification nonetheless points at one major issue raised by Bennett that even minor changes in the definition of disability can lead to a greater level of isolation (Bennett, 2020). Generally speaking, intellectual disability has often been a main target of intervention projects as it has greater representation in the population of inclusive school students in

LMICs. Conversely, studies related to sensory disabilities have, in general, been sponsored by countries of the OECD.

4.4 Overall Themes

Seven key concepts emerged at different moments in the coding and analysis of the data.

4.4.1 Geographical Isolation as a Factor Increasing Vulnerability

The geographical isolation of the Philippines has been recognized as a reason why it is exacerbating the vulnerability of people with disabilities, healthcare workers at the Philippines Red Cross have also acknowledged, that despite the fact that the country is one of the most disaster-prone in the world, there is a scarcity of resilience studies conducted at national and regional levels, which also take into account socioeconomic inequalities and governance (Chong et al., 2025).

Earlier, through a local disaster-resilience index, Orencio and Fujii found out that the Philippines' disaster recognition-implementation gaps (Orencio & Fujii, 2012). On Ternate Island, Indonesia, Lessy et al. demonstrated that the different levels of access to basic services, disaster management systems, risk reduction actions, emergency and recovery preparedness, across the 60 surveyed villages was quite significant (Lessy et al., 2025). Smith et al., in their communication review of children with medical complexity, illustrated how break down in telecommunication and inability to information could greatly add disaster impacts (Smith et al., 2024). The study of coastal governance in Ternate shed light on the failure of budget sharing to adequately support remote archipelagic (Kyren, 2024).

4.4.2 Readiness of Schools and

The Comprehensive School Safety (CSS) Framework and Indonesia's adherence to it (Satuan Pendidikan Aman Bencana/SPAB 2022, 2030) are well-known models of policy (Nisa & Maharani, 2025). Widowati et al., (2023) listed as many as 23 major indicators for Disaster Preparedness and Safety School programs which they classified as 9 school disaster management pillars, 5 safe school facility indicators, and 9 risk reduction education indicators. Syahputri et al.'s work in two coastal high schools in Pacitan demonstrated that the training of teachers and educational staff and the integration of the curriculum were two not optimally implemented aspects; as for disaster mitigation, the establishment of extramural activities was lacking, even though there was implementation through Scouts and Junior Red Cross (Syahputri et al., 2022).Putera et al. after interviewing the authorities and faculty members at tsunami high risk in Padang found out that in spite of institutional collaboration, there are still restrictions in SPAB program deployment, including financial constraints, lack of teacher training, and absence of systematic integration of curriculum (Putera et al., 2025).Khusia ni et al. pointed out that first aid, assembly areas, evacuation routes, and emergency communication protocol alone are not enough without evacuation drill regularity and teacher preparedness training (Khusnani et al., 2023).

Paci-Green et al.'s global baseline survey of CSS policies in 68 countries showed that most countries had enacted emergency management policies for the education sector. However, less than 25% of the countries provide funding for multi-hazard risk assessment and retrofit of weak schools, less than 50% limit the use of schools as temporary shelters, only about 50% require schools to carry out emergency drills, less than 25% include disaster management in teacher training, and only 25% include climate change and DRR in school curricula (Paci-Green et al., 2019). This pattern points to the fact that policy-practice gaps and poor resourcing are big problems in CSS implementation in archipelagic states.

Regarding children with disabilities, on the one hand, Cabatay and Gonzales found that even after the country's initiatives spanning several decades, SEND children are still suffering from the effects of disasters due to the delay in the opening of their special schools and there is a significant lack of a bridge between the public and private special education units (Cabatay & Gonzales, 2024). On the other hand, Cabatay and Pujaningsih analyzed 12 special education schools in Yogyakarta and found that the more the teachers are bothered by challenges, the less compliance their schools show (Cabatay & Pujaningsih, 2025). Capuyan gave a survey to a total of 70 elementary and secondary teachers in Borbon District, Cebu, and even though the level of school preparedness for inclusive DRR was found to be quite high, there were also very significant challenges (Capuyan, 2026).

4.4.3 Teacher Preparedness and Inclusive Pedagogy

In fact, the teachers' willingness and ability to perform well in inclusive disaster risk reduction (IDRR) is one of the key points determining the success of the whole endeavor (Sheehy et al., 2022). Just about 60% out of 769 Indonesian teachers, who took part in Sheehy et al.'s research, reported that disaster risk reduction education (DRRE) has been almost nonexistent, and that the programs used are not accessible to all children (Sheehy et al., 2022). On the other hand, Rofiah et al. presented that teachers need to be equipped with a comprehensive knowledge of inclusive disaster risk reduction education, and children of early ages are the most vulnerable during disasters who need learning programs that are adjusted to their particular needs (Rofiah et al., 2024). Utama et al. stated in their participatory training which used andragogical approaches that a very significant positive change was seen in the teachers' understanding and skills related to the inclusive disaster preparedness which was also evident from the learning materials that were generated during the training (Utama et al., 2025). Furthermore, quasi-experimental results of Rofiah and Kawai showed that DRR education, which is one area of inclusive education, can greatly help prepare students with disabilities, at the same time, it is contributing to the very limited evidence of inclusive DRR in the LMICs (Rofiah & Kawai, 2025). Through the SLR of DRR education in Indonesia Septikasari et al. singled out 6 major strategies including integration through online platforms, multi-stakeholders involvement, school-independent implementation, scout extracurricular, pre-service training, and local regulatory policies (Septikasari et al., 2022).

Through analysis of Japanese childcare teacher training syllabi, Yamawaki et al. spotted a huge gap: only 2.8% out of the 36 nationally and publicly analyzed childcare teacher training institutions included "disaster and childcare" in their curricula, whereas 8.3% incorporated "safety of children with disabilities" (Yamawaki et al., 2025). The UN CRPD Committee, in its 2022 report, regretted the slow progress of

inclusive education implementation in Japan (Yamawaki et al., 2025). Among the barriers identified, Beamish et al. list teacher education and ongoing professional development for students with SEN as the largest and most widespread deficiency in the Asia-Pacific region (Beamish et al., 2024). Mariyam proposed the Collaborative Inclusive Education Model emphasizing the close association of multi-stakeholders, differentiation instruction, and the nurturing of an inclusive school culture (Mariyam, 2025). Sewell et al. defined Universal Design for Learning (UDL) as a theory of inclusion that is based on multiple means of representation, engagement, and action/expression (Sewell et al., 2022). Anggraini & Subasno support the argument that UDL is the best tool to ensure that the education system upholds educability for all children with a special emphasis on children with disabilities (Anggraini & Subasno, 2024).

4.4.4 The Role of Families in DRR

Family preparedness was one of the greatest help for inclusive DRR, and the major point of raising awareness (Hipper et al., 2018), (Wolf-Fordham et al., 2015). Wolf-Fordham et al. disclosed that there is a marked discrepancy between parents who reported that they are "very well prepared" and the data that shows they have hardly carried out even a half of the recommended actions, and they also expressed a widespread need for training and other preparedness supports (Wolf-Fordham et al., 2015). Hipper et al. found out that apart from needing more knowledge and information, parents of children with special healthcare needs also require training to develop effective preparedness plans; they are often not aware of the disaster plans of their children's schools and the schools are often not able to meet parents' expectations during disasters (Hipper et al., 2018). Mann et al., through a scoping review, identified children and adolescents with disabilities as a group with multiple vulnerabilities who are exposed to disasters, terrorism, and the COVID-19 pandemic, and that sociodemographic characteristics have an influence on their preparedness behaviors (Mann et al., 2021). Smith et al. emphasized the need for two-way communication and better healthcare system connectivity to inform families during emergencies (Smith et al., 2024).

Flanagan et al. showed that family emergency preparedness can be enhanced through inter-professional collaboration among health personnel, disability advocates, and public safety workers. The main theme in their comments was health personnel's lack of emergency preparedness as a family need (Flanagan et al., 2023). Wolf-Fordham et al. claimed that it should be health professionals, disability advocates, and public safety personnel who initiate discussions (Wolf-Fordham et al., 2015). These results, point at the value of integrated family-centered preparedness models in archipelagic contexts.

4.4.5 Traditional Knowledge and Community Resilience

Indigenous knowledge is often recognized and advocated as a valuable resource for inclusive DRR in remote archipelagic settings but, so far, it has been little utilized (Mercer et al., 2007). Mercer et al. combined indigenous and scientific knowledge into a model to address DRR and at the same time called for the focus to be on reducing the vulnerability of indigenous rural communities of Small Island Developing States (SIDS) (Mercer et al., 2007), (Mercer et al., 2009). Their team's fieldwork in PNG

demonstrated how to combine and balance the two knowledge bases to reduce vulnerability in communities affected by environmental hazards (Mercer et al., 2009). Walshe and Nunn revealed that indigenous kastom knowledge was the main reason for the proper tsunami response and that only five fatalities had occurred, out of approximately 300 persons in the threatened population (Walshe & Nunn, 2012). Gero et al. cited Fiji and Samoa as examples in the Pacific where on the basis of local knowledge, participation in community-based DRR and adaptation to climate change measures is feasible (Gero et al., 2011).

4.4.6 Warnings and Technology

Disability-inclusive Disaster Risk Reduction (DRR) cannot be realized without the availability of inclusive early warning systems (Stough & Kang, 2015). Chisty et al.'s qualitative research on flood-prone regions of Bangladesh indicated that even when persons with disabilities do receive a warning of the flood, they do not later have the ability to respond effectively; in fact, there are substantial gaps in terms of the various components of the early warning system (EWS), namely monitoring, warning service, dissemination, communication and response capacity (Chisty et al., 2021). It was found by Muda et al. (2018) that most temporary shelters are inaccessible to persons with disabilities in terms of obtaining supplies and assistance. Looking across OECD countries, Maguire et al., through the methodology of a scoping study, looked at deaf, Deaf, or hard-of-hearing people and identified three factors influencing their access to and participation in communication during emergencies: emergency warnings, alerts, and announcements; emergency sector response; and emergency preparedness (Maguire et al., 2025). Lemus and Suarez made a suggestion for the development of an early warning system such as one that is based on light signals and vibrations specifically for deaf or hard-of-hearing persons (Lemus & Suarez, 2025). Shcholokov et al. advocated multi-channel alert and evacuation management systems incorporating tactile, light, vibration, and acoustic elements for children with deafness or hearing loss in Ukraine (Shcholokov et al., 2025).Looking into disability-inclusive warnings within the UN "Early Warnings for All" initiative, Yore et al. came to a conclusion that the aim of reaching everybody including persons with disabilities can only be achieved through creativity and flexibility, intersectionality, contextualization, and connectivity (Yore et al., 2025).

4.4.7 Inclusive Evacuation Planning and Universal Design

Universal Design for Learning (UDL) and Universal Design (UD), in general, have been very strongly and effectively representing the concept of inclusive evacuation theory. A scoping review of evacuation solutions for individuals with functional limitations identified six main evacuation solution types: notification, wayfinding, egress, building design, strategy, and training programs, illustrating that work on these types of emergencies should be extended and the consideration of a greater variety of impairments should be included (Bochi et al., 2023). Zhao et al., by an experimental analysis of evacuation involving 49 children with intellectual disabilities aged 7, 16 discovered that drill announcement status significantly affected recognition and pre-movement times; floor level significantly influenced evacuation processes; and dependency behavior on teachers was prevalent (Zhao et al., 2024). In support of the fact that children behave differently than adults during evacuations, Yao et al.

performed an experimental study whereby they analyzed the evacuation behavior of kindergartners (Yao et al., 2023). Fire drills that were conducted in school and that were analyzed by Hashempour et al. helped identify kindergarten children's behavior characteristics, for instance the lack of personal space and group-based movement, the study implies the need for evacuation models designed specifically for children (Hashempour et al., 2025). Dederichs et al. pointed out that, as regards Universal Design (UD) principles, intuitive design, accessibility, equitable use, these three provide a theoretical frame for designing alarm systems and evacuation routes, and that regulations that deal with how people enter buildings generally neglect how to evacuate safely (Dederichs et al., 2020).

Table 5
Geographical Distribution of Studies

Region	Number of Studies	Percentage
Indonesia	24	30.8%
Pacific Islands	14	17.9%
Philippines	11	14.1%
Global/cross-regional	18	23.1%
Japan	3	3.8%
Caribbean SIDS	2	2.6%
Other	6	7.7%
Total	**78**	**100%**

Table 6
Regional Distribution of Studies

Disaster Type	Number of Studies	Percentage
Multi-hazard	38	48.7%
Earthquake	14	17.9%
Tsunami	9	11.5%
Typhoon/Cyclone	8	10.3%
Flood	6	7.7%
Volcano	2	2.6%
Fire	1	1.3%

Table 7
Disaster Types Addressed

Disability Category	Number of Studies	Percentage
Intellectual disability	23	29.5%
Physical/motor disability	19	24.4%
Sensory (visual, hearing)	14	17.9%
Multiple/complex disabilities	12	15.4%
Psychosocial disability	5	6.4%
SEND (without specification)	5	6.4%

Table 8
Sample DRR Interventions

Intervention Type	Examples	Authors
School-based DRRE programs	Disaster mitigation education for SEND	Rofiah et al.; Sheehy et al.; Utama et al. (Rofiah & Kawai, 2025), (Sheehy et al., 2022)
Teacher training	Participatory andragogy training	Utama et al.; Rofiah et al.; Yamawaki et al.
Family preparedness	Interprofessional collaboration	Wolf-Fordham et al.; Flanagan et al.; Mann et al.
Comprehensive School Safety/SPAB	CSS implementation	Nisa & Maharani; Syahputri et al.; Putera et al.; Widowati et al.
Curriculum integration	DRRE in school curricula	Septikasari et al.; Desilia et al.; Mutanda & Ngcamu; Masocha et al.
Early warning systems	Multi-channel alerts for hearing impairment	Sanchez & Jimenez; Shcholokov et al.; Maguire et al.; Chisty et al.; Yore et al.
Evacuation research	Experimental evacuation studies	Zhao et al.; Yao et al.; Hashempour et al.; Boon et al.; Dederichs et al.
Indigenous knowledge integration	Kastom knowledge, IK frameworks	Mercer et al.; Walshe & Nunn; Gero et al.
Community-based resilience	Village resilience indices	Lessy et al.; Chong et al.; Kong
Psychosocial support	School-based programs	Gibbs et al.; Aslan; Tan & Gümüş; Zengin

Table 9
Main Findings Across Studies

Theme	Key Finding
Sendai implementation	Limited progress over the past decade, no significant regional differences
Mortality disparity	Persons with disabilities have 2 to 4 times higher disaster mortality rates(Bah, 2025)
Geographic concentration	Indonesian research dominates; Caribbean and Micronesian gaps persist(Djalante, 2018)
Disability exclusion	Children with disabilities largely absent from DRR initiatives
Teacher preparation	Teachers lack training in inclusive DRRE, especially in SEND contexts (Yamawaki et al. 2025; Sheehy et al. 2022)
Family underpreparedness	Even "well-prepared" parents took fewer than half of the recommended action steps
Indigenous knowledge	Significant in reducing tsunami fatalities in the Pacific
School policy gaps	Less than 25% of countries include DRR in teacher training globally(Paci-Green et al., 2019)
Disability-specific learning	Quasi-experimental evidence shows inclusive DRR programmes improve preparedness
EWS inclusivity	Critical gaps in monitoring, dissemination, communication, and response capability
Evacuation behaviour	Floor level, dependency, and drill announcement significantly affect evacuation of children with disabilities
Participation	Children with disabilities largely absent from research, programmes, and evaluations
Conceptual evolution	Move from medical to social/relational/intersectional disability lens

Table 10
Research Gaps and Future Directions

Gap	Future Direction
Caribbean SIDS underrepresentation	Comparative Caribbean and Micronesian SIDS studies
Pacific Indigenous knowledge with a disability lens	Co-designed studies with Indigenous disabled communities
Assistive technology in disasters	Kinetics, sensory substitution, multi-channel alerts
Teacher training evaluation	Longitudinal studies of training impact on inclusive preparedness
Family-school interface research	Co-developed protocols between parents and teachers
Climate slow-onset hazards	Studies on sea-level rise, drought, and heatwaves in SIDS
Disaster socioeconomic data	Disability-disaggregated data infrastructure
Digital and remote pedagogies	m-Learning, virtual reality, AI-supported DRR for inclusive education
Intersectional analysis	Disability × gender × age × Indigenous × rural-urban
Recovery and rehabilitation	Disability-inclusive Build Back Better in SIDS contexts
Policy implementation	From rhetoric to practice—benchmarks for monitoring compliance
Long-term mental health	Disability-specific longitudinal disaster mental health research

5. Discussion

5.1 Synthesis Across Regions and Contexts

The update of the analyzed documents paints a picture full of contradictions in different aspects of inclusive DRR in isolated archipelagic areas. Indonesia and Philippines together with Pacific Island nations are also vulnerable to tectonic and climate hazards; however, the differences in governance capacity, educational facilities, and disability policy implementation are large. Indonesia's national SPAB policy is a three-pillar framework at the highest policy level. Still, the papers here reviewed continually point out the implementation gaps in Indonesia particularly in special education schools (Cabatay & Gonzales, 2024; Cabatay & Pujaningsih, 2025; Nisa & Maharani, 2025). After Typhoon Haiyan in 2013, the highly decentralized disaster risk reduction and management system of the Philippines was also largely reformed to focus on accountability. However, they still lack resources in the remotest island municipalities (Chong et al., 2025; Kong, 2023; Orencio & Fujii, 2012). In fact, on the Pacific Island states,

variations are so far-reaching that Fiji, Samoa, Vanuatu, and Papua New Guinea stand out as the most studied cases.

Comparing cross-regional situations shows several important patterns.

Firstly, all archipelagic states have officially adopted the Sendai Framework's disability-related priorities; still, the difference between the spoken commitment and the actual operational implementation is huge. Watermeyer and Botha have demonstrated that disability complexities continue to be underestimated in DRR policy, and simply using inclusive language is not enough (Watermeyer & Botha, 2025). Secondly, the enormous amount of Indonesia's research is in stark contrast to the technically advanced Pacific Island studies that feature indigenous knowledge more often as a source of resilience. In fact, this points to the regional research traditions, funding patterns, and academic infrastructure rather than the differential need.

Third, the findings relating to teacher preparedness emerge very strongly as a theme. Indonesia and Japan teachers, who experience the challenges, name insufficient training, lack of disability-inclusive teaching materials, and minimal institutional support as their main reasons (Sheehy et al., 2022), (Yamawaki et al., 2025). The link formal compliance with frameworks (e.g., SPAB) and actual implementation difficulties is complex: Cabatay and Pujaningsih noted that higher compliance is associated with lower implementation challenges; however, this correlation is not perfect and depends on resource availability (Cabatay & Pujaningsih, 2025).

Fourth, going by the documented information, the use of indigenous knowledge in tsunami survival is well elaborated in the Pacific contexts, but the situation is quite different when it comes to the conjunction with disability inclusion. The Vanuatu research by Walshe and Nunn, the PNG ones and the Gero et al. Pacific study which have all highlighted the potential of kastom, customary knowledge, and ecological awareness to save human lives (Gero et al., 2011; Mercer et al., 2007; Mercer, Kelman, Suchet-Pearson, et al., 2009; Mercer, Kelman, Taranis, et al., 2009; Walshe & Nunn, 2012). However, there was no paper among those reviewed that explicitly addressed the use of indigenous knowledge system in inclusive DRR and the integration of disability-inclusive views with indigenous kastom. This, in effect, is the major integration gap that future research needs to address.

5.2 High-Income versus LMIC Contexts

Capable of performing sophisticated research at a technical level, high-income countries mostly rely on evidence generated through scientific and technological advances. They also often focus on measuring, monitoring, and differentiating the evacuation of people with various functional limitations (Bochi et al., 2023; Maguire et al., 2025; Zhao et al., 2024). On the other hand, LMIC research in archipelagoes is mostly qualitative, mixed-methods, quasi-experimental, or case study focused (Cabatay & Gonzales, 2024; Rofiah et al., 2021; Rofiah & Kawai, 2025; Sheehy et al., 2022). The methodological gap between the two also implies the size of research materials and at the same time, generates complementary

evidence. High-income literature mostly produces generalizable knowledge on evacuation and warning system design while LMIC literature brings in rich context and community-based nuances.

Maguire et al. indicated that their initial research on the hearing loss community's experience in OECD countries revealed several aspects to be working on for accessibility and inclusion: issuing warnings in multiple formats and through different channels, first responders being trained, emergency plans taking into account diverse needs, and training and educational materials being accessible (Maguire et al., 2025). However, while their examples can be transferred to LMIC archipelagic areas, the actual possibility of them applying directly would be severely constrained by the level of infrstructure available. Research gap between high-income data and LMIC practicality is yet another issue to be tackled at a research level.

6. Conclusion

By this systematic literature review, we have collected and summarized a body of recent worldwide evidence on the issue of inclusive disaster risk reduction (DRR) for children with disabilities dwelling in remote archipelagic areas. This study has shown that even though the literature available has greatly increased after the adoption of the Sendai framework and that disability inclusion has been highlighted in international frameworks, the reality of inclusive DRR practice in remote island areas is still very limited and unequal. Consequently, children with disabilities in archipelagic areas will still find their already vulnerable situation exacerbated by isolation, exposure to multiple hazards, lack of specialist services, exclusion from education, etc., which together with unpreparedness, bad response and recovery, and other disability-inclusive systems shortcomings.

This systematic review has four major advantages. Firstly, it is a milestone in the field because this is the very first systematic review that is completely devoted to inclusive DRR for children with disabilities in remote archipelagic regions. Secondly, the original IDRR-CDAR Framework has been developed through this study to theoretically advance the ongoing dialogue. This framework of ours, including the SFDRR, the social model of disability, intersectionality, child-centered DRR, inclusive education through Universal Design for Learning, community-based DRR, and Bronfenbrenner's bioecological systems theory, in one way or another unites these. Third, the review highlights the major research gaps and outlines a blueprint for future studies in a number of areas including geographical, methodological, theoretical, and applied. Fourth, the study points to major changes in education policies in humanitarian education and also shows the potential of human rights and education for children with disabilities even in calamity.

The 2023 global survey of UNDRR is a reflection of Sendai framework at mid-decade and points to the situation in different regions remaining unchanged to require urgent actions(UNDRR, 2023). These remote archipelagic parts of the world are not only the frontline of the climate change impacts but they are also a powerful indictment of the global agenda for disability-inclusive DRR failure (Vousdoukas et al., 2023). Children with disabilities along with their families, schools, and communities should be the focus of this work.

Without community and local level participation/reliance, inclusive DRR in remote archipelagic regions cannot be achieved. It is inevitable to link global framework with local knowledge systems first to recognize disability as a cross-cutting issue, to engage children as active participants, to strengthen families and schools, and finally to fund inclusive preparedness, response, and recovery. With this, the IDRR-CDAR Framework is to be one more tool for this work. The next ten years of the Sendai Framework implementation coupled with the pre-2030 period represent a major opportunity for turning the vision into reality.

Declarations

Conflict of Interest

The authors declare no conflict of interest.

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Data Availability Statement

All sources analyzed in this systematic review are publicly available in the databases specified in the Methods section. Extracted data are available from the corresponding author on reasonable requestt

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Figures

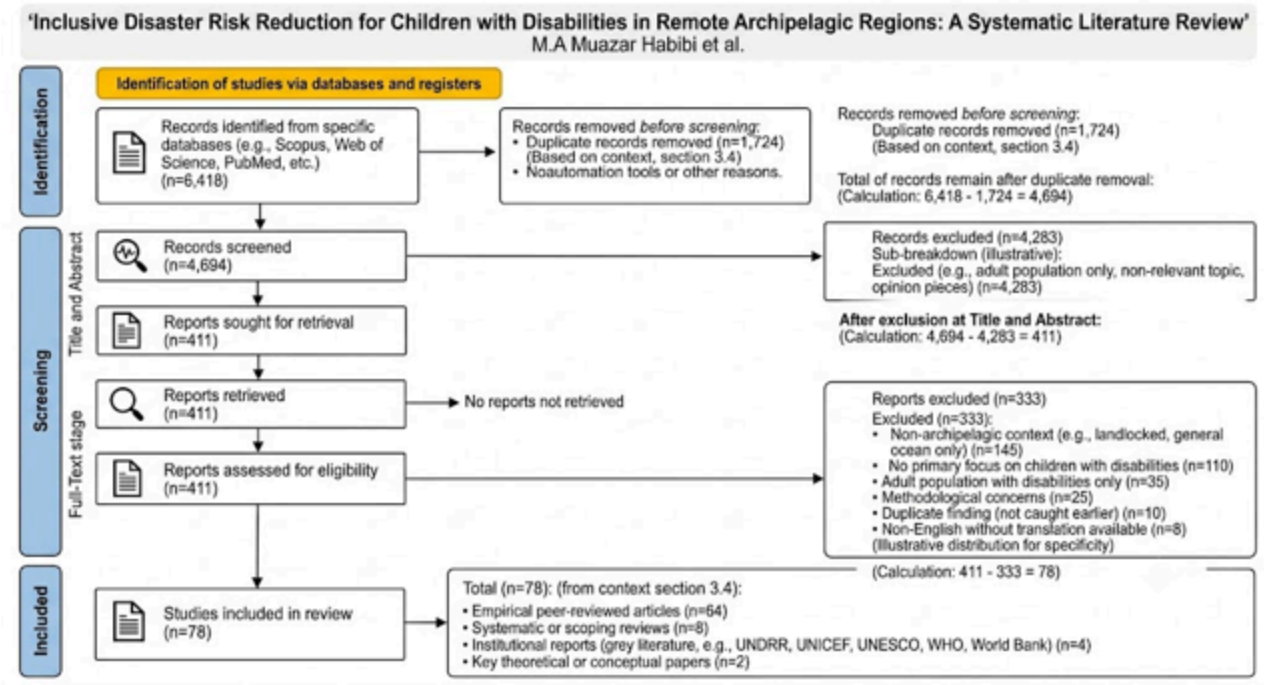


Figure 1

PRISMA 2020 flow diagram illustrating the literature search and screening process, resulting in 78 included studies.

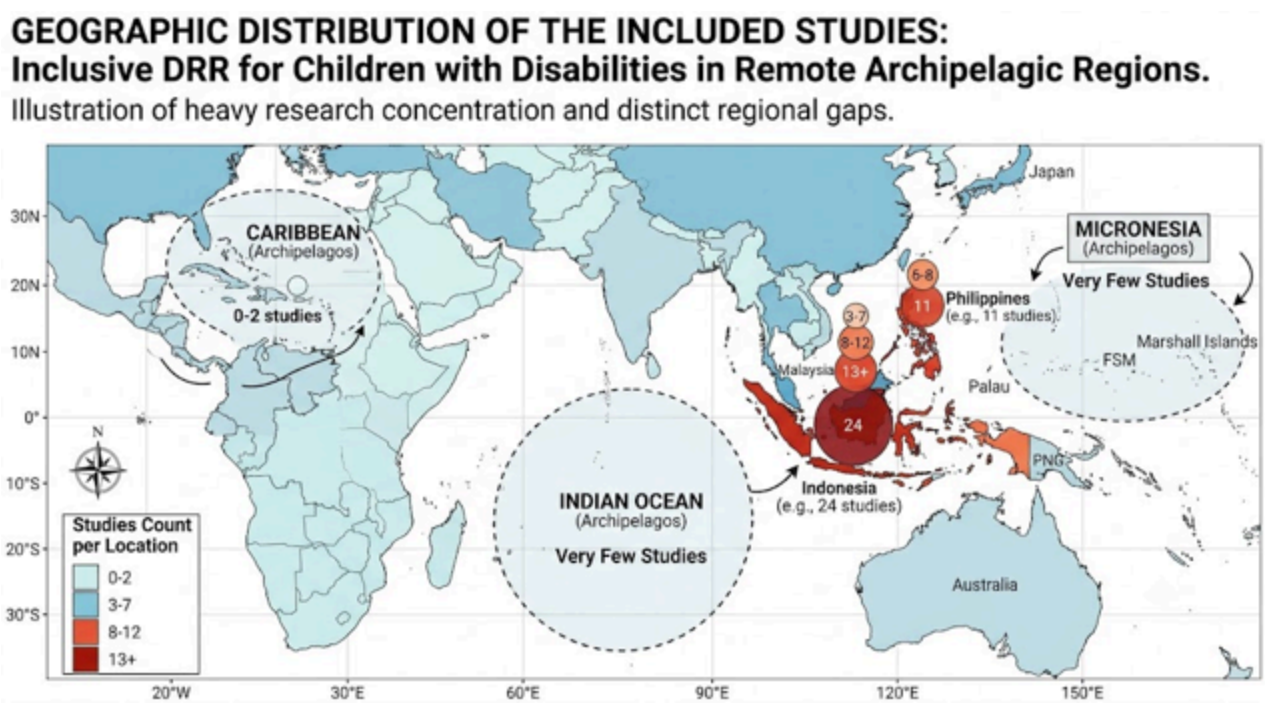


Figure 2

Geographic distribution of the included studies. The map illustrates the heavy concentration of research in Indonesia and the Philippines, while highlighting the distinct gaps in the Caribbean, Indian Ocean, and Micronesian archipelagic contexts

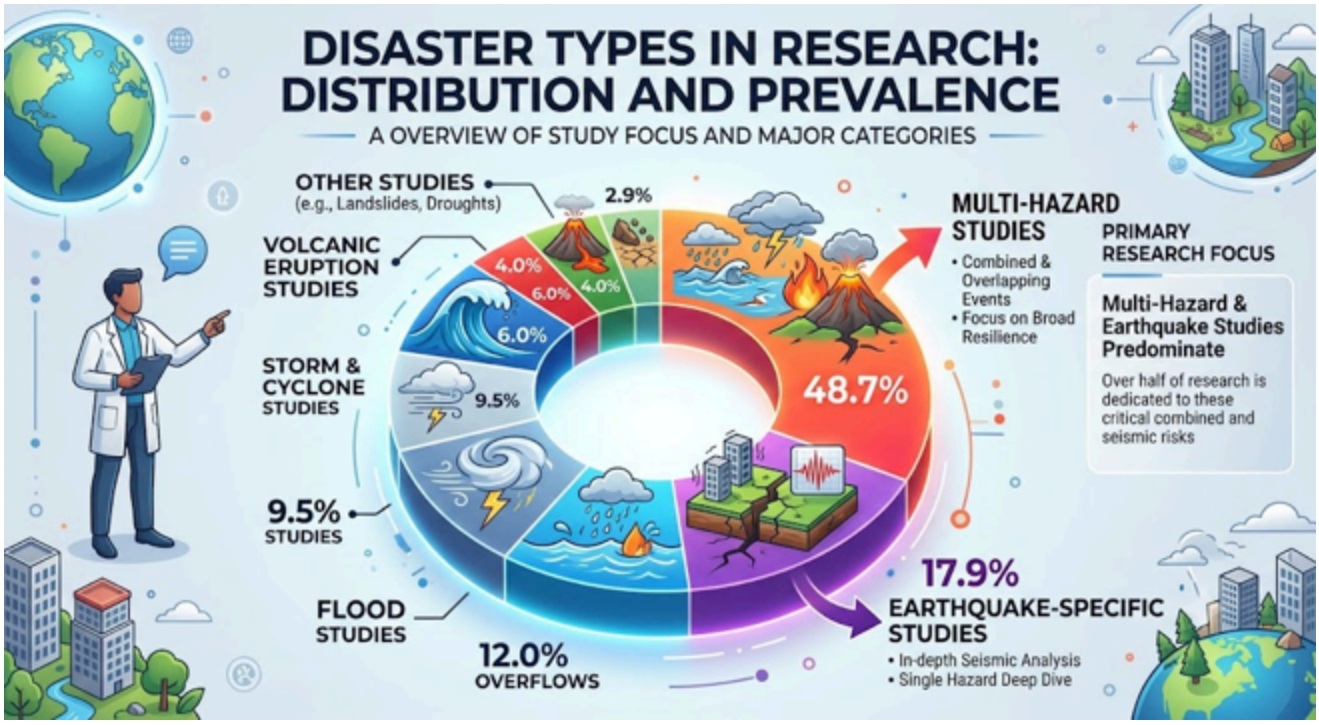


Figure 3

Visual depiction of how disasters were divided among different types in the research, emphasizing the high prevalence of multi-hazard (48.7%) and earthquake-specific (17.9%) studies

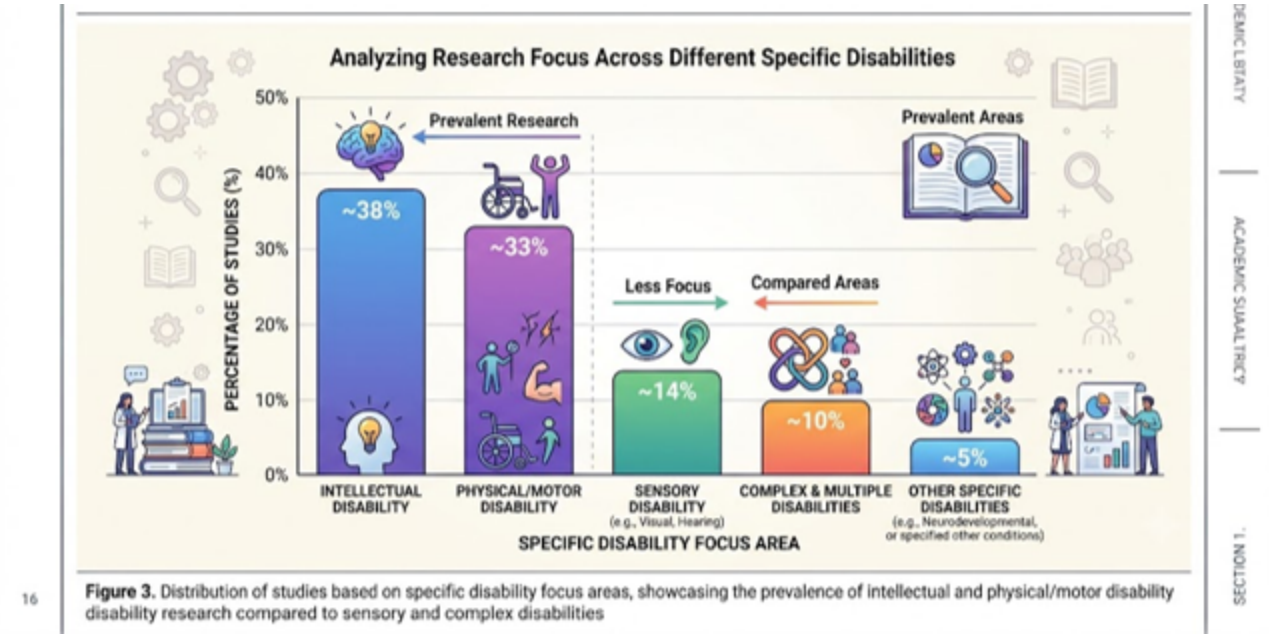


Figure 4

Distribution of studies based on specific disability focus areas, showcasing the prevalence of intellectual and physical/motor disability research compared to sensory and complex disabilities

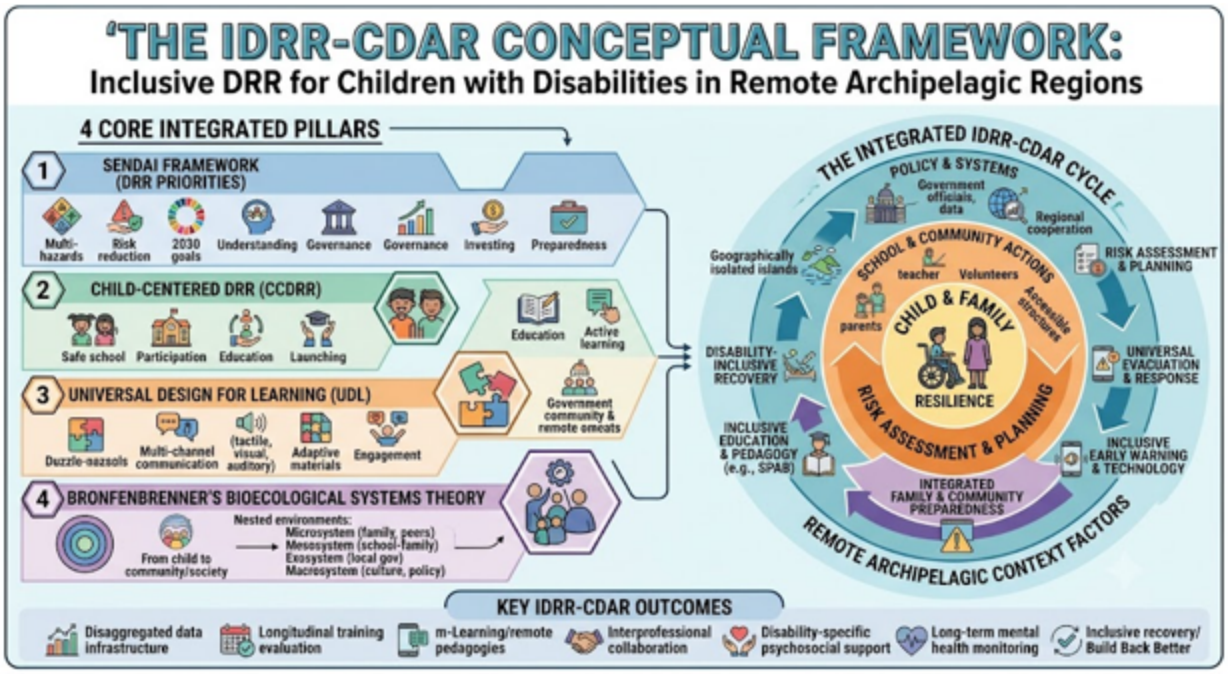


Figure 5

The IDRR-CDAR Conceptual Framework. Integrating the Sendai Framework, child-centered DRR, Universal Design for Learning (UDL), and Bronfenbrenner's bioecological systems theory to guide inclusive DRR in remote archipelagic regions.