

RESEARCH PAPER

# Breaking the Circuit of Information Poverty: Early Warning Messages and DHH Communities in Vietnam

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# ABSTRACT

People regardless of their abilities may face the ramifications of natural disasters. However, disaster communications often ignore the lived experience of people with disabilities. Early warning communications, which can better prepare people for disasters, are not the exception. The design and delivery of early warning communications are often auditory, excluding the lived experience of the Deaf and Hard of Hearing (DHH) individuals. While studies intersecting disaster and disabilities have gained traction, attention given to the DHH remains limited. Through interviews and group discussions with Deaf organizations and DHH individuals in Vietnam, this study found a range of grassroots efforts that the DHH performed when the early warning and disaster communications were exclusionary. It documented the roots of disaster-related information poverty within the DHH communities and their agency to overcome it such as co-creating inclusive content with trustworthy others and hearing people. The findings potentially inform early warning message designers and disaster communication programmers to better incorporate the DHH lived experience to disaster management plans.

**Keywords:** early warning, disaster, emergency, disability, Deaf and Hard of Hearing, Vietnam

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# 1. INTRODUCTION

Natural disasters affect people regardless of their characteristics and capabilities, but the methods in which incoming disasters are often communicated can leave groups who have been historically marginalized such as people with disabilities (PwDs) behind (Good, 2022). While Disability Disaster Risk Reduction (DiDRR) has gained traction, implementation is rather inconsistent (UNDRR, 2023). Such inconsistencies are reflected in the early warning systems that are often built on an audible sense, neglecting the need of the Deaf and Hard of Hearing (DHH). In low-income countries, which often struggle to meet basic needs and address development priorities, PwDs endure multidimensional sufferings, discriminatory systems, and are faced with barriers to access to education and public services (Marchildon, 2018). At times of disasters, they often face greater risks because the existing disaster management plans are ill-equipped to meet their needs (Twigg et al., 2018).

Studies intersecting disabilities and disaster have revolved around strengthening capacities of PwDs, disaster-related organizations, and policy advocacy. Studies situated in Australia and Indonesia suggest the importance of people-centered approaches and organizational collaboration to better prepare and protect PwDs prior and during disasters (Pertiwani, 2022; Villeneuve et al., 2021). In Cambodia, women with disabilities have reportedly been the most affected by disasters but the least to have access to disaster-related information (Gartrell et al., 2020). DiDRR programs are practiced differently by the practitioners and disabled people organizations (DPOs) in Indonesia and the Philippines. A rather technical and interventionist approach to disasters is observable among the practitioners whereas DPOs view DiDRR programs can be more reflective of the lived experience of the disabled people by connecting the intervention with a broader social aspect constructing disabilities. In this regard, capacity building programs remain critical, but they are expected to be designed specifically for PwDs (Kusumawardoyo & Tamtomo, 2022).

While such studies have contributed to documenting and advocating the needs of PwDs, they often treat disabilities as universal rather than idiosyncratic. Although a collective experience as a disabled person may unite PwDs, their lived experiences are often nuanced and fragmented (Mitchell & Snyder, 2016). A wheelchair user may have no difficulty in accessing disaster-related information but may express a need for a more accessible evacuation route. A Deaf person is likely to hold more capacities to go through the evacuation route, but they may receive early warning messages late as they are unable to capture the sound of the siren used to alert everyone to evacuate.

In that respect, aggregating different types of disabilities has the potential to reduce the complex lived experience of a certain group of disabled people. Thus, perpetuating the chronic ableism often used as the basis for governing societies (Campbell, 2009).

In response, this study focuses on the lived experience of the DHH communities in a developing country. It holds the potential to broadly contribute to the existing disability studies that have been largely situated within the context of rich and democratic countries (Rohman, 2021). In particular, this study contributes to the intersection of disaster and disability studies that have limitedly paid attention to the DHH communities' lived experience. It illuminates the interactions of the DHH communities with disaster-related information in an ecosystem where the role of the government is centralized such as Vietnam.

## 2. CONTEXT

Vietnam has been reported as among the countries affected by natural disasters associated with climate change such as floods, landslides, and typhoons. Disaster risk reduction and recovery programs are apparent and offer opportunities for a more integrated disaster management system (CFE-DM, 2021). The early warning early action system has been modernized but institutional and financial issues remain as ongoing threats to the system sustainability (Lan Huong et al., 2022). Like in other countries, such a system relies heavily on sound, which can be inaccessible to those with hearing issues. Admittedly, there have been various disaster-response capacity building programs delivered in disaster-prone areas in the country. Compared to other countries in the region, Vietnam is arguably more experienced in dealing with emergency situations such as the recent COVID-19 pandemic and seasonal natural disasters (Asian Disaster Preparedness Center & UN Office for Disaster Risk Reduction, 2020).

Having said that, challenges remain. While inclusion is envisioned in the broader disaster response plans, PwDs reportedly suffer from a lack of information and have a low disaster-related program engagement (UNDP Viet Nam, 2023). With support from multilateral organizations, the government plans to implement social inclusion principles more consistently in the disaster reduction partnership plans, as PwDs need to have more access to resources and be capable of autonomously preparing to face disasters (Vietnam+, 2024).

Locally, the view and narrative of PwDs are often situated within the spectrum of inabilities and social burden as it has been observable in the existing norms and cultural practices. The stigmatization of disabilities has led to a medicalization of the issues while social approaches to disabilities are nearly absent (Nguyen, 2015). Although Vietnam has ratified the UN Convention on the Rights of Persons with Disabilities (CRPD) in 2015, public services and infrastructures have been reported to be unable to meet the need of the disabled (UNPRPD, 2021). The inconsistent implementation of the Convention has also manifested in the limited support for organizations for disabled people, which often rely on international funds and community support for delivering their missions to assist and improve the life quality of PwDs (Rohman, forthcoming). Encountering difficult times when available resources are minimal, PwDs resort to their own communities to survive (Rohman & Pitaloka, 2023b). Together with issues surrounding disability data collection and its usage for delivering assistance (Rohman et al., 2023), technological affordances and digital divide are lingering challenges to optimally use digital platforms for disseminating disaster-related information. On the ground, uneven quality digital infrastructure between urban and rural areas and that many PwDs are unable to access and afford digital technologies have contributed to widening information gap between the abled and disabled.

Like other PwDs, the DHH in Vietnam struggle with getting the support they need because of complex reasons. There are approximately 1 million Vietnamese who self-identify as unable to hear. Most schools do not have the resources necessary to deliver DHH-friendly teaching and learning activities while sign language training centers and schools limitedly operate in major cities (Duy, 2017). Observationally, many DHH are confined at home as parents and family members believe that is a way to protect them from harm. Consequently, not only do they have a limited understanding of the Vietnamese language but also signs as their lexicons are underdeveloped due to a lack of interactions with their fellow DHH, where new signs are learned and exchanged over time. Such lived experience, while observable in everyday life, has only been partially considered in the efforts to improve the wellbeing of the DHH in general and to strengthen their capacity to live with disasters in particular (Tien et al., 2022). Thus, DiDRR is still largely imaginary, at least in the eyes of the DHH.

## 3. LITERATURE

This article is positioned at the junction of information behavior, disaster, and disability studies. It departs from the concept of information poverty to engage with the absence of information in human interactions with others and technologies. The concept explains the lack of information and inability of marginalized groups to meet their information needs due to the fitness of the information to their life (Chatman, 1996). People need information but it is unavailable, inaccessible, or they are unable to afford it due to socio-technical, cultural, and economic reasons, reducing their capacity to survive and advance (Marcella & Chowdhury, 2020). In this regard, information poverty is not an individual problem but rather entangled with a broader information ecosystem in which people are embedded. One is poor informationally because the system is silent for their information needs. Information poverty thus originates from the perpetual marginalization and widening social inequality (Peterson-Salahuddin, 2024), as injustices and capitalistic-driven economic governance become the invisible values dictating politics and socio-cultural milieus.

With that understanding, information poverty is interrelated with the technological, socio-economic, and cultural divides (Yu, 2006). The design and deployment of technologies in social governance (e.g., digitalization of public services, overreliance on social and mobile media for information sharing tools) often (un)intentionally marginalize groups who are not digitally astute and literate. Digital solutions frequently assume that the targeted users possess sufficient education levels and economic sources to comprehend information being disseminated and can afford to use the necessary technologies. Thus, the benefits are concentrated to those with adequate resources and capabilities (van Dijk, 2005). In broader terms, the information poverty is a byproduct of ignorance and neglect of the information senders to sufficiently understand the norms, values, and lived experience of the information recipients (Rogers, 2010) as reflected in the culturally unfit use of technologies, formats, languages, and designs for responding to emergencies, which if remained unaddressed will lead to a normalization of inequality (Ellcessor, 2022).

Groups who have been historically marginalized such as PwDs are often informationally impoverished during emergency situations such as natural disasters, pandemic, and violent events (O'Sullivan & Phillips, 2019).

Ableism, as in the inclination to cast able-bodied needs and norms upon the disabled (Campbell, 2009), entangled with social stigma and preconceptions towards disabilities, are ingredients for systemic informational poverty. The disabled are forced to endure information void as policy makers, programmers, and responders to emergencies are ill-equipped with creating inclusive measures to protect everyone during critical times. Moreover, the socio-cultural and political constructions of disabilities as socio-economic burden, the legacy of bad karmas, and medical problems (Nario-Redmond, 2020) has further pushed the disabled to the periphery of disaster response plans (Lowy Institute, 2022). Their contribution and participation to public life are restricted, making the disabled second-class citizens who must continuously fight for their basic rights and needs (Beckett & Campbell, 2015).

Attached to larger social structures are the unmet information needs of PwDs that have been widely documented in numerous natural disaster and emergency related studies. While the wheelchair users may know the evacuation route, they may have to wait longer, and the evacuation camp may lack inclusive sanitary facilities (Ronney & White, 2007). The Blind and visually impaired individuals' information stocks and capacity to self-evacuate and protect families during natural disasters are minimal (Fatin et al., 2020). More attention should be given to increasing the capacity and information needs of children with disabilities (Abdulhalim et al., 2021). Although progress has been made in the attempts to design and deploy more inclusive disaster reduction, response, and recovery programs, protecting the disabled prior to and during natural disasters, as well as promoting seamless multi-stakeholder collaboration, remain challenging (Pertwi, 2022). Enabling PwDs to mitigate risks is considered a premium as chaos, primarily in places with a limited disaster response experience, is inevitable when a disaster strikes. One way to achieve that is to design a more inclusive early warning and message system (Chisty et al., 2021), primarily for the DHH who are often deprived of information because of accessibility issues.

### **3.1 THE DHH AND DISASTERS**

Studies intersecting disaster and disabilities tend to view disabilities as a homogenous population despite their diversity and complex lived experience. A focus on DHH is growing, as well as the efforts made to design a more inclusive early warning message for them. Light, image, and text have been suggested as compositions to be included in the existing early warning systems that are often designed auditorily (Kamau et al., 2018).



Visual materials are preferred as they fit with the lived experience of the DHH when there is a need to search for disaster related information, particularly among those who only sign to communicate and possess lower reading skills and capability with local languages. The fact that many early warning systems are audible indicates an exclusionary approach to providing timely information, which is critical for mitigating greater risks and better disaster preparations. Thus, designing and delivering inclusive disaster response plans may create an environment for everyone to live with disasters safely (Ton et al., 2020).

The scarcity of resources and limited availability of sign language interpreters have also contributed to the absence of DHH-accessible information in emergency and disaster responses (Calgaro et al., 2021). Although sign language is among the most languages taught in the US, emergency preparedness materials are hardly readable to the DHH (Neuhauser et al., 2013) and thus sign language interpreter inclusion in the disaster response plans is suggested (Bennett et al., 2018). First responders have been suggested to learn a basic sign language (Roberts, 2018) and capacity building activities and communication strategies targeted to the DHH to programmatically equip the parties directly involved in the disaster response plans (Tannenbaum-Baruchi et al., 2014). In developing countries, members of DHH communities, primarily Deaf children, have limited access to public services due to communication barriers and minimal institutional support (Jaiyeola & Adeyemo, 2018; Masuku et al., 2021). Disaster management is under-invested due to multidimensional reasons (IMF, 2019) and sign-language education and learning centers are under-developed (Ali et al., 2021). Therefore, in such a circumstance, the well-being and safety of the DHH community is at a greater risk than the larger population as they are less equipped to face disasters.

When accessible early warning messages and disaster-related information is absent, the DHH tend to rely on their vision, gut-feeling, and others to prepare and protect themselves prior to a disaster (Cooper et al., 2021). As most warning systems are designed to be audible, seeing becomes the practice to seek information and make decisions in response to the anticipated disaster. Guessing, which is based on personal experiences and natural habits, is a mechanism the DHH often perform when the early warning system remain neglectful of their lived experience. Paired with these, they rely on significant, trustworthy others for seeking information and support as their existence is unrecognizable due to their social invisibility in the disaster response planning process. Such a personal agency is a direct response to the perpetual ignorance of their information rights and suggests a collective action that is performed to protect themselves and others when a systemic exclusion persists (Rohman & Pitaloka, 2023a).

With the foregoing discussion on information poverty, disasters, and disabilities in mind, the following research questions are posited:

1. How does information poverty manifest in the lived experience of DHH communities living in disaster prone areas in Vietnam?
2. How do the DHH communities respond to the limited availability of accessible early warning messages and disaster-related information in general?
3. What are approaches to creating an inclusive early warning and disaster preparation plan for the DHH communities?

## 4. METHOD

This study was based on 20 interviews and 10 focus group discussions (FGD) data collected from November 2023 to January 2024 in Vietnam. The interviews lasted for approximately two hours. The participants (n=20, 10 female) were affiliated with Deaf associations and clubs in Quang Ngai (3), Hue (2), Da Nang (2), Dak Lak (2), and other cities (11). The average age was 31 years old, all identified as DHH, and 40% held a chairperson position. Most of them were high school graduates and only 1 was a university graduate. The FGD (n=88, 47 female) comprised 8-10 people who identified themselves as DHH/group and lasted for at least one hour. The participants' average age was 28 years old. Respectively, 54 and 34 lived in Central and South Vietnam. Among these, 30 and 28 had experienced typhoons and floods; 21 had not experienced natural disasters firsthand. The rest reported had experienced other disasters such as earthquakes, thunderstorms, landslides, and heatwaves. The participant's highest education level was vocational school (1). Many graduated from elementary (43) and middle (33) schools, 7 were high school graduates, and 4 did not go to formal schools. See Appendix 1 and Appendix 2 for research participants' demographic data.

We collaborated with a sign-language learning center to recruit participants. An invitation to participate in the study was sent personally to the participants, who later signed a consent form prior to participating in interviews/FGDs. The interview and FGD questions primarily revolved around the perceptions of the DHH communities toward the existing early warning and disaster-related information sharing in their areas, what they often did when such information was limited or inaccessible to them, and what they envisioned to create a more inclusive disaster response plans as well as to strengthen the capacity of the DHH individuals to autonomously protect themselves from the ramifications of inaccessible disaster-related information. To protect their privacy, participants' identities have been altered in this article.

iWe aggregated all the data, altered the name of the participants to protect their privacy, and translated the transcriptions to English for data analysis. We treated both interview and FGD data together to better understand the participants' lived experience as we searched for themes that could help us answer the research questions (Schreier, 2012). An iterative reading occurred, together with discussions with the interviewer, who was a sign language interpreter and had extensive experience of working with the DHH communities. This process allowed us to retain the voice of the participants and to minimize the occurrence of meaning missing as the data was being translated from sign-language, to Vietnamese, and then to English. Given that the author was a hearing-person, continuous conversations with the interviewer and interactions with the data became a process that helped shape the abstraction and theorization of the Findings (Langley, 1999). For example, with the concept of information poverty in mind, the analysis was started by understanding the forms of information poverty during disaster times, the causes, and what agency the DHH performed to mitigate the risk coming from dispossessing critical information when a natural disaster was predicted to occur. This way, the contexts in which the DHH were embedded informed the development of the models potentially useful for explaining their situations and information behaviors. In this regard, the Findings reported in the below section were a byproduct of the researchers' interactions with the data, relevant literature, and the participants (Charmaz, 2006).

## 5. FINDINGS

### 5.1 THE INGREDIENTS OF INFORMATION POVERTY

A systemic stigma together with limited resources and technological affordances were the root of information poverty, resulting in early warning messages that were not only exclusionary but also unfit with the DHH lived experience (see Figure 1). Information poverty was intact in every layer of disaster communications as evidenced in the neglect of the information needs of the DHH. The stigma appeared in various aspects of life and public services including but not limited to early warning messaging formats and the broader disaster response plans. Lacking resources and inequitable communication channels exacerbated the minimal care for the DHH communities. A Deaf club leader said:

*The Deaf community is left behind because they cannot express [themselves] or share [their feelings] with outsiders ... they often do not know how to communicate with their families. ..., they are often looked down upon. When problems arise, they often do not know who to turn to because of the unavailability of sign language interpreters, or they may not have enough money to hire interpreters. They struggle to articulate their thoughts .... (p002).*

The experienced information poverty originated from the absence of equitable communication channels as reflected in the lack of sign language interpreters and messages that catered to the lived experience of the DHH. While they might be eager to seek information, the availability of accessible information and communication was limited, thus reducing chances to articulate their needs and the visibility of disaster measures that suited their lived experience. In this regard, the marginalization the DHH experienced came from ableism in the larger social governance. The early warning messages would have been formatted to fit with their needs if inclusion was the principle deployed from the beginning of the message design. In reality, hearing culture was the prevalent basis for communicating disaster-related information. As such, not only did that hinder the DHH from seeking information but also put them at a greater risk when emergency situations occurred.

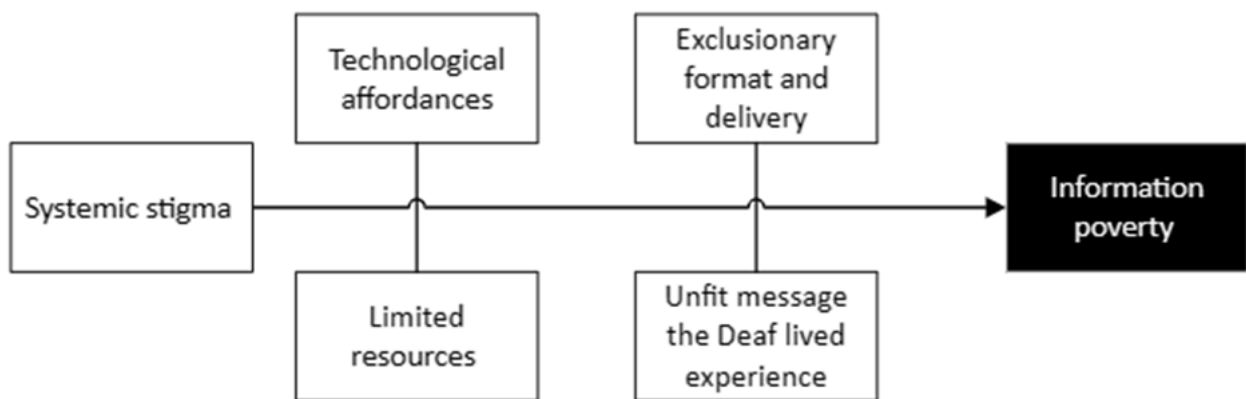


Figure 1. The information poverty ingredients within the DHH communities.

Technological affordance, paired with incompatible communication channels and hard-to-reach geographies, constrained the DHH to get early warning and disaster related information. Participants who considered themselves living in good quality internet connections could take advantage of social and internet-based media to seek information, but those in the areas where the Internet connection was a luxury tended to be informationally poor due to a lack of resources and poor digital infrastructure. A leader of a deaf association in Ninh Thuan elaborated:

*Before a storm, announcements are made on public address systems, but deaf individuals cannot hear them. Those living in the city with family members receive information through their families. Deaf individuals living alone rely on neighbors to inform them about approaching storms. Because deaf individuals can't hear, they miss out on information broadcasted through loudspeakers. Those who are nearby and aware of the situation help by passing on the information to deaf individuals. ... In mountainous and remote areas, information for deaf individuals is challenging to access. There is a lack of announcements through various channels specifically for deaf individuals. (p01)*

The excerpt exemplifies the intersectional situations that magnified the information poverty among the DHH pre-disaster. Although an early warning message was received, the format was clearly unfit with the DHH lived experience regardless of their access to the Internet. Those with access could seek information digitally but that was not the case among the DHH residing in remote areas with a poor internet connection. In this case, their information poverty was a byproduct of the absence of affordable technology and its infrastructure as well as the systemic exclusion of Deaf from the early warning message deliveries. Putting it differently, inability to access and being in the lowest socio-technical rung simultaneously pushed the DHH to the periphery of disaster response plans.

The complexity in the sign language usage added another layer to the information poverty:

*Lack of sign language interpreters, inability to hear broadcast speakers, and the absence of specific announcements from the people committee create significant challenges for Deaf individuals. Even when sign language interpretation is available on TV for the Northern region, Deaf individuals might not understand it, leading them to avoid watching. (p008)*

Multidimensional causes ranging from socio-technical to cultural deprived the DHH of information. Early warning messages were absent or delivered audibly in most disaster-prone areas. Sign language interpreters on news TV programs were considered culturally unfit due to differences in the signs used by the Northerners and Southerners. There was a hope that the Southern sign language would be used on the public media more often because some regional dialects were signed and interpreted differently. In addition, among the DHH who were socially confined, their vocabularies were limited due to minimal opportunities to keep up with the growing usage of new signs.

Barriers to accessing texts and written information were even thicker among the DHH who were based in remote areas, possessed a low education level, and had a limited Vietnamese comprehension. In this regard, the early warning messages and the diffusion of disaster-related information were deficient of Deaf lived experience. Consequently, the DHH communities were in perpetual information poverty across different stages of natural disasters.

## 5.2 COLLECTIVE ACTION AGAINST INFORMATION POVERTY

To break the circuit of information poverty, the DHH community performed collective actions as observable in their attempts to create, recreate, and co-create content they deemed capable of keeping them informed. These collective actions were the agency they exercised to overcome the ramifications of having limited information and to protect themselves when inclusive early warning messages remained absent in their vicinity. The collective actions were entangled with the presence of trustworthy (hearing) individuals and the accessible and affordable mass and social media platforms while continuously reaching out to local entities (See Figure 2). Broadly, the collective action epitomized a resilience in the absence of inclusive information and group solidarity in difficult times.

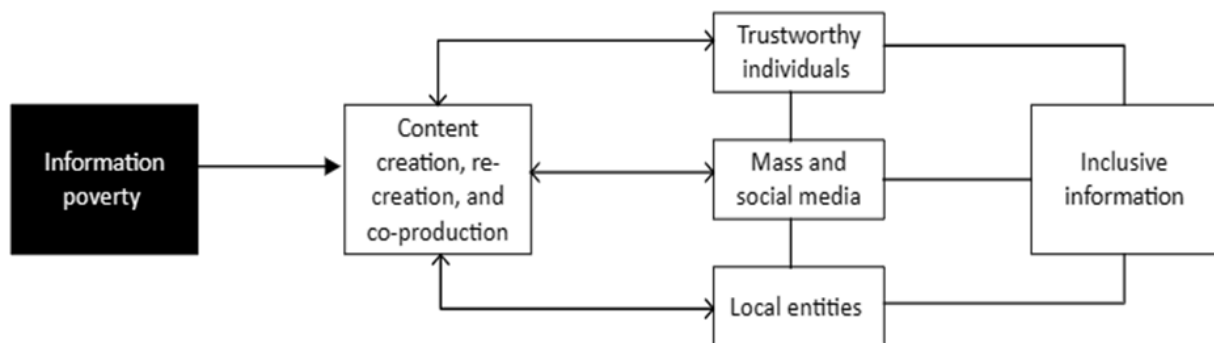


Figure 2. Collective actions for overcoming information poverty.

Given the absent/exclusionary early warning messages, the DHH reproduced freely available content to cater to their needs. As reflected in the excerpt below, TV was among the sources from where the content was obtained while digital and social media platforms were a means of disseminating the reproduced content to the wider DHH community.

*In addition to the information I share in sign language, there are TV broadcasts with relevant information before storms. A day or two before a storm, I observe information on TV regarding the upcoming storm and floods. I create small bulletins related to this information using sign language. Afterward, I capture images from this information and integrate them into videos with sign language, which I then share for everyone else to be aware of and prepare accordingly. Besides posting on Facebook, I also share this information in Zalo groups to ensure that people receive timely updates and make early preparations. I will use images or videos related to natural disasters, along with subtitles and sign language suitable for the different proficiency levels of deaf individuals. For example, those who understand Vietnamese can read the subtitles, while those who don't know how to read can rely on sign language or images. On a frame like that, there are multiple options for them to access the information more effectively. That's the approach I have used before. (p017)*

Re-creating content signified the attempt to produce information that fit with their lived experience. Seeing was the start of gathering information from TV as sign language was limitedly used on it. Images and videos were the main content they re-created and circulated to the others quickly. Since this re-creation process was from within the DHH community, the content was likely more compatible with their lived experience and needs at the given time. The content re-creation was not only intended to convert the format but also to meet the needs of those with limited sign and Vietnamese languages.

Images and videos, at least in this circumstance, were more effective for providing information prior to flood and/or storm. The content re-creation, thus, manifested the agency the DHH exercised at times when equitable information was absent.

While TV was an information source, trustworthy individuals such as hearing family and friends played a role as content co-creators, particularly when the widely circulated information was inaccessible to the DHH. For example:

*During the flood season, some members of the deaf leadership collect information, then post it in sign language on the club's Facebook page for everyone to know. ... I post information for deaf individuals in areas where I have acquaintances. This information is shared on the club's Facebook page, providing advice on how to stay safe, protect oneself, and handle situations during natural disasters. ... Regarding information from the Committee, deaf individuals cannot access it because the announcements are posted with very long sentences, making it impossible for deaf individuals to read and fully understand the content. I have to ask my family to summarize the meaning of those contents for me, and then I convey it in sign language to share with the community. This way, they can understand what preparations they need to make and what actions to take. (p013)*

Given that, the content co-creation implied information sharing activities among the DHH and with hearing individuals. Interpreting and converting Vietnamese to signs were the initial steps of content co-creations. The interpretation processes necessitated assistance from hearing individuals as the spoken vocabulary might be non-existent in sign language, which could lead to loss in translation and incomplete understanding to the DHH. In this case, the content that mass media and authorities disseminated was unfit with the DHH lived experience due to its complexity and linguistic differences. Thus, as a part of the co-creation processes, the interpretation was pivotal to bridging the gap between the hearing and non-hearing worlds. Worth noting was that this interpretation process largely involved hearing individuals from within the DHH's immediate circles such as family and friends, which indicated a sense of trustworthiness and social proximity. The accuracy of the interpretations therefore stemmed from the understanding of the hearing individuals of the lived experience of the DHH and the DHH's trust in the hearing individuals' ability to interpret the information.

As such, the co-created information was a byproduct of interactions among diverse individuals, who could serve as the source and recipient of disaster-related information. As mentioned in the above excerpt, information sharing via different communication channels followed the content co-creation. A participant emphasized the importance of this co-creation in the attempts to disseminate DHH accessible information:

*When watching news reports and observing the storm's path, I pay attention to the hurricane's movement. If it intensifies or weakens, I keep an eye on it and inform everyone. However, whether people believe it or not, they pay attention to such storm-related information to know how to prepare when the storm arrives. ... I share additional announcements or information from Facebook with my deaf community. I will provide more examples and explanations to ensure accessibility for the deaf community. (p009).*



This excerpt exemplifies one's ability to exercise agency to mitigate the risks of inaccessible information. Sharing the content co-created with others manifested the effort to protect each other from the forecasted storm. As early warning messages were often absent and/or inaccessible, sharing the content widely on social media and personal networks was considered an act of individual altruism. The presence of individuals with the ability to seek, co-create, and share such content demonstrated not only a salient sense of community but also the intent to enable others to protect themselves when the storm arrived. Since not all DHH individuals had the same agency to do so, the presence of others with similar lived experiences were viewed as capable of facilitating the DHH capacity to better respond to storms. The content sharing therefore signified a sense of preparation to face emergency situations when equitable information was limited/absent. In other words, content sharing represented the DHH's effort to actively protect themselves from the ground up when the existing disaster-communication infrastructure left them behind despite the collective threats of the disaster.

### **5.3 IMAGINED INCLUSION**

In response to the perpetual exclusion and absence of inclusive early warning messages, the DHH community shared a collective understanding of what might alter their circumstances. Although immediately eliminating information poverty was unlikely, the DHH imagined a more inclusive society, where early warning messages would better reflect diverse people's lived experience rather than the larger population only. This sense of imagined inclusion was shared uniformly regardless of the type of disasters they were likely to face or their socio-technical and cultural contexts. The imagined inclusion was meant to manifest in the greater institutional support, more culturally fit early warning messages, and stronger collaboration between hearing and non-hearing individuals (See Figure 3). The imagined inclusion reflected the broader social change the DHH community hoped would materialize in Vietnam. They were aware of the reality that they must be resilient when enduring various forms of exclusions in public services. Some of them had given up as perceived change was illusive, and accepting exclusion became part of their reality. Many of them continued to believe that inclusion was possible to emerge at individual, group, and institutional levels.

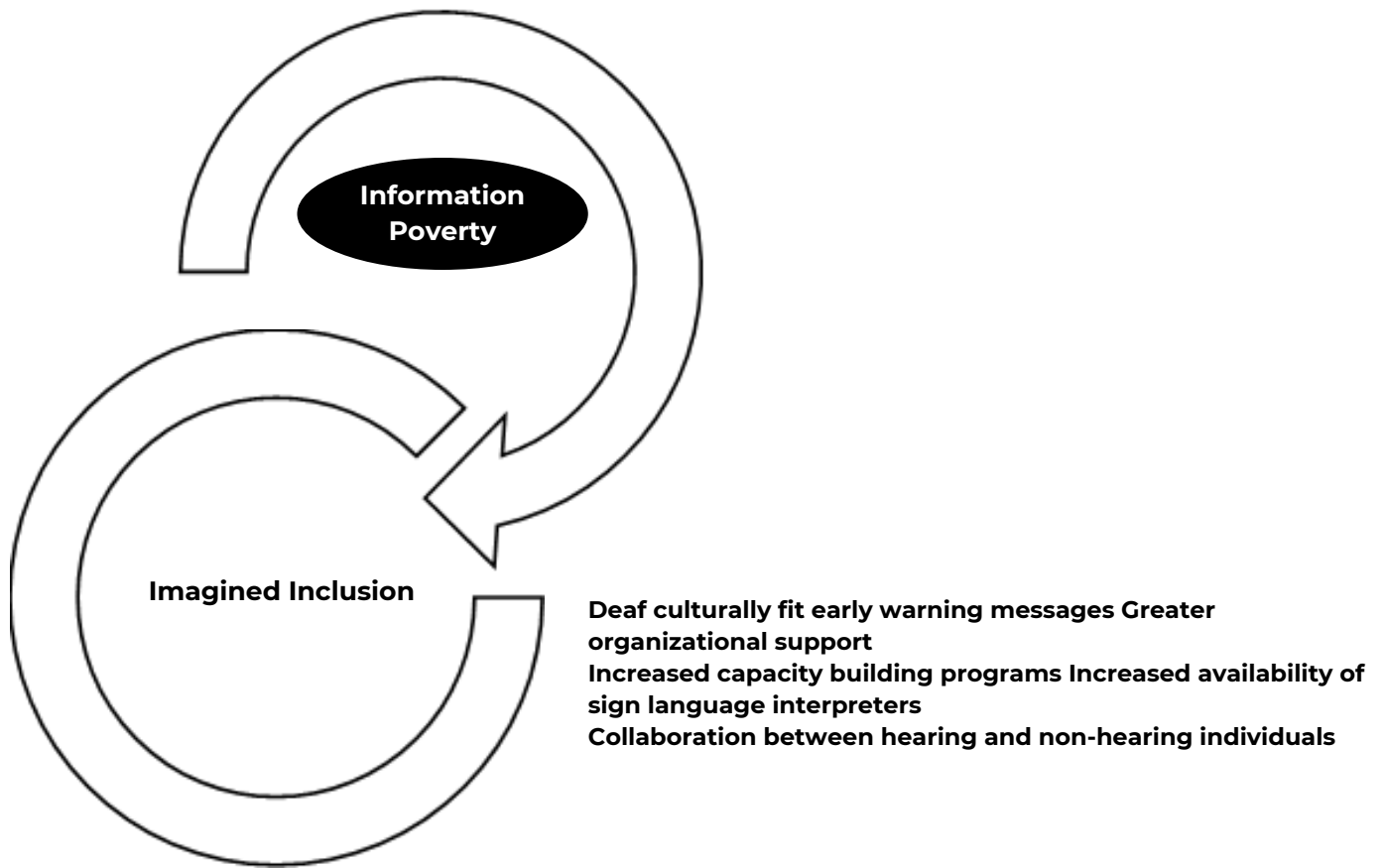


Figure 3. The imagined inclusion within the DHH community

A hope for a more equitable format of early warning messages was salient. Rather than creating a one-size-fits all format, the messages were meant to be tailored to the needs of the DHH. A bespoke message could be designed according to the disaster type and the DHH information behavior. A Deaf association leader detailed what constituted 'equitable' messages:

*Prepare visually appealing materials with expressive gestures. Clearly include signs such as a checkmark (V) indicating approval, and the letter X indicating disapproval. Facial expressions should convey do's and don'ts. ... Implement pre-disaster information notifications that are tailored to the weather conditions in each region, providing specific guidance on handling and resolving situations, such as landslides, storms, and explosions. ... Utilize sign language video notifications as Deaf individuals are accustomed to images and videos. Reading text can be confusing for them. Additionally, there are apps related to disaster prevention, storms, or disease prevention that will provide information through the app, allowing individuals in our community to stay informed. Flyers or leaflets should include vivid illustrations, culturally resonant with our community, to enhance understanding. (P008)*

A prescription for formatting early warning messages that fitted with the DHH lived experience was offered in the above excerpt. Images and videos, in addition to sign language, should be the main feature of the message. Texts, even the simple one, could be ineffective due to differences in reading skills and Vietnamese language comprehension of the DHH. Clear illustrations, e.g., using the actual photos of life jackets, boats, or shelters were considered more effective than graphically-designed illustrations. More importantly, the message should be tailored according to the local contexts e.g., the disaster type, and the regional sign language used, to make it more culturally accessible. An idea to create mobile apps that could facilitate the DHH community to access disaster-related information in a timely manner was suggested. Similar technological approaches to that had existed, including online weather forecast websites, but they suffered from accessibility issues and could be unaffordable to certain groups of DHH.

Equipping the existing information sources such as TV programs and disaster information centers with sign language services was reported to be a way to create a more inclusive society:

*For TV programs, there should be sign language interpretation and deaf interpreters to attract more deaf people. There should be reminders and notifications to families with deaf members so that they will be aware of the need to pay attention to deaf individuals in their families. Additionally, all services across various industries need sign language interpretation to support the deaf community.*

Creating an ecosystem that allowed the DHH to stay informed was believed to empower DHH communities. TV and family members, two sources from which the DHH often received information, could be a start for strengthening the capacity of the DHH to protect themselves prior to natural disasters. While some national TV news programs had been accompanied by sign language interpreters, many local TV stations were either unable to afford or unaware of the importance of making the news accessible to everyone. Since the mass media was partially accessible, empowering hearing family members with the necessary information was paramount. In this regard, it was assumed that the hearing family members were able to search for and share disaster-related information as well as the early warning message with the DHH. Given the emotional and spatial proximity of these family members, they played crucial roles in transferring such critical information to the DHH. Not only did they often have the personal understanding of the DHH lived experience but also, as noted early, were considered trustworthy.

Thus, promoting interactions between the hearing and non-hearing communities would lead to more inclusive disaster communications. The information sharing between them might help create methods for designing and delivering early warning messages that were not only accessible but also reflected the lived experience of the DHH and the hearing people within their trusted social circles. The excerpt below exemplified just that:

*... deaf individuals to communicate and interact with hearing people who are knowledgeable about disaster-related topics. By receiving shared training with hearing individuals, they can enhance their knowledge and develop creative methods tailored to the deaf community. Through this process, they can think of innovative ways to disseminate information more effectively within their community, considering the cultural context of the deaf population. Deaf individuals should have training specific to their community's needs. (P016)*

Centering the design and delivery of the early warning messages on the lived experience of diverse people would benefit everyone. Information related to early warning and disaster was not shared in a social vacuum as the hearing and non-hearing people shared knowledge and lived experience in responding to limitedly available, inaccessible information prior to and during natural disasters. The expected inclusive interactions would create trickle down effects, as the information sharing occurred among the hearing, among the non-hearing, and between the two communities. With this, the produced early warning messages would better reflect the necessary information and resonate with the lived experience of the DHH. Thus, unfit format, content, and information to the DHH communities would diminish, allowing for a further co-creation of inclusive early warning messages.

While such grassroots efforts were within the purview, advocating for more responsive and supportive authorities was still necessary. The authorities could improve their database and disseminate accessible early warning messages and disaster related information more proactively. A participant suggested:

*In case of a natural disaster, support from the local People's Committee is crucial. This way, they can identify which families have Deaf members in need of assistance. The People's Committee can enter these households to explain the situation to the Deaf individuals in that area. Additionally, they can send text messages or post official announcements on Facebook within that region, ensuring that the Deaf community can access the necessary information. (P005)*

The above excerpt demonstrates the need for local authorities to increase their capacity to datafy DHH individuals and households. Local authorities in several provinces might have done so, but in the others, primarily where natural disasters were frequent, they were expected to have a more reliable database used to protect vulnerable groups, including the DHH communities, across different stages of natural disasters. In tandem, the local authorities were expected to have a stronger understanding of how to produce more inclusive early warning messages and to disseminate it through equitable communication channels. Since many DHH figures were social media users, such messages could be shared widely through it. As such, the local authorities must have an adequate understanding of the DHH lived experience and a range of methods to engage them such as deploying sign language interpreters, working with their family and friends, and sharing accessible information. This way, the DHH believed that a more inclusive disaster response plan could manifest gradually.

## 6. DISCUSSION

Information poverty resulting from the absence of accessible disaster-related information and early warning messages was universally observable within the DHH communities. A lack of resources and technological unaffordability confounded by perpetual ableism are the compounding factors. Stigma and misconception towards the DHH community leads to a neglect of their information needs before, during, and after a natural disaster. In a circumstance where disaster communication is still developing, early warning messages are often absent. If they exist, then they are often inaccessible to the DHH. Given the perpetual ableism, efforts to better equip the DHH with the skills and information necessary to autonomously protect themselves from the undesirable outcome of living in a disaster-prone area are limited. As a result, the DHH must rely on each other and hearing individuals to seek information during times of emergency (Cooper et al., 2021).

In that regard, information poverty, rather than simply an economic and socio-technical issue, reflects the dispossession of information not by choice. The social-structure and system in which the DHH is embedded have conditioned them to be informationally poor, as the necessary information is not disseminated in a format accessible to them. Information poverty, specifically during a time of emergency such as a natural disaster, may therefore put them at a greater risk. While the ramifications of a natural disaster may not discriminate against anyone, the information related to its occurrence may

intentionally or unintentionally exclude groups who have been historically marginalized like the DHH (Good, 2022). Early warning messages, as noted in the Findings, are often designed and delivered with a hearing-assumption in mind rather than incorporating the needs of diverse people. The DHH information behavior, which often relies on images, lights, and signs, is ignored, hindering the capability of the DHH to autonomously prepare themselves and protect others prior to and during the disaster period.

Being impoverished informationally, the DHH communities create, recreate, and co-create content that better reflects their needs and lived experiences. Because not all news channels are accompanied with sign language interpreters, DHH individuals with a limited fluency in both sign and Vietnamese languages are unable to sufficiently comprehend lengthy and text-based content circulated by authorities. Thus, recreating the content to better cater to the community's needs is a direct response to exclusion. The content recreation in this sense implies a fight against informational exclusions in tandem with the grassroots solidarity to better protect each other when their wellbeing and safety are absent from the formal measures to respond to an emergency (Rohman & Pitaloka, 2023b). Although one may argue that this action also implies resilience (Phibbs, 2022), that it is performed in response to the absence of inclusive information and design suggests that it can be a form of peaceful protest to urge the state to better meet their information needs.

The co-creation of content suggests another form of responses to the information poverty. The in-group solidarity solidifies as they share a collective belief on the importance of protecting each other when the circuit of informational exclusion persists. The role of information sharing with the hearing individuals remains important in the process of co-creating inclusive information before it is widely shared with the larger DHH communities.

This co-creation not only signifies an inclusive collaborative information sharing at critical times (Rohman, 2020; Rohman et al., 2020) but also the incorporation of the DHH lived experience into it, allowing for information that is both accessible and culturally fit to spread within the DHH communities. The co-created content, reflecting collaborative grassroots efforts, surpasses the efficacy of official information that is often perceived as Deaf unfriendly and requires high reading comprehension skills. The co-created content therefore magnifies within group attempts to informationally enrich each other when the existing socio-technical infrastructure is deemed exclusionary to the DHH. As such, it seems that the attempt to mitigate the ramification of exclusion are more apparent at the grassroot level rather than a direct activism to fight for inclusion in Vietnam. Although creating a more inclusive society has become a developmental jargon, the DHH communities seem to lack the capacity to get

involved in policy making, including advocating for more inclusive early warning messages and disaster related information. The grassroots agency to create and co-create inclusive disaster-related content can certainly fill the information void when accessibility and culturally unfit issues linger. But the urge for changing policy seems to be limitedly observable within the communities. This circumstance can be attributed to the DHH individual predispositions who might have the view that change is impossible given the protracted prejudice and exclusion they must endure over time. Another reason may stem from the political landscape in which social changes often start from the top in the country rather than from the ground-up (Hai, 2016). With such understandings in mind, the absence and presence of inclusive early warning messages depict the state of commitment to inclusive disaster response plans as well as the current state of ableism and the grassroots agency to counter it.

## 7. CONCLUSION

This study has demonstrated the circumstances that lead to the exclusionary early warning messages for the DHH community in Vietnam. Because the message's format is inaccessible and culturally unfit, information poverty is persistently prevalent during times of emergency. The DHH is informationally impoverished in perpetuity because of the absence of understanding to their information needs and lived experiences. It is not their inability to hear that puts them at a greater risk when disasters happen, but the absence of equitable information before and during a natural disaster. In response, they create, recreate, and co-create content that they consider to be more fit to their own needs. Recreating news pertaining to forecasted disasters is a way to protect their own community as more equitable information is shared with one another. To do so more effectively and given that many information sources are designed for hearing individuals, the DHH view that converging the lived experience of the hearing, primarily those with direct exposure to the DHH, with their lived experience will allow for more inclusive early warning message and disaster response plans to emerge.

The findings may inspire disaster-related content creation and design practices while contributing to attempts to mitigate the prevalence of ableism in them. Light, movement, and image are ingredients for creating more equitable early warning messages, which often are built on texts and audios. In tandem, the usage of sign language interpreters that fit with the regional and cultural references of the targeted DHH community will help strengthen the

cultural references of the targeted DHH community will help strengthen the capacity of the DHH to search for and share information from and with each other. Thus, improving their ability to autonomously protect themselves and others when disasters occur. In this sense, the ability of the content creators to produce inclusive messages may indicate their awareness on the DHH lived experience, as the inclination to inclusively design and deliver messages manifests from the beginning of disaster communication strategies rather than an afterthought.

The present study, however, limitedly pays attention to the effort the DHH community has performed to make structural changes. Although attempts to create more inclusive early messages and disaster-related information sharing are evident, they are situated at the local level and the potential for scaling up is minimal if not accompanied with a parallel effort to advocate for a better inclusion of the lived experience of the DHH into messaging strategies of the existing disaster response plans. Given that, this study has partially focused on the political economic factors that can affect disaster response plans located in an environment where the role of the government is centralized. The sporadic nature of grassroots agency for creating inclusive disaster-related information within the DHH community cannot be interpreted as a manifestation of an inclusion. Instead, it is an organic instinct to survive and protect others when times are difficult and support is limited.

Investigating the subtle strategies the DHH community performs to influence policies related to disaster communication can be a future area of research. It may focus on the structural changes the DHH envision to create a more inclusive society and stronger support to the existing Deaf associations and clubs in Vietnam. Although political opportunities are limited in the country, understanding the attempt that a portion of the Deaf leaders, together with other disabled activists in the country, in ensuring the inclusion of the Deaf lived experience into such policies may provide more insights for ways of promoting change without jeopardizing the safety of the DHH activists and supporting the country's development goal.

At individual and group levels, further research may pay attention to the dynamic and nuance that surround the intent of the DHH to balance dependency on hearing individuals with developing an autonomy to search for disaster-related information. The trustworthy others (e.g., family and friends) are the sources from whom the DHH receive early warning and disaster related messages, their interactions with the DHH will certainly reduce the information void but if no serious efforts are made to create a more DHH-friendly early warning system then the circuit of dependency will be continued and the opportunities for DHH individuals to autonomously respond to disasters will be slimmer, as a continuous inaccessible system fertilizes dependency rather than autonomy.



## 8. REFERENCES

- Abdulhalim, I., Mutch, C., González, V. A., & Amor, R. (2021). Improving post-earthquake evacuation preparedness for deaf and hard of hearing children: A conceptual framework. *International Journal of Disaster Risk Reduction*, 62(October 2020). <https://doi.org/10.1016/j.ijdrr.2021.102360>
- Ali, K., Braithwaite, B., Dhanoolal, I., & Snoddon, K. (2021). Sign language-medium education in the global South. *Deafness and Education International*, 23(3), 169–178. <https://doi.org/10.1080/14643154.2021.1952507>
- Asian Disaster Preparedness Center & UN Office for Disaster Risk Reduction. (2020). *Disaster Risk Reduction in Viet Nam - Status Report 2020*.
- Beckett, A. E., & Campbell, T. (2015). The social model of disability as an oppositional device. *Disability and Society*, 30(2), 270–283. <https://doi.org/10.1080/09687599.2014.999912>
- Bennett, D., LaForce, S., Touzet, C., & Chiodo, K. (2018). American sign language & emergency alerts: The Relationship between language, disability, and accessible emergency messaging. *International Journal of Mass Emergencies & Disasters*, 36(1), 71–87. <https://doi.org/10.1177/028072701803600104>
- Calgaro, E., Craig, N., Craig, L., Dominey-Howes, D., & Allen, J. (2021). Silent no more: Identifying and breaking through the barriers that d/Deaf people face in responding to hazards and disasters. *International Journal of Disaster Risk Reduction*, 57(June 2020), 102156. <https://doi.org/10.1016/j.ijdrr.2021.102156>
- Campbell, F. K. (2009). *Contours of ableism. The production of disability and abledness*. Palgrave Macmillan.
- CFE-DM. (2021). Vietnam. Disaster management reference handbook. <https://www.cfe-dmha.org/LinkClick.aspx?fileticket=GqvC778XPRA%3D&portalid=0>
- Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative analysis*. Sage Publication Ltd. <https://doi.org/10.1016/j.lisr.2007.11.003>
- Chatman, E. A. (1996). The impoverished life-world of outsiders. *Journal of the American Society for Information Science*, 47(3), 193–206. [https://doi.org/10.1002/\(SICI\)1097-4571\(199603\)47:3<193::AID-ASI3>3.0.CO;2-T](https://doi.org/10.1002/(SICI)1097-4571(199603)47:3<193::AID-ASI3>3.0.CO;2-T)

Chisty, M. A., Nazim, A., Rahman, M. M., Dola, S. E. A., & Khan, N. A. (2021). Disability inclusiveness of early warning system: a study on flood-prone areas of Bangladesh. *Disaster Prevention and Management: An International Journal*, 30(4–5), 494–509. <https://doi.org/10.1108/DPM-05-2021-0177>

Cooper, A. C., Bùì, H. T. T., Nguyễn, L. T., Nguyễn, P. K., Nguyễn, T. H. T., & Phan, D. P. N. (2021). Deaf-led organizations and disaster communication in Việt Nam: Interdisciplinary insights for disability inclusive disaster risk reduction planning. *International Journal of Disaster Risk Reduction*, 65(April). <https://doi.org/10.1016/j.ijdrr.2021.102559>

Duy, A. P. (2017). *Raising the voice of deaf people*. <https://www.dvv-international.de/en/adult-education-and-development/editions/aed-842017-inclusion-and-diversity/columns/raising-the-voice-of-deaf-people/>

Ellcessor, E. (2022). In case of emergency. How technologies mediate crisis and normalize inequality. New York University Press. [https://doi.org/10.12968/s2514-9768\(22\)90265-0](https://doi.org/10.12968/s2514-9768(22)90265-0)

Fatin, M., Sofia, S., & Oktari, R. S. (2020). Earthquake and Tsunami Emergency Preparedness of Visually Disabled People. *International Journal of Disaster Management*, 3(1), 1–11. <https://doi.org/10.24815/ijdm.v3i1.15787>

Gartrell, A., Calgaro, E., Goddard, G., & Saorath, N. (2020). Disaster experiences of women with disabilities: Barriers and opportunities for disability inclusive disaster risk reduction in Cambodia. *Global Environmental Change*, 64(June), 102134. <https://doi.org/10.1016/j.gloenvcha.2020.102134>

Good, G. A. (2022). Disasters and disability: A call to action. *Journal of Visual Impairment and Blindness*, 116(6), 761–763. <https://doi.org/10.1177/0145482X221144405>

Hai, H. N. (2016). *Political dynamics of grassroots democracy in Vietnam*. Palgrave Macmillan.

IMF. (2019). IMF Executive Board Discusses Building Resilience in Developing Countries Vulnerable to Large Natural Disasters. <https://reliefweb.int/report/world/building-resilience-developing-countries-vulnerable-large-natural-disasters>

Jaiyeola, M. T., & Adeyemo, A. A. (2018). Quality of life of deaf and hard of hearing students in Ibadan metropolis, Nigeria. *PLoS ONE*, 13(1), 1–11. <https://doi.org/10.1371/journal.pone.0190130>

Kamau, P. W., Ivey, S. L., Griese, S. E., & Qari, S. H. (2018). Preparedness training programs for working with Deaf and Hard of Hearing communities and older adults: Lessons learned from key informants and literature assessments. *Disaster Medicine and Public Health Preparedness*, 12(5), 606–614. <https://doi.org/10.1017/dmp.2017.117>

Kusumowardoyo, C. L., & Tamtomo, K. (2022). Reflections on implementing the Sendai Framework in the Asia-Pacific: Beyond adding disability inclusion to disaster risk reduction. *Disasters*, 46(4), 857–878. <https://doi.org/10.1111/disa.12507>

Lan Huong, T. T., Van Anh, D. T., Dat, T. T., Truong, D. D., & Tam, D. D. (2022). Disaster risk management system in Vietnam: progress and challenges. *Heliyon*, 8(10), e10701.

Langley, A. (1999). Strategies for theorizing from process data. *Academy of Management Review*, 24(4), 691–710. <https://doi.org/10.5465/AMR.1999.2553248>

Lowy Institute. (2022). Disability-inclusive disaster risk reduction in Asia-Pacific. <https://www.lowyinstitute.org/the-interpreter/disability-inclusive-disaster-risk-reduction-asia-pacific>

Marcella, R., & Chowdhury, G. (2020). Eradicating information poverty: An agenda for research. *Journal of Librarianship and Information Science*, 52(2), 366–381. <https://doi.org/10.1177/0961000618804589>

Marchildon, J. (2018). 5 Facts About Living with a Disability in the Developing World. <https://www.globalcitizen.org/en/content/disability-in-the-developing-world/>

Masuku, K. P., Moroe, N., & van der Merwe, D. (2021). 'The world is not only for hearing people – It's for all people': The experiences of women who are deaf or hard of hearing in accessing healthcare services in Johannesburg, South Africa. *African Journal of Disability*, 10, 1–8. <https://doi.org/10.4102/AJOD.V10I0.800>

Mitchell, D. T., & Snyder, S. L. (2016). *The biopolitics of disability. Neoliberalism, ablenationalism, and peripheral embodiment.* University of Michigan Press.

Nario-Redmond, M. R. (2020). *Ableism. The causes and consequences of disability prejudice.* Wiley Blackwell.

Neuhauser, L., Ivey, S. L., Huang, D., Engelman, A., Tseng, W., Dahrouge, D., Gurung, S., & Kealey, M. (2013). Availability and readability of emergency preparedness materials for Deaf and Hard-of-Hearing and older adult populations: Issues and assessments. *PLoS ONE*, 8(2), 9–11.  
<https://doi.org/10.1371/journal.pone.0055614>

Nguyen, X. T. (2015). *A Journey to inclusion*. Sense Publishers.  
<https://doi.org/10.4324/9780429197062-5>

O'Sullivan, T. L., & Phillips, K. P. (2019). From SARS to pandemic influenza: The framing of high-risk populations. *Natural Hazards*, 98(1), 103–117.  
<https://doi.org/10.1007/s11069-019-03584-6>

Pertiwi, P. P. (2022). Bridging the divide: understanding collaborative action in disability-inclusive disaster risk reduction through socio-cultural activity theory. *Disaster Prevention and Management: An International Journal*, 31(2), 166–174.  
<https://doi.org/10.1108/DPM-04-2021-0119>

Peterson-Salahuddin, C. (2024). From information poverty to information deficit: An intersectional analysis of women of color's news information-seeking habits in the digital age. *International Journal of Communication*, 18, 1494–1515.

Phibbs, S. (2022). Disability, disasters, and resilience. *Journal of Visual Impairment and Blindness*, 116(6), 847–849.  
<https://doi.org/10.1177/0145482X221144680>

Roberts, G. (2018). Get ready: A model for deaf community leadership and preparedness. *Australian Journal of Emergency Management*, 33(3), 7–9.

Rogers, E. M. (2010). *Diffusion of innovations* (5th ed.). Free Press.

Rohman, A. (2020). How information sharing at information grounds helps reconnect a religiously divided society? Cafés, Christians and Muslims in Ambon, Indonesia. *Journal of Documentation*. <https://doi.org/10.1108/JD-03-2019-0054>

Rohman, A. (2021). What do disability and pandemic studies 2010-2020 say? Progress, inequality, and stagnation. *SSRN Electronic Journal*, June(1).  
[https://doi.org/https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=4523588](https://doi.org/https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4523588)

Rohman, A., Pang, N., & Pitaloka, D. (2020). The episodes of a Facebook group for information sharing in the Ambon 2011 conflict prevention movement, Indonesia. *Information Communication and Society*, 23(4), 539–554. <https://doi.org/10.1080/1369118X.2018.1521456>

Rohman, A., & Pitaloka, D. (2023a). Contact tracing apps, nationalism, and users with disability in the Global South: The faith in state and collective objective. *Mobile Media and Communication*, 11(2), 230–247. <https://doi.org/10.1177/20501579231158908>

Rohman, A., & Pitaloka, D. (2023b). Disconnected and disabled during the pandemic: Toward more inclusive pandemic response plans in the Global South. *Journal of Librarianship and Information Science*, 1–12. <https://doi.org/10.1177/09610006231207657>

Rohman, A., Pitaloka, D., Erlina, E., Dang, D., & Prastyani, A. (2023). Disability data and its situational and contextual irrationalities in the Global South. *Big Data and Society*, 10(1). <https://doi.org/10.1177/20539517231160523>

Ronney, C., & White, G. W. (2007). Narrative analysis of a disaster preparedness and emergency response survey from persons with mobility impairments. *Journal of Disability Policy Studies*, 17(4), 206–215.

Schreier, M. (2012). *Qualitative content analysis in practice*. Sage.

Tannenbaum-Baruchi, C., Feder-Bubis, P., Adini, B., & Aharonson-Daniel, L. (2014). Emergency situations and deaf people in Israel: Communication obstacles and recommendations. *Disaster Health*, 2(2), 106–111. <https://doi.org/10.4161/21665044.2014.989131>

Tien, T. T. N., Cooper, A. C., & Craig, L. (2022). Deaf community and DiDRR network in Viet Nam call for action: Ensuring that no one is left behind. <https://blogs.lse.ac.uk/seac/2022/08/10/deaf-community-and-didrr-network-in-viet-nam-call-for-action-ensuring-that-no-one-is-left-behind/>

Ton, K. T., Gaillard, J. C., Adamson, C., Akgungor, C., & Ho, H. T. (2020). An empirical exploration of the capabilities of people with disabilities in coping with disasters. *International Journal of Disaster Risk Science*, 11(5), 602–614. <https://doi.org/10.1007/s13753-020-00287-6>

Twigg, J., Kett, M., & Lovell, E. (2018). Briefing note Key messages Disability inclusion and disaster risk reduction Overcoming barriers to progress. 2018. <https://interagencystandingcommittee.org/iasc-task-team-inclusion-persons-disabilities-humanitarian-action>.

UNDP Viet Nam. (2023). *Latest disability inclusion study found low engagement in disaster risk management and lack of access to information | United Nations Development Programme*. <https://www.undp.org/vietnam/press-releases/latest-disability-inclusion-study-found-low-engagement-disaster-risk-management-and-lack-access-information>

UNDRR. (2023). 2023 Global survey report on persons with disabilities and disasters. In *2023 Global Survey Report on Persons with Disabilities and Disasters*. <https://doi.org/10.18356/9789213585795>

UNPRPD. (2021). Situational analysis of the Rights of Persons with Disabilities in Vietnam. [https://unprpd.org/sites/default/files/library/2022-11/Situation\\_Analysis\\_CountryBrief\\_Vietnam\\_0.pdf](https://unprpd.org/sites/default/files/library/2022-11/Situation_Analysis_CountryBrief_Vietnam_0.pdf)

Van Dijk, J. (2005). *The deepening divide: Inequality in the information society*. SAGE Publications.

Vietnam+. (2024). Disaster risk reduction partnership planning 2025-2030 relevant to Vietnam's priorities: UNDP Resident Coordinator. <https://en.vietnamplus.vn/disaster-risk-reduction-partnership-planning-20252030-relevant-to-vietnams-priorities-undp-reside/280338.vnp>

Villeneuve, M., Abson, L., Pertiwi, P., & Moss, M. (2021). Applying a person-centred capability framework to inform targeted action on Disability Inclusive Disaster Risk Reduction. *International Journal of Disaster Risk Reduction*, 52(June 2020), 101979. <https://doi.org/10.1016/j.ijdr.2020.101979>

Yu, L. (2006). Understanding Information Inequality: Making sense of the literature of the Information and digital divides. *Journal of Librarianship and Information Science*, 38(4), 229–252. <https://doi.org/10.1177/0961000606070600>

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# APPENDICES

## APPENDIX 1: INTERVIEW PARTICIPANT LIST

Participant ID	Age	Gender	Education level	Organization
P001	31	Male	Grade 12	Club for Deaf People in Ninh Thuan
P002	38	Female	Grade 7	Club for Deaf People in Ho Chi Minh
P003	30	Male	Grade 4	Club for Deaf People in Bao Loc
P004	27	Male	Grade 9	Club for Deaf People in Quang Ngai
P005	28	Male	Grade 12	Club for Deaf People in Dak Lak
P006	24	Female	Grade 9	Club for Deaf People in Quang Ngai
P007	37	Female	Grade 12	Club for Deaf People in Vung Tau
P008	32	Male	Grade 5	Club for Deaf People in Dak Lak
P009	30	Male	Grade 5	Club for Deaf People in Ca Mau
P010	31	Female	Grade 9	Club for Deaf People in Gia Lai
P011	29	Female	Grade 5	Club for Deaf People in Quang Tri
P012	28	Female	Grade 5	Club for Deaf People in Hue
P013	21	Female	Grade 8	Club for Deaf People in Quang Ngai
P014	33	Female	Grade 5	Club for Deaf People in Hue
P015	40	Male	Grade 9	Club for Deaf People in Da Nang
P016	30	Female	Grade 12	Club for Deaf People in Da Nang
P017	47	Male	Bachelor	Club for Deaf People in Tien Giang
P018	26	Male	Grade 5	Club for Deaf People in Hoi An
P019	30	Female	Grade 5	Club for Deaf People in Nha Trang
P020	23	Male	Grade 9	Club for Deaf People in Da Lat

# APPENDICES

## APPENDIX 2: FOCUS GROUP DISCUSSION PARTICIPANT DEMOGRAPHIC

No	Location	YoB	Education level	Gender	Experience with natural disasters	Occupation
01	South	1998	Elementary school	Male	Typhoon	Employee making roasted pork
02	South	2003	High school	Male	Flood	Student
03	South	1996	High school	Female	Typhoon	School assistant staff
04	South	2001	Elementary school	Male	Typhoon	Garment Processing Staff
05	South	2003	High school	Male	Flood	Student
06	South	1999	Elementary school	Male	Typhoon	Garment Processing Staff
07	Central	1996	Middle school	Female	Flood	Product Care Staff
08	Central	1996	Elementary school	Female	Flood	Teacher
09	Central	1995	Elementary school	Female	Flood	Paper Flower Craftsman
10	Central	2002	Middle school	Female	Typhoon	Student
11	Central	1997	Elementary school	Male	Flood	Machine Repair Technician
12	Central	1984	Did not go to a formal school	Female	Flood	Waiter/Waitress
13	Central	1987	Elementary school	Female	Flood	Teacher
14	Central	1991	Elementary school	Female	Flood	Baker
15	Central	1998	Middle school	Male	Flood	Garment Processing Staff
16	Central	2005	Middle school	Female	Flood	Unemployed
17	Central	2005	Elementary school	Male	Typhoon	Student
18	Central	2004	Vocational degree	Male	No experience	Electrical Vocational Training
19	Central	1979	Elementary school	Male	Flood	Technical Staff
20	Central	2004	Middle school	Male	Flood	Unemployed
21	Central	2005	Middle school	Female	Flood	Student
22	Central	2005	Middle school	Male	Flood	Student
23	Central	1997	Middle school	Male	Flood	Personal Trading
24	Central	2001	Middle school	Female	Typhoon	Tea Leaf Picking
25	Central	2005	Elementary school	Male	Typhoon	Waiter/Waitress
26	Central	2004	Middle school	Male	Flood	Unemployed
27	Central	2002	Elementary school	Female	Flood	Garment Processing Staff
28	Central	1994	Elementary school	Male	Flood	Unemployed
29	Central	1992	High school	Male	Flood	Technical Staff
30	Central	1993	Middle school	Female	No experience	Garment Processing Staff
31	Central	2005	Middle school	Male	No experience	Waiter/Waitress
32	Central	1994	Did not go to a formal school.	Male	Others	Waiter/Waitress
33	Central	2002	Middle school	Female	Others	Waiter/Waitress
34	Central	2003	Middle school	Female	Flood	Janitor
35	Central	2001	Did not go to a formal school.	Female	Typhoon	Waiter/Waitress
36	Central	2002	Middle school	Male	Typhoon	Baker
37	Central	2000	Elementary school	Male	Others	Waiter/Waitress
38	Central	1997	Elementary school	Male	Typhoon	Hotel Room Attendant
39	Central	1993	Elementary school	Male	Typhoon	Baker



# APPENDICES

## APPENDIX 2: FOCUS GROUP DISCUSSION PARTICIPANT DEMOGRAPHIC (CONTINUED)

40	Central	2000	Middle school	Female	No experience.	Waiter/Waitress
41	Central	1996	High school	Male	Typhoon	Baker
42	South	1997	Middle school	Male	Earthquake	Garment Processing Staff
43	South	2002	Middle school	Female	Flood	Unemployed
44	South	2002	Middle school	Male	Typhoon	Packaging Staff
45	South	2000	Middle school	Male	No experience	Waiter/Waitress
46	South	2001	Middle school	Female	No experience	Waiter/Waitress
47	South	2004	Middle school	Female	No experience	Barista
48	South	2003	Middle school	Female	No experience	Spa Staff
49	South	1997	Middle school	Female	No experience	Garment Processing Staff
50	South	1995	Middle school	Male	No experience	Advertising Design Staff
51	South	1997	Elementary school	Female	No experience	Hotel Room Attendant
52	South	1994	Elementary school	Male	Typhoon	Garment Processing Staff
53	South	1988	Elementary school	Male	Flood	Silversmith
54	South	1997	Elementary school	Male	Typhoon	Silversmith
55	South	2003	Middle school	Male	Flood	Teacher
56	South	1999	High school	Female	Typhoon	Teacher
57	South	2000	Elementary school	Male	Flood	Carpenter
58	South	2003	Middle school	Female	Others	Factory Worker
59	South	1994	Elementary school	Male	Typhoon	Silversmith
60	South	1994	Elementary school	Female	Typhoon	Garment Processing Staff
61	South	1994	Elementary school	Male	Others	Agricultural Work
62	Central	1987	Middle school	Female	Typhoon	Agricultural Work
63	Central	1980	Elementary school	Female	Flood	Janitor
64	Central	2004	Elementary school	Female	Flood	Unemployed
65	Central	1994	Middle school	Male	Typhoon	Picture Frame Crafting
66	Central	2003	Elementary school	Female	No experience	Unemployed
67	Central	1987	Middle school	Female	Typhoon	Agricultural Work
68	Central	1971	Did not go to a formal school.	Female	Flood	Household
69	Central	1991	Did not go to a formal school.	Male	Others	Picture Frame Crafting
70	Central	1994	Elementary school	Female	No experience.	Silversmith
71	Central	1998	High school	Female	No experience	Advertising Design Staff
72	Central	1989	Elementary school	Female	No experience	Garment Processing Staff
73	Central	1994	Elementary school	Female	No experience	Nail
74	Central	2002	Elementary school	Female	No experience	Silversmith
75	Central	2003	Elementary school	Male	No experience	Iron Welder
76	Central	1994	Middle school	Female	No experience	Technician
77	Central	2005	Elementary school	Male	No experience	Car Wash
78	Central	1988	Elementary school	Female	Flood	Household
79	Central	1994	Middle school	Female	Thunderstorm	Technician

# APPENDICES

## APPENDIX 2: FOCUS GROUP DISCUSSION PARTICIPANT DEMOGRAPHIC (CONTINUED)

80	Central	1994	Elementary school	Female	No experience	Household
81	South	1988	Elementary school	Male	Typhoon	Factory Worker
82	South	1990	Elementary school	Female	Others	Garment Processing Staff
83	South	1990	Elementary school	Female	Typhoon	Unemployed
84	South	1980	Elementary school	Female	Typhoon	Unemployed
85	South	1979	Elementary school	Male	Typhoon	Laborer
86	South	1984	Middle school	Male	Typhoon	Factory Worker
87	South	1985	Elementary school	Male	Typhoon	Factory Worker
88	South	1991	Middle school	Female	Typhoon	Factory Worker
89	South	1993	Elementary school	Female	Typhoon	Garment Processing Staff
90	South	1993	Elementary school	Female	Typhoon	Factory Worker