Messaging for Inclusion:

Identifying relevant factors for disability and age inclusive disaster preparedness

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Table of contents

Background 4

Part 1: Putting disability and age inclusive disaster preparedness messaging for Kurigram District, Bangladesh in context 8

What are the key elements that make up disaster preparedness messaging? 8

Disability and age in the context of Bangladesh 10

Disasters and disaster preparedness messaging in Bangladesh 11

Part 2: Identifying relevant factors for disability and age inclusive disaster preparedness messaging in Kurigram District, Bangladesh 14

Methodological approach 14

Meaningful participation of people with disabilities and older people in disaster preparedness messaging 15

The accessibility of disaster preparedness messaging for people with disabilities and older people 16

The role of community networks in disability and age inclusive disaster preparedness messaging 17

Disability and age-disaggregated data for disaster preparedness messaging 18

Key findings and recommendations 19

References 22

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Background

The World Meteorological Organization (2021) has observed that over the last 50 years, a weather, climate or water-related disaster has occurred at a global average of every single day, causing an average of 115 deaths and 202 million dollars' worth of economic losses per event. At the same time, there is also mounting concern about the growing negative impacts of climate-related disasters worldwide, with unseasonal flooding and heatwaves in places like Western Europe attributed to the climate crisis (BBC News, 2021). Moreover, the ongoing COVID-19 pandemic has thrown into sharp focus how important it is for populations to be adequately informed about the risks, impacts and mitigation strategies for disasters. Yet, the provision of information about disasters, and consequently the ability of affected populations to cope with them, is not experienced equitably worldwide. In particular, people with disabilities and older people, who are often disproportionately impacted by disasters, are often most excluded from the disaster management process, including preparedness communications.

The provision of information to help prepare for disasters and the type and content of preparedness messaging is crucial to help populations cope with disasters when they occur. Moreover, comprehensive planning and preparation of emergency communication infrastructure itself will greatly aid the abilities of both responders and victims to cope with disasters in situ (Bricout & Baker, 2010). While such communication networks should operate cross-sectorally, traversing public, private and non-profit boundaries, particular emphasis has been given to the local community as the bedrock of effective disaster communication. As Bricout & Baker (2010) note, it is essential that preparedness communication is embedded in the local community prior to disasters, as disaster events are precisely when many communication structures break down.

The provision of information to help prepare for disasters and the type and content of preparedness messaging is crucial to help populations cope with disasters when they occur.

Exposure to media regarding disaster preparedness has been found to enhance the knowledge, skills, and motivation for individuals to engage in preparedness behaviour and effective disaster management (Bradley et al., 2016; Murphy, 2008). Moreover, communities, as societal structures of like-minded individuals bonded by culture and place, are uniquely placed to drive forward the sharing of disaster preparedness information, as well as offer some level of assistance to other community members during a disaster event, particularly those with vulnerabilities (Rooney & White, 2007).

Channels of disaster preparedness messaging include face-to face conversations, telephone calls, group meetings, mass media such as television and interactive social media such as Twitter (Bradley et al., 2016). While the effectiveness of different channels is dependent on the disaster context and characteristics of the receivers (e.g. their access to technology), it is generally accepted that disaster preparedness information should be conveyed with clarity, consistency and in unambiguous language, particularly to engage vulnerable groups such as those low in literacy (Levac et al., 2012; Paton & Johnson, 2001).

Two of the largest populations considered vulnerable or at risk in disaster events globally are people with disabilities and older people.

Many groups within society can be considered as vulnerable to disasters. The meaning of vulnerability can also be contested, with Chen et al. (2009) extending the definition to any member of the population likely to experience a worse than average outcome during a disaster event (i.e. classifying about 50% of the general population as vulnerable). Two of the largest populations considered vulnerable or at risk in disaster events globally are people with disabilities and older people. Specifically, approximately 15% of the world's population is thought to have a disability, with the majority residing within low and middle-income countries (LMICs), where 9 in 10 disaster-related deaths have occurred in the last 50 years (WMO, 2021). The world's population is also ageing, with the share of older populations in LMICs increasing as factors like access to healthcare improve (Sudharsan et al., 2018).

Furthermore, as disability is positively correlated with age, many people with disabilities are likely to be older, and vice versa, with one study suggesting there may be up to 14 million older people with disabilities affected by disasters (Help Age, 2018).

Both people with disabilities and older people are disproportionately more likely to suffer severe outcomes in disasters. For example, these groups may be at increased risk of injury and death, or they may face barriers accessing evacuation routes and shelters (HelpAge, 2018; Twigg et al., 2018). This is not solely due to the quality of "having a disability" or "being old"; rather vulnerability is produced through an interaction between having an impairment and/or being older, the environment, and social and institutional structures, like community attitudes or policies (Twigg et al., 2018). Frequently, vulnerability to disasters is produced through an association between the identity of having a disability or being older and another at risk characteristic. For example, disability is associated with lower socioeconomic status, and individuals of low socioeconomic status are in general less likely to be informed of, and be able to respond to, disasters (Chen et al., 2009). Moreover, people with disabilities and older people are, like all social groups, heterogeneous, meaning that some individuals within these groups (e.g. pregnant women with disabilities; older caregivers) may be more vulnerable to disasters than others.

Despite the importance of being prepared to cope with disasters ahead of time, and the crucial role of communication strategies in supporting preparedness, little is known about how to ensure communications about disaster preparedness are inclusive of people with disabilities and older people. This includes within the context of Bangladesh, a country exposed to significant natural disasters including floods, cyclones and earthquakes. Bangladesh has a large population of over 170 million and is one of the most densely populated countries in the world. As of 2020, a quarter of the Bangladeshi population is estimated to live in multidimensional poverty (UNDP, 2020). In some disaster-prone districts, such as Kurigram District located in the north-western region, up to half of the population are estimated to live in poverty (Imam et al., 2020). These reasons, as well as weather and climate-related factors, contribute to why Bangladesh has suffered two of the worst natural disasters in the last 50 years in terms of numbers of deaths (WMO, 2021). In recent years, Bangladesh has greatly improved its disaster management infrastructure. To underpin the effectiveness of disaster risk reduction it is imperative that its system is inclusive of the most marginalised: people with disabilities and older people.

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This report comprises a situational analysis looking at how people with disabilities and older people access disaster preparedness communications ("messaging"). It is part of the research project **Messaging for Inclusion: Co-creating disability and age inclusive disaster preparedness messaging in Bangladesh**. This project aims to answer the question of how disaster-related messaging can be made accessible in Kurigram District, and how it can be made more effective in terms of reaching people with disabilities and older people.

The project is funded by the **Elrha Humanitarian Innovation Fund (HIF)**, and led by Leonard Cheshire in partnership with Christian Aid and Kurigram Protibondhi Kallyan Sangstha (KPKS). It is intended to inform subsequent primary research that will take place under the project.

This project aims to answer the question of how disaster-related messaging can be made accessible in Kurigram District, and how it can be made more effective in terms of reaching people with disabilities and older people.

This situational analysis explores the following two research questions in the context of Bangladesh:

1. What are the key elements that make up disaster preparedness messaging?
2. What factors need to be considered for disability and age inclusive disaster preparedness messaging in the context of Kurigram District, Bangladesh?

The report is in two parts. The first part begins with a framework for understanding and classifying disaster preparedness communication, before presenting a deep-dive into the Bangladesh context, covering disability and age in the context of Bangladesh, as well as Bangladeshi disaster management infrastructure and disaster risk reduction laws policies to date. The second part of the report presents a scoping study of available empirical literature on disaster preparedness communication for people with disabilities and older people, drawing on evidence from Bangladesh and the South Asia region where possible.

Part 1: Putting disability and age inclusive disaster preparedness messaging for Kurigram District, Bangladesh in context

What are the key elements that make up disaster preparedness messaging?

Disaster preparedness messaging is not static. Different methods of communication may be identified and employed as new technologies emerge and the culture and behaviour of populations shift (Bradley et al., 2014; Bricout & Baker, 2010). This also means that there is no timeless, culture-invariant example of a 'good' disaster preparedness messaging channel, as the effectiveness of a communication strategy must be responsive to the context it is employed in. Notwithstanding, it is useful to briefly consider a typology of disaster preparedness messaging. For example, on balance, does an effective disaster preparedness communication aim to inform, or can it be light on information but adopt emotive language designed to encourage action?

Mileti, Sorenson and colleagues propose that disaster communication is influenced both by characteristics of the message (e.g. level of clarity, specificity and frequency) and the characteristics of the individuals receiving the message (Mileti & Fitzpatrick, 1992; Mileti & Sorenson, 1990). In this model, characteristics of disaster messaging 'receivers' encompass their individual characteristics (e.g. age, disability status), but also their environment (e.g. how often disasters occur) and social factors (e.g. the strength of ties with the local community) (Mileti & Fitzpatrick, 1992). While it is beyond the scope of this situational analysis to consider in depth what characteristics constitute an effective disaster preparedness communication, extant research suggests messaging content is the biggest determinant (Mileti & Sorenson, 1990). Messaging content itself can also be broken down into various factors such as message source, timing of the warning, and the guidance described in the message (Sutton et al., 2015). Evidence in particular highlights the value of clear, informative and accurate messaging, consistent across different channels and delivered in easy-to-understand language (Levac et al., 2012; Mileti & Sorenson, 1990; Sorenson, 2000). More recent lines of empirical inquiry examine messaging content in the context of new communication platforms like Twitter (e.g. Sutton et al., 2015; Vos et al., 2018).

Considered from the perspective of disability and age inclusive disaster preparedness communication, what the body of evidence on messaging content illustrates is that it may not be enough for messages to simply reach people with disabilities and older people.

For a communication strategy to be inclusive in the sense of producing an equitable preparedness outcome for these groups, it is important to consider other factors. These include whether people with disabilities and older people can access the same *range* of messages, whether they can access them as rapidly and easily as younger and non-disabled people, and whether the information delivered is clear and unambiguous for them. However, the majority of literature reviewed on messaging content for this situational analysis was conducted in high-income contexts, particularly the USA, and there appeared to be little information on effective messaging content in low and middle-income contexts.

Clearly, while some messaging strategies may operate broadly better than others, as is evident from the Mileti & Fitzpatrick (1992) model, all disaster communication is also influenced by the characteristics of the receiver. As such, this also means that a broad communications strategy will not be inclusive for all, or even all members of a social group such as people with disabilities and older people, as individual group members will possess heterogenous characteristics that make certain strategies more or less effective. This implies that an inclusive communication strategy should also be relevant and tailored to its audience members. To understand who this audience is in the context of Kurigram District, this report turns now to consider the background and characteristics of people with disabilities and older people in Bangladesh.

In Bangladesh, the 2010 household survey suggested that 38% of over 60s had a disability. A recent survey suggests that this could be as high as 50% of over 60s when in the context of a humanitarian crisis.

Disability and age in the context of Bangladesh

Bangladesh's last available census was conducted ten years ago in 2011. Although another census has been planned for 2021, this was not available at the time of writing. Census data places the population of those 60 or over in Bangladesh at almost 5%, while more recent estimates from UNDESA (2015) suggest that 7% of Bangladesh's population is 60 or over, projected to grow to 11.5% by 2030. In terms of disability, the 2011 census data suggests only 1.4% of the population have a disability. However, the questions used to assess disability are not considered robust (Abu Alghaib et al., 2019). A 2010 household survey from the Bangladesh Bureau of Statistics (BBS), which used a more widely accepted methodology known as the Washington Group Questions, identified a prevalence of 10.2%. Similarly, data collected via a new intercensal monitoring system in 2018 suggests a disability prevalence of 8.5% (BBS, 2018).

Considering the intersection between disability and age, overall disability prevalence increases with age, being highest in older age groups (WHO, 2011). In Bangladesh, the 2010 household survey suggested that 38% of over 60s had a disability. A recent survey suggests that this could be as high as 50% of over 60s when in the context of a humanitarian crisis (REACH, 2021). Moreover, disability has been identified as a risk factor for poverty in Bangladesh (Davis, 2016, Thompson, 2020). The association between disability, ill-health and ageing is a contributing factor to why many older Bangladeshis live in poverty (HelpAge, 2017).

In the poorest district of Bangladesh, Kurigram, only 56% of the population are estimated to be literate, compared to the national average of 74% (BBS, 2011). However, given recent improvements in education systems, illiteracy falls disproportionately on older people, as well as people with disabilities, who are more likely to be excluded from school than people without disabilities (UNICEF, 2014). Bangladesh as a whole has a mobile penetration rate of 54% and a mobile internet penetration rate of 28% (GSMA, 2021). However, people living in poverty are less likely to own a mobile phone. There is also a noted mobile disability gap, whereby people with disabilities in Bangladesh are 10% less likely to use a mobile phone (GSMA, 2019). Illiteracy and lack of access to communication technology are factors that may increase the risk of exclusion of people with disabilities and older people from disaster preparedness messaging.

Disasters and disaster preparedness messaging in Bangladesh

Bangladesh is geographically located at one of the world's most naturally disaster-prone areas, frequented by widespread and severe floods every year, as well as frequent tropical cyclones (United Nations Office for Disaster Risk Reduction (UNDRR), 2020). Kurigram is a district located in the Rangpur division of Northwestern Bangladesh. It is comprised of nine sub-districts (Upazillas), and 72 Unions (lowest administrative units), with a population of over 2 million. Roy and Sarker (2016) highlight that seasonal flooding affects the people of Kurigram frequently, the extent depending on surrounding rivers and total rainfall. For example, in 1998 and 2004 there were particularly catastrophic floods that affected the whole district. However, even the less severe seasonal flooding is devastating, with 400,000 people stranded by floods in 2019 alone (START, 2019). Roy and Saker (2016) point out that the severity of flooding in Kurigram is accentuated because the district has poor flood forecasting capacity.

A recent study examining how communities in Buraburi Union, Kurigram, prepare and respond to flooding paints a concerning picture of the risk to the general population (Bassar & Habib, 2016). It found that there was no formal organisation involved in flood forecasting, and identified that community members mainly found out about ongoing floods via word-of-mouth, mobile or radio. Moreover, the majority of participants said that they were ill-prepared for flooding and did not – or could not – take all the effective preparedness measures they would like. For example, the study found that two-thirds of the 100 households surveyed did not know that there was a flood shelter nearby. The study noted the central role of women in supporting local community preparedness efforts (e.g. storing firewood for cooking during a flood) but did not disaggregate by age or disability.

In terms of a nationwide approach toward disaster preparedness, the government has taken strong steps to improve infrastructure since the 1970s cyclone Bhola, in which over 500,000 people are thought to have lost their lives. This remains one of the most severe disaster events the world has faced. The Ministry of Disaster Management and Relief was formed in the wake of that disaster. In the past decade, the Department of Disaster Management (DDM) was set up under it, to oversee the implementation of the disaster management strategy. The Department also has a focus on promoting disaster risk reduction and in particular protecting and building the capacity of groups vulnerable to disasters (DDM, 2016). Additionally, the multi-sectoral National Disaster Management Council (NDMC) provides overarching strategic and policy guidelines on disaster risk reduction to the other agencies.

Beginning with the Standing Orders on Disaster (SOD) in 1997, there have been several national policy and legal frameworks to support disaster management and mitigate risks to vulnerable groups. Notably, there has been the Disaster Management Act (2012), the Disaster Management Policy (2015) and the Seventh Five Year Plan (2015). Additionally, the SOD were revised in 2010 and a National Plan for Disaster Management 2010-2015 is now in its third iteration (2020-2025). In terms of disaster preparedness communication, the National Plan for Disaster Management 2010-2015 directed the formation of a nationwide early warning system, the Disaster Management Information Centre (DMIC), to consolidate preparedness communication efforts. According to the Seventh Five Year Plan (Planning Commission, 2015), seminal infrastructure achievements in disaster preparedness communication include the creation of an Interactive Voice Response (IVR) system, which provides information such as weather updates and cyclone warnings to any mobile phone. Additionally, disaster alerts are now sent by the DMIC to Union Information Service Centres (UISC), which are information centres in local communities that offer internet services to rural populations (Das, 2019).

In terms of a nationwide approach toward disaster preparedness, the government has taken strong steps to improve infrastructure since the 1970s cyclone Bhola, in which over 500,000 people are thought to have lost their lives.

Considering the aspects of existing disaster policy and legal frameworks most relevant to disability and age-inclusive disaster preparedness communication, the Disaster Management Act 2012 provides a legal mechanism for the government to take protective actions specifically targeting people with disabilities and older people. The National Plan for Disaster Management 2010-2015 also confers priority on people with disabilities and older people in terms of recovery plans in the aftermath of disasters, but does not comment on preparedness. Similarly, the Seventh Five Year Plan (Planning Commission, 2015) mentions the general need for disability and age inclusive disaster risk reduction. Of further relevance, Bangladesh also has specific laws, policies and plans pertaining to both people with disabilities (e.g. Rights and Protection of Persons with Disabilities Act 2013, National Action Plan on Disability 2006) and older people (e.g. National Policy of Older Persons 2013) which contain cognate provisions and protections in areas related to disaster preparedness. For example, the National Action Plan on Disability 2006 covered transport and communication as an area of priority (Thompson, 2020).

The narrative review conducted of Bangladesh laws and policies relevant to disaster preparedness communication for this situational analysis identified no formal study of the extent and areas in which national laws and policies consider, enforce and promote disability and age inclusive communication for disaster preparedness. This itself is an evidence gap. The issue also warrants consideration in the context of international frameworks. Notably, the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD, 2007) upholds the right of people with disabilities to full and equitable participation. The Sendai Framework for Disaster Risk Reduction (2015), adopted by UN member states, calls for a people-centered approach to disaster risk reduction, noting that governments must engage with members of vulnerable communities, including people with disabilities and older people. Finally, there now exist international guidelines on the inclusion of people with disabilities and older people in humanitarian action. For instance, the Inter-Agency Standing Committee (IASC), which is a co-ordination body for humanitarian assistance between UN agencies and key non-UN partners, has published recent guidelines on the inclusion of people with disabilities in humanitarian action (IASC, 2019). Additionally, UK and US government funding has led to the creation of international guidelines for the inclusion of people with disabilities and older people in humanitarian action (Age and Disability Consortium, 2018).

Part 2: Identifying relevant factors for disability and age inclusive disaster preparedness messaging in Kurigram District, Bangladesh

Methodological approach

For the second part of this situational analysis, we conducted a rapid desktop scoping review which collated academic and grey literature on disability and age inclusive disaster preparedness, in particular inclusive messaging strategies. As such, the focal groups for the review were people with disabilities and older people. Initially, the review was focused specifically on literature within Bangladesh and the South Asia region, but due to a paucity of research, it was extended more widely to cover key global sources.

To facilitate the rapid scoping review, key databases (e.g. Web of Science) and search engines (e.g. Google Scholar) were searched in English in order to identify sources of interest, using a list of key terms corresponding to disaster preparedness, messaging, people with disabilities and older people. Targeted web searches also took place in Bangla. Research papers and scientific research reports both unpublished and published between the start of January 2007 (i.e. proximal to the signing of the UNCRPD) and 2021 were included in the reviews. Literature searches were supplemented by informal telephone conservations with project partners, Christian Aid and KPKS.

As the primary purpose of the rapid scoping review (and wider situational analysis) was to inform the new primary research being conducted under the **Messaging for Inclusion: Co-creating disability and age inclusive disaster preparedness messaging in Bangladesh** project, the below narrative analysis should not be taken as an exhaustive discussion of factors influencing disability and age inclusive disaster preparedness messaging. Rather, the analysis is intended to offer useful direction in regard to what factors to consider in creating disability and age inclusive disaster preparedness messaging, including where there are evidence gaps. The narrative also contextualises the evidence around disaster preparedness messaging in the context of the wider extant research about disability and age inclusive disaster risk reduction. In this respect, a recent review by Robinson, Marella and Logam (2020) notes that there is a paucity of evidence on the inclusion of people with disabilities and older people in the disaster reduction cycle (i.e. preparedness, response, recovery) in general, with most of the limited range of sources published after 2015.

Meaningful participation of people with disabilities and older people in disaster preparedness messaging

This factor concerned the extent that people with disabilities and/or older people can influence, play a role in the co-ordination of, or give feedback about disaster preparedness messaging. Meaningful participation across the broader disaster risk reduction cycle is a growing area of attention within humanitarian interventions, although Robinson et al. (2020) find the area is subject to little direct empirical investigation.

In an article analysing experiences of the South Asian tsunami of 2004, Priestley and Hemingway (2007) identify that organisations of persons with disabilities (OPDs) found it difficult to engage with disaster management teams, while at the same time their resources had been depleted by the crisis, thus affecting capacity for engagement in the future.

More recently, international agreements like the Sendai Framework (2015) have put forward the need for meaningful consultation with vulnerable groups like people with disabilities and older people. This has been recognised within Bangladesh's own policies, like the Seventh Five Year Plan (Planning Commission, 2015). Within the Plan (p. 631), the need for meaningful participation is linked to the recognition that group members can make valuable contributions to support disaster management, and this line of thinking is also found elsewhere (e.g. Chen et al., 2009). For example, people with disabilities and older people are best placed to test communication strategies and decide whether message formats are accessible. However, as per Kett et al. (2005), the primary obligation to ensure meaningful participation is not only because people with disabilities (and older people) can contribute to effective disaster management, but because they are rights-holders.

Twigg and Kett (2018) suggest that for meaningful participation there should be representation of marginalised groups on decision making bodies at all levels. Such representation would naturally encompass those bodies responsible for disaster preparedness messaging. Hay and Pascoe (2018) find that in the aftermath of the 2011 Christchurch earthquake, mass media was important in calling attention to the fact that disability needs had not been incorporated into disaster risk planning. This raises the possibility that effective disaster preparedness messages may also promote meaningful participation, in addition to being influenced by it.

The accessibility of disaster preparedness messaging for people with disabilities and older people

The accessibility of media-based disaster communications is a common factor discussed in the extant research literature, particularly with reference to people with hearing or visual impairments and in terms of contemporary forms of mass media such as TV or social media. For example, Yap and Mitra (2020) identified that during the COVID-19 outbreak only about two-thirds of countries worldwide (including Bangladesh) used a sign-language interpreter within at least one national press conference, falling to just two-fifths of low-income countries. The literature describes numerous channels used to reach people with disabilities, for example, television news, radio (Fu et al., 2010) and community plays about disaster risk reduction (Craig et al., 2019).

For older people, research by Akunuma et al. (2011) highlights that information about disasters conveyed via television is often difficult to interpret, even for older adults without disabilities. A study by Pang, Karanasios, and Anwar (2019) observed that while television or radio were older people's preferred sources of preparedness information, they found the content of the messages hard to interpret. Moreover, global evidence shows that older people have very low levels of social media use (Morris, Mueller & Jones, 2014; Pang, Karanasios & Anwar, 2019), thus limiting its effectiveness as a disaster preparedness channel for this group. This is in stark contrast to (younger) people with disabilities, who use social media at a comparable level to the general population in some high-income settings such as the USA (Morris, Mueller, & Jones, 2014). Finally, where disaster preparedness communication is delivered formally by emergency workers, research highlights the need to provide staff with training to ensure the communication needs of older people and certain groups of people with disabilities (e.g. those with hearing impairments) are met (Engelman et al., 2013; Kamau et al., 2019).

Taken together, this literature highlights the need to adopt a plurality of disaster messaging channels to reach different groups (and different members within these groups), as well as consider different ways of presenting content to ensure all group members will be able to comprehend and act on the preparedness information.

In terms of the scope of the present research, the efficacy of social media as a viable disaster messaging channel may be limited, due to the high poverty rate in Kurigram district. As noted earlier, one study found that residents in Kurigram mainly learned about flooding via word of mouth, radio or mobile, but the study did not disaggregate by disability or age and there is a noted mobile disability gap in Bangladesh (GSMA, 2019). In a similar context, Pang et al. (2019), who examined preparedness messaging among older people in rural Indonesia, identified that local, informal networks played a role in spreading information beyond initial sources (i.e. broadcast media). These community-based messaging solutions are considered under the next factor.

Taken together, this literature highlights the need to adopt a plurality of disaster messaging channels to reach different groups (and different members within these groups), as well as consider different ways of presenting content to ensure all group members will be able to comprehend and act on the preparedness information.

The role of community networks in disability and age inclusive disaster preparedness messaging

This factor considers two dimensions of community involvement. First, the crucial role of the community in disability and age inclusive disaster preparedness messaging and second, the benefits that the involvement of people with disabilities and older people in disaster preparedness messaging can confer on the community.

Considering the first aspect, a study conducted in Cambodia among women with disabilities found that the community (family, friends and neighbours) were the key source of preparedness information for almost all participants (Gartrell et al., 2017). Converging evidence is also provided from other contexts such as the Solomon Islands (King et al., 2015) and Tuvalu (Elisala et al., 2020). Similarly, research among older people in Indonesia highlighted the crucial role of village heads (a local person responsible for coordinating disaster management efforts), neighbours, or (adult) children in disseminating preparedness information to older people, especially where individuals did not have access to or did not regularly use broadcast media (Pang et al., 2019). Moreover, in a study examining the inclusion of older people in cyclone disaster management in coastal Bangladesh, Malak et al. (2020) found that support of younger adults was crucial. They found that younger adults provided preparedness and other support not only to their older family members, but also to unrelated older adults in the community. Clearly this suggests that the community may be an effective messaging channel for reaching people with disabilities and older people in Bangladesh.

However, in the context of research on disability inclusion in the wake of Typhoon Haiyan, Zayas et al. (2017) point out that existing disability stigma and discrimination within communities may sometimes prevent people with disabilities from being included in disaster risk reduction efforts, including preparedness.

Problematically, Zayas et al. (2017) also highlight that negative attitudes can be internalised by people with disabilities and negatively impact their self-perceptions as individuals able to contribute to decision making. This is certainly a missed opportunity for disaster risk reduction, as in addition to the formal involvement of OPDs, individuals with disabilities can make a substantial contribution to disability inclusive preparedness in the community (Priestley & Hemingway, 2007). Specifically, people with disabilities are best placed to overturn stigmatising perceptions of disability itself and advise on how to implement disability inclusion in all areas of communications (e.g. messaging content, format, platforms etc.). As such, Craig et al. (2019) recommend that local disaster risk reduction agencies seek to train people with disabilities to act in an advisory capacity (including through formal employment).

In a similar fashion, older people can also make a substantive contribution to disaster preparedness messaging. In particular, Pang et al. (2019) highlight that in many cultures older people may be central to information flows and able to influence local social structures, for example in spreading messages. They also may possess a repository of useful information with regards to disaster preparedness, built upon prior experience. Ultimately, this suggests that disaster preparedness messaging to communities will be more effective and inclusive with the involvement of people with disabilities and older people.

Disability and age-disaggregated data for disaster preparedness messaging

Ensuring the effectiveness of disability and age inclusive disaster preparedness messaging requires that actors know where people with disabilities and older people are and what channels they use to access information. The availability of good quality disaggregated data that can identify group members can be challenging, particularly because measuring disability is not straightforward and requires the use of established measures (e.g. the Washington Group Short Set) and enumerator training (Abu Alghaib et al., 2019). In Bangladesh, use of such higher quality disability measures has identified an additional 7% of people with disabilities, relative to the 2011 census when a less robust measure was used (BBS, 2018). However, there are, for example, no representative statistics at national or district level regarding the different technology or messaging channels people with disabilities and older people have access to. Therefore, while evidence suggests there is a mobile disability gap in Bangladesh (GSMA, 2019), the magnitude of this gap at district level or among sub-groups like older people with disabilities has not been estimated.

Use of data also encompasses the sharing of data back to the communities that provided the data (or are affected by the findings). People with disabilities (and other groups) should also be involved in evidence dissemination, which helps ensure that wider communities are empowered by research

There are several 'best practices' around disability data collection, and disaggregated data more generally, that are beyond the scope of this report to discuss. However, one aspect worth mentioning is that ensuring the inclusion of people with disabilities (and other groups) in the planning, design and use of data enhances the quality of the data collected and the learnings derived from it (Abu Alghaib et al., 2019; Quigley et al., 2018). Use of data also encompasses the sharing of data back to the communities that provided the data (or are affected by the findings). People with disabilities (and other groups) should also be involved in evidence dissemination, which helps ensure that wider communities are empowered by research (Daehnhardt & Bollaert, 2021).

Another area of interest is to look towards the emerging area of 'big data' for disaster management, so far mostly limited to high-income contexts. Specifically, advances in technology have meant that governments now have a lot of data at their disposal, including geospatial. These data can play a role in a pre-emptive disaster management system, which Akter and Wamba (2019) highlight should include an informational hub synthesizing the various forms of data collected. Disability and age inclusive data may be useful for such an informational hub, for example highlighting localities with a greater percentage of people with disabilities or older people. However, from this rapid scoping review, the capacity of Bangladesh's Disaster Management Information Centre (DMIC) to pursue such an approach and its usefulness is currently unclear.

Key findings and recommendations

The present situational analysis looked at how people with disabilities and older people access disaster preparedness communications ('messaging') across two distinct lines of inquiry. The first part outlined a framework for understanding and classifying disaster preparedness communication, before presenting a deep-dive, covering disability and age in the context of Bangladesh, as well as Bangladesh's disaster management infrastructure and disaster risk reduction laws and policies to date. The second part of the report covered a scoping study of available empirical literature intended to identify key factors for disaster preparedness communication for people with disabilities and older people.

The primary purpose of the situational analysis was to inform new primary research being conducted for the **Messaging for Inclusion: Co-creating disability and age inclusive disaster preparedness messaging in Bangladesh** project, funded by Elrha. However, there are a number of key findings and recommendations of interest to actors working on disaster management in Bangladesh and more broadly. These key findings and recommendations are presented below, separated into a global and Bangladesh-specific list.

Global

1. In terms of general principles for good disaster preparedness messaging, evidence highlights that communications should be clear, informative and accurate, consistent across different channels and delivered in easy to understand language (e.g. Levac et al., 2012).
2. Multiple disaster messaging channels are needed to reach people with disabilities and older people, and different members within these groups. For example, in some settings people with disabilities use social media in similar fashion to the general population, but globally social media use remains low among older people (e.g. Morris et al., 2014), meaning the effectiveness of social media as a messaging channel for younger and older people with disabilities will diverge.
3. There needs to be consideration of different ways of presenting content to ensure all group members will be able to comprehend and act on the preparedness information. For example, even healthy older adults may find messages on television difficult to process (e.g. Akunuma et al., 2011).
4. Community networks are vital in spreading disaster preparedness messaging to people with disabilities and older people, particularly to rural-based communities (e.g. Pang et al., 2019). In some communities, there may be stigma toward people with disabilities which may limit the willingness of communities to include them in local disaster risk reduction efforts (e.g. Zayas et al., 2017).
5. The involvement of people with disabilities in the creation and dissemination of disaster preparedness messaging can help overturn stigma and may lead to more effective preparedness. For example, local disaster risk reduction organisations can train and employ staff with disabilities (Craig et al., 2019). The involvement of older people is also often crucial to supporting information flow (Pang et al., 2019).
6. Disaster preparedness messaging should be underpinned by the meaningful participation of OPDs and representatives of older people in all decision making around the disaster risk reduction cycle (e.g. official disaster management bodies; Priestley & Hemingway, 2007). This is needed not only to ensure more effective preparedness, but because people with disabilities and older people are rights-holders (Kett et al., 2005).
7. Disability and age-disaggregated data is important to identify people with disabilities and older people and what messaging channels they use. Data collection should take place with the participation of people with disabilities and older people in the evidence generation cycle (e.g. Quigley et al., 2018), including the dissemination of evidence back to wider communities. Actors within the emerging area of 'big data' for disaster risk reduction (Akter & Wamba, 2019) should consider how to integrate disability data and age data to best ensure preparedness via inclusive disaster communications and other optimal outcomes.

Bangladesh

1. A substantial percentage of the population of Bangladesh are people with disabilities or older people (8.5% and 7% respectively, BBS, 2018; UNDESA, 2015). Moreover, many older people have a disability (e.g. Help Age, 2017). As such, people with disabilities and older people comprise a large sector of the population that warrant consideration in disaster risk reduction.

2. At the same time, there is a dearth of research on disability and age inclusive disaster preparedness in Bangladesh, including in the area of messaging and the best methods to communicate with these groups. Extant research highlights radio, mobile and community networks as useful disaster preparedness communication channels (e.g. Bassar & Habib, 2016). However, recent estimates also show that people with disabilities in Bangladesh are 10% less likely to use a mobile phone (GSMA, 2019), which also carries implications for the effectiveness of messaging channels commonly accessed through a phone, such as social media. In general, more research into disability and age inclusive disaster risk reduction is needed in the Bangladesh context, including for preparedness communications. For example, we did not identify studies that looked at access to technology among individual members *within* households. In some contexts, household heads may control the use of important household items (Carew et al., 2019). This means that some individual older household members or those with disabilities may conceivably have less access to disaster preparedness communication compared to members of these groups who are also household heads.

3. Bangladesh has several laws and policies relevant to disaster preparedness communication (e.g. the Seventh Five Year Plan; Planning Commission, 2015). These do make mention of people with disabilities and older people. However, there has been no formal study of the extent and areas in which national laws and policies consider, enforce and promote disability and age inclusive communication for disaster preparedness. Such an analysis would be useful to drive forward a targeted understanding of disability and age-inclusive disaster risk reduction in the Bangladesh context.

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