

Holistic Policy Responses for Disability-Inclusive Disaster Risk Reduction: A Rapid Review

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ABSTRACT

People with disability can experience barriers to their safety throughout stages of emergency management planning, response, and recovery. To advance national policy guidance and social justice, this review asked how the application of national DiDRR principles and standards have shaped DiDRR policy and practice guidance external to Australia. Our rapid review thus informed the following two questions: a) what national DiDRR guiding principles, standards and related structural barriers currently exist outside of Australia?; and b) in what ways might national guiding principles and standards be practically applied in whole-of-government and whole-of-society policy efforts to address structural barriers impeding DiDRR? Applying thematic analysis, we identified nine national DiDRR principles: strength-based emergency support; human rights; equal partnerships; diversity and inclusion; cultural competence; anti-discrimination; accessibility; person-centred emergency preparedness; and education and awareness. Three national DiDRR standards covered accessibility across: emergency communication; emergency transport; and emergency shelter. Our exploratory research raises potential for co-designed DiDRR policy and practice to increase the social and economic participation of people with disability that extend beyond immediate goals of reducing emergency risks.

Introduction

Disasters have a disproportionate impact on people with disability who experience barriers to their safety throughout stages of emergency management planning, response, and recovery (Twigg et al., 2018). International obligations to protect the rights of people with disability in emergencies under the United Nations Convention on the Rights of Persons with Disabilities (UN-CRPD) require their participation in disability inclusive disaster risk reduction (DiDRR) policy formulation (Gautam & Sharma, 2018; Takayama et al., 2022). Such inclusion recognises the strengths that people with disability bring to disaster risk reduction (DRR) and the impact of their voices, experiences and contributions towards advancing safety and wellbeing in emergencies. According to the United Nations Office for Disaster Risk Reduction (UNDRR, 2024a), “disaster risk reduction is aimed at preventing new and reducing existing disaster risk and managing residual risk, all of which contribute to strengthening resilience and therefore to the achievement of sustainable development.” DRR strategies and policies strive to lower risks through a range of measures including reducing exposure to disaster events, remaining diligent with land and environmental management, supporting sustainable development, and improving peoples’ preparedness for disaster events (International Strategy for Disaster Reduction, 2004; Naheed, 2021). Increasingly recognised as a key part of building community resilience in the event of disaster, DiDRR is applied across prevention, preparedness, response and recovery phases of the disaster cycle (Crawford et al., 2023; Sserunkuma, 2017). Established with the goal of ensuring the inclusion of people with disability in disaster and emergency management planning, measures supportive of DiDRR act to prioritise the needs of people with disability throughout a given disaster situation (Leyla Craig et al., 2023; Nasreen et al., 2024). While DiDRR programs and practices are increasingly implemented throughout Australia, pathways to enable the inclusion of people with disability in DRR activities nevertheless remain disjointed with notable gaps reported where the needs of people with disability are overlooked leading to inadequate emergency preparedness (Calgaro et al., 2020; Quail et al., 2018; Weibgen, 2014). One fundamental gap is a current lack of awareness about DiDRR practices at both local and national levels, resulting in people with disability continuing to be underserved in DRR efforts (Leyla Craig et al., 2023; Neupane, 2022). In this context, our study forms part of a broader research initiative in Australia aiming to build national consistency for DiDRR development and implementation by enhancing the coordination between disability policies and emergency management protocols. By informing inclusive disaster management policies, the potential benefits of this research initiative encompass improved safety, empowerment, and social participation for people with disability.

Collaborative Australian research has revealed that effective DiDRR is reliant upon fundamental principles of participation, accessibility, collaboration, and non-discrimination (Duncan et al., 2018; Villeneuve, 2021). In practice, however, the application of principles (e.g., accessible environments and communications) are typically limited (Gartrell et al., 2020; Gaskin et al., 2017). With contemporary disaster management policy still largely treating people with disability as

'vulnerable victims', policies need to incorporate DiDRR principles in order to empower people with disability (Leilani Craig et al., 2019, p.352). Empowering people with disability in DRR involves: increasing opportunities to access and use risk information, supporting emergency preparedness planning tailored to support needs and risk situations, ensuring active involvement in the co-design of DRR resources and tools that are fit-for-purpose, and inviting meaningful participation in decisions which impact choices and opportunities for people with disability to be prepared and safe during emergencies (Calgaro, 2017; Villeneuve, 2021; Villeneuve et al., 2019; Waidyanatha, 2020). The literature is supportive of embedding DiDRR principles into future emergency management policies and practices (Calgaro et al., 2020; Pertiwi et al., 2020; Villeneuve, 2021). Australian research has demonstrated that co-produced DiDRR strategies also empower emergency managers to develop better understanding and more effective DRR solutions because it helps them to shift their focus from viewing people with disability as the source of vulnerability to identifying and removing the structural barriers that increase their disaster risks (Villeneuve, 2021).

Recognising the importance of Australia's shared responsibility framework for emergency management (Villeneuve et al., 2019), a need exists to provide specific guidance for a diverse range of practitioners- including emergency personnel, community and disability service providers - and individuals with disability to apply DiDRR principles in practice (Calgaro et al., 2020; Duncan et al., 2018; Gatto, 2016; Villeneuve, 2021). Standards play a fundamental role in providing this detailed practice guidance, in turn enabling DiDRR advancement on a national scale. Appreciating that the differences between principles and standards are not always well-defined or fixed, principles can be thought of as overarching ideas and values about how something is to operate (Cambridge Dictionary, 2024a; Jackson, 2014; Kärkkäinen et al., 2020). National principles can therefore support consistency in the widespread application of DiDRR strategies across diverse jurisdictions with different disaster risks, resources, and demographics. In contrast, standards are more specific, reflected in rules or detailed guidelines intended to be followed (Cambridge Dictionary, 2024b). Simply stated, principles encompass values and ideas upon which DiDRR operations are broadly guided, whereas standards offer the detailed directions needed to realise DiDRR goals through consistency in practice. Despite this important role, and according to the literature, there exists no consistent set of standards enabling a greater inclusion and participation of people with lived experience of disability in DRR (Gautam & Sharma, 2018; Global Resilience Partnership, 2019; Villeneuve et al., 2021). Australia's grassroots co-production of DiDRR tools, grounded in human rights and capability-focused approaches to disability inclusion in emergency management, facilitated a groundswell of support for person-centred DRR strategies positioning people with disability and their support needs at the centre of practice development (Villeneuve et al., 2021). This positioning of lived experience of disability is evidenced in the uptake, implementation, and recognition of person-centred emergency preparedness (P-CEP). Still, there remains a need to increase equitable access for all Australians with disability through nationally consistent emergency guidance that

supports scalability for broader reach. Such national guidance is central to establishing clear benchmarks and standards, facilitating better accountability and governance, and informing resource allocation decisions to prevent disparities in how DiDRR initiatives are implemented. Putting into practice this need for national consistency in the implementation of DiDRR, Australia is co-designing national emergency guiding standards from the ground up with people with disability (Villeneuve, 2021). Nevertheless, to ensure that important DiDRR practice standards have not been overlooked in this ongoing co-development process, it is appropriate to also consider national developments outside of Australia.

DiDRR endeavours to empower people with disability and emergency managers to exercise their different roles, responsibilities, and capabilities through their mutual participation in DRR activities and in the building of whole-of-community resilience to disasters (Matsukawa et al.; Villeneuve, 2021; Villeneuve et al., 2019). Moreover, with governance representing a key determinant of DRR success, the advancement of effective public sector governance for DRR necessitates a holistic, multi-sectoral approach (Danaa & Thorlund, 2022). The Hyogo Framework for Action (HFA) (2005-2015) was the international driver for collaborative governance in support of DRR (Twigg, 2009; Zhou et al., 2014). This Framework represented the first policy efforts to explain, describe and detail the work that is required from different sectors and actors to reduce disaster losses. The HFA was the predecessor to the Sendai Framework for Disaster Risk Reduction (SFDRR) which built on the CRDP and called for universal design, disability inclusion and accessibility, and person-centred approaches to reducing emergency risks (Gledhill & Baird, 2023; Stough & Kang, 2015). For it is this inclusive and integrated approach to DRR which has been advocated since 2005 in coordinated policy responses to emergencies including those of earthquakes in Nepal and Haiti, the 600 kilometre diameter Typhoon Haiyan which hit the Philippines in 2013, as well as flood events in Sri Lanka (Lagmay et al., 2015; Warner, 2020; Wijesinghe, 2022).

A holistic approach to DRR facilitates cooperation among differing levels of government as reflected in Australia's shared responsibility framework (Center Asian Disaster Reduction, 2015; de Vet et al., 2019). Aligning with broad policy guidance as offered by Australia's National Disaster Resilience Strategy, the Second National Action Plan to Implement the National Disaster Risk Reduction Framework (NDRRF), and the NDRRF policy itself, a shift towards shared responsibilities in a whole-of-government approach to DRR is further encouraged (Commonwealth of Australia, 2018; Lukasiewicz & Baldwin, 2020; Meltzer et al., 2024). A whole-of-government approach to policy development is defined as "redefining and renegotiating roles, responsibilities, relationships, accountabilities and power sharing" (Homel, 2004, p.5). Moreover, a holistic policy approach sees responsibilities dispersed across government departments and agencies to increase 'situational awareness' (Domingo, 2017, p.35; Nalau et al., 2016; Villeneuve et al., 2017). Australia's national implementation of DRR and its policy, and practice alignment internationally, takes on a shared responsibility approach. Recognising that the Australian Government supported a whole-of-government approach to

DRR over the last decade through its shared responsibility framework, public sector revisions are nevertheless needed to more effectively integrate DRR within and across all levels of government and further afield (Forino et al., 2017; Howes et al., 2015; Nalau et al., 2016; Villeneuve et al., 2017). Supporting practical application of the Sendai Framework for DRR, the UNDRR (2024b) recognised that preventing and reducing emergency risks requires a whole-of-society approach. This particular policy approach is defined as promoting, “the full and effective contributions of all relevant stakeholders to the risk management of emergencies” (World Health Organization, 2020, p.1). Movement beyond a whole-of-government approach, a whole-of-society approach to DRR requires the active involvement of an even broader array of stakeholders. In addition to government departments and agencies, a whole-of-society approach to DRR encompasses the private sector, industry groups, individuals with disability, their families, communities and organisations - i.e., Disabled People’s Organisations (DPOs), academia, research organisations, the media, faith-based groups, and voluntary groups (World Health Organisation, 2020). Embracing a wide array of representations, we argue that a collaborative whole-of-society approach to DRR should also consider and account for the diversity of identity and how some people’s identity intersect (e.g., race, culture and language, gender and sexual orientation, religion, social class, etc) to result in overlapping forms of oppression and discrimination. By understanding how multiple forms of inequality can compound, it is easier to identify who are excluded by emergency management policies and practices.

Literature Review

Appreciating that there is no shortage of scholarly publications which are supportive of whole-of-government and whole-of-society approaches to DRR in Australia and elsewhere, a paucity of research is currently published on the subject of holistic efforts towards advancing DiDRR. In particular, to addressing the structural barriers (e.g., legislative shortfalls) which can impede DiDRR delivery as informed by national DiDRR principles and standards external to Australia (Villeneuve, 2021). The scope of our research interest is therefore purposefully set to learning about DiDRR principles and standards from other nations. Recognising these pressing research and policy gaps, our investigative study will endeavour to inform the following two questions: a) what national DiDRR guiding principles, standards, and related structural barriers currently exist outside of Australia?; and b) in what ways might national guiding principles and standards be practically applied in whole-of-government and whole-of-society policy efforts to address the structural barriers impeding DiDRR as identified in this review? By addressing these questions, this rapid review forms an important part of an Australian effort to develop the guiding principles and standards which are essential to supporting consistency in the implementation of disability inclusive emergency management practices. Our review therefore offers a bridge to understandings about how national principles and standards have been applied in the shaping of DiDRR policy and practice guidance outside of Australia. While paraphrased for this article, we

note that the method and results sections to follow are in the Mellifont et al. (2024) report.

Research Methods

Typically completed in weeks rather than months, rapid review was purposefully chosen for this study given the appropriateness of this method towards informing timely policy decisions and directions (Harker & Kleijnen, 2012; Khangura et al., 2012). This research has applied the five Khangura et al. (2012) described stages to conducting a rapid review. These stages consist of: a) identifying the study question(s); b) identifying data sources and defining the search terms; c) developing the selection criteria; d) the screening and selection of studies; e) extracting data; and f) synthesising data. Our applications of each of these stages are described as per below.

Identifying the study question(s)

We collaboratively developed the aforementioned research questions that included review and feedback from an expert advisory consisting of national peak disability representative and advocacy bodies.

Identifying data sources and defining the search terms

The following seven academic databases were searched: MEDLINE; PsycINFO; Embase; Scopus; Web of Science; CINAHL; ProQuest Central applying the search terms that are defined in Table 1. Four grey literature databases were searched: Relief Web, Prevention Web, Ask Source, Disability-inclusive Disaster Risk Reduction Network (DIDRRN) by applying the search terms as per Table 2. The grey literature served as a supplement the scholarly publications with each group clearly differentiated in our results.

Table 1. Peer-reviewed literature search terms.

Medline, PsycInfo, Embase

((exp disabled persons/ or (disab* or handicap* or disabled Person* or mental retard* or development* disability* or learning disorder* or cognitive* or hearing impair* or "hearing loss" or "hearing disorder" or "Intellectual Disability" or "intellectual disorder" or "Cri-du-Chat Syndrome" or "down syndrome" or "de lange syndrome" or "Mental retardation" or "Rubinstein Taybi syndrome" or "trisomy 13" or "WAGR syndrome" or "Williams Syndrome" or "Prader Willi syndrome" or "genetic disorder" or "Vision disorder" or vision impair* or blind* or low vision* or "visual disorder" or "language development disorder" or "speech disorder" or "communication disorder" or "communication disability " or "mutism" or deaf* or "sign language" or "Auslan" or "auditory processing disorder" or "speech delay" or "language delay" or "semantic pragmatic disorder" or "Brain Injury" or autism* or autistic * or kanner* syndrome* or "Chronic brain damage" or "Cerebral Palsy" or neurodiver* or "Spinal dysraphism" or "Spinal

bifida" or "Mental disorder" or psych* disorder* or psych* disab* or "motor disorder" or "neuro cognitive disorder" or "neurodevelopment disorder" or "bipolar disorder" or "substance related disorder").ti.) and exp Disasters/) or exp Natural Disasters/ or exp Weather/ or landslides/ or tsunamis/ or volcanic eruptions/ or Pandemics/ or (natural disaster* or avalanche* or cyclonic storm* or earthquake* or flood* or landslide* or tidal wave* or tornado* or wildfire* or weather* or extreme heat* or Extreme weather* or lightning or rain* or temperature* or wind* or landslide* or tsunami* or volcanic eruption* or "chemical spills" or "chemical leakage" or "Oil spill" or Pandemic*).mp.) and (disability inclusive disaster risk reduction* or disaster risk education* or inclusive preparedness* or "Disaster Planning" or disaster plan* or "community participation" or "community support" or community engagement* or community participat* or community support* or "disaster management" or "disaster response" or "disaster recovery" or "emergency preparedness" or "emergency management" or "DIDRR" or "DRR" or "EPRR").ti,ab. and (standard* or Framework* or tool* or manual* or model* or Guideline* or Policy* or principle*).ti,ab.

ProQuest Central, Web of Science, CINAHL

(disab* or handicap* or disabled Person* or mental retard* or development* disability* or learning disorder* or cognitive* or hearing impair* or "hearing loss" or "hearing disorder" or "Intellectual Disability" or "intellectual disorder" or "Cri-du-Chat Syndrome" or "down syndrome" or "de lange syndrome" or "Mental retardation" or "Rubinstein Taybi syndrome" or "trisomy 13" or "WAGR syndrome" or "Williams Syndrome" or "Prader Willi syndrome" or "genetic disorder" or "Vision disorder" or vision impair* or blind* or low vision* or "visual disorder" or "language development disorder" or "speech disorder" or "communication disorder" or "communication disability" or "mutism" or deaf* or "sign language" or "Auslan" or "auditory processing disorder" or "speech delay" or "language delay" or "semantic pragmatic disorder" or "Brain Injury" or autism* or autistic* or kanner* syndrome* or "Chronic brain damage" or "Cerebral Palsy" or neurodiver* or "Spinal dysraphism" or "Spinal bifida" or "Mental disorder" or psych* disorder* or psych* disab* or "motor disorder" or "neuro cognitive disorder" or "neurodevelopment disorder" or "bipolar disorder" or "substance related disorder") and (natural disaster* or avalanche* or cyclonic storm* or earthquake* or flood* or landslide* or tidal wave* or tornado* or wildfire* or weather* or extreme heat* or Extreme weather* or lightning or rain* or temperature* or wind* or landslide* or tsunami* or volcanic eruption* or "chemical spills" or "chemical leakage" or "Oil spill" or Pandemic*) and (disability inclusive disaster risk reduction* or disaster risk education* or inclusive preparedness* or "Disaster Planning" or disaster plan* or "community participation" or "community support" or community engagement* or community participat* or community support* or "disaster management" or "disaster response" or "disaster recovery" or "emergency preparedness" or

"emergency management" or "DIDRR" or "DRR" or "EPRR") and (standard* or Framework* or tool* or manual* or model* or Guideline* or Policy* or principle*)

Scopus

disab* OR handicap* OR "disabled Person*" OR "mental retard*" OR "development* disability*" OR "learning disorder*" OR cognitive* OR "hearing impair*" OR "hearing loss" OR "hearing disorder" OR "Intellectual Disability" OR "intellectual disorder" OR "Cri-du-Chat Syndrome" OR "down syndrome" OR "de lange syndrome" OR "Mental retardation" OR "Rubinstein Taybi syndrome" OR "trisomy 13" OR "WAGR syndrome" OR "Williams Syndrome" OR "Prader Willi syndrome" OR "genetic disorder" OR "Vision disorder" OR "vision impair*" OR blind* OR "low vision*" OR "visual disorder" OR "language development disorder" OR "speech disorder" OR "communication disorder" OR "communication disability " OR "mutism" OR deaf* OR "sign language" OR "Auslan" OR "auditory processing disorder" OR "speech delay" OR "language delay" OR "semantic pragmatic disorder" OR "Brain Injury" OR autism* OR autistic* OR "kanner* syndrome*" OR "Chronic brain damage" OR "Cerebral Palsy" OR neurodiver* OR "Spinal dysraphism" OR "Spinal bifida" OR "Mental disorder" OR "psych* disorder*" OR "psych* disab*" OR "motor disorder" OR "neuro cognitive disorder" OR "neurodevelopment disorder" OR "bipolar disorder" OR "substance related disorder" AND "natural disaster*" OR avalanche* OR "cyclonic storm*" OR earthquake* OR flood* OR landslide* OR "tidal wave*" OR tornado* OR wildfire* OR weather* OR "extreme heat*" OR "Extreme weather*" OR lightning OR rain* OR temperature* OR wind* OR landslide* OR tsunami* OR "volcanic eruption*" OR "chemical spills" OR "chemical leakage" OR "Oil spill" OR pandemic* AND "disability inclusive disaster risk reduction*" OR "disaster risk education*" OR "inclusive preparedness*" OR "Disaster Planning" OR "disaster plan*" OR "community participation" OR "community support" OR "community engagement*" OR "community participat*" OR "community support*" OR "disaster management" OR "disaster response" OR "disaster recovery" OR "emergency preparedness" OR "emergency management" OR "DIDRR" OR "DRR" OR "EPRR" AND standard* OR framework* OR tool* OR manual* OR model* OR guideline* OR policy* OR principle*

Table 2. Grey literature search terms.

Prevention Web
DIDRR AND (National guideline OR principle OR framework OR tools)
Relief Web
"DiDRR" OR "Disability guideline"
Ask Source
(Disability AND disaster AND guideline) OR "disability inclusion" OR "disability disaster guideline"
DIDRRN
"Disability" OR "DiDRR"

Developing the selection criteria

Inclusion and exclusion criteria for scholarly and grey literature publications are depicted in Tables 3 and 4 respectively.

Table 3. Inclusion and exclusion criteria (peer reviewed publications).

Inclusion criteria: a) exposures (natural hazards, emergencies, pandemic related); b) type of publication (peer-reviewed journal); d) topics of interest: publication discusses principle(s) (i.e., overarching ideas, guidance or values) to support DiDRR at a national level and/or publication discusses standard(s) (i.e., specific rules or detailed guidelines) to support DiDRR at a national level) and/or publication discusses DiDRR structural barriers which national principles or standards might assist to redress); e) language (English); f) year of publication (2000 to 2023).

Exclusion criteria: a) language (all other languages than English); b) location = Australia.

Table 4. Inclusion and exclusion criteria (grey literature).

Inclusion criteria: a) topics of interest: publication discusses principle(s) (i.e., overarching ideas, guidance or values) to support DiDRR at a national level and/or publication discusses standard(s) (i.e., specific rules or detailed guidelines) to support DiDRR at a national level) and/or publication discusses DiDRR structural barriers which national principles or standards might assist to redress b) type of publication (policy documents, frameworks or guidelines).

Exclusion criteria: a) year of publication (published prior to 2000); b) location = Australia.

Screening studies

One reviewer (FN) conducted the title and abstract screenings. A second reviewer (DM) validated the full text screenings with both reviewers collaboratively discussing and reaching agreement upon included publications.

Extracting data

Three researchers (FN, DM, and MV) collaboratively constructed the charting framework. The framework consisted of the following fields: author(s); year of publication; type of publication; study design/methods; aims; location, and key findings (i.e., national principles/standards and DiDRR structural barriers). FN carried out the extractions of each of the peer reviewed and grey literature publications.

Synthesising data

Researcher DM imported the extraction file into NVivo before applying the Braun and Clarke (2006) described technique to doing thematic analysis. This iterative process involved the following four phases: 1) identification of codes and themes; 2) naming of themes; 3) revising themes; and 4) the reporting of themes. DM collaboratively discussed themes with team members FH, TC and MV and consensus on these was reached.

Results and Discussion

Our screening and selection results are shown in Figure 1. Of the four included peer-reviewed publications (see Table 5), one was from Canada, one was from the United States, one was from the Asia Pacific region, and one was from New Zealand. Each of these were qualitative studies (three were case studies and one involved policy analysis research). From the thirty-three included grey-literature publications which varied in geographic scope (i.e., global, regional or country-specific) (see Table 6), thirteen of these were global, three were from Europe, two were from the Asia Pacific region, two were from Fiji, two were from the United States of America, two were from Nepal, and one was from each of Indonesia, Pakistan, the Philippines, India, Middle East and Eurasia, Somalia, the South Asia region, Africa, and Myanmar. Tables 7, 8 and 9 below respectively show the nine national DiDRR principles, three national DiDRR standards, and four DiDRR structural barriers as revealed from our rapid review.

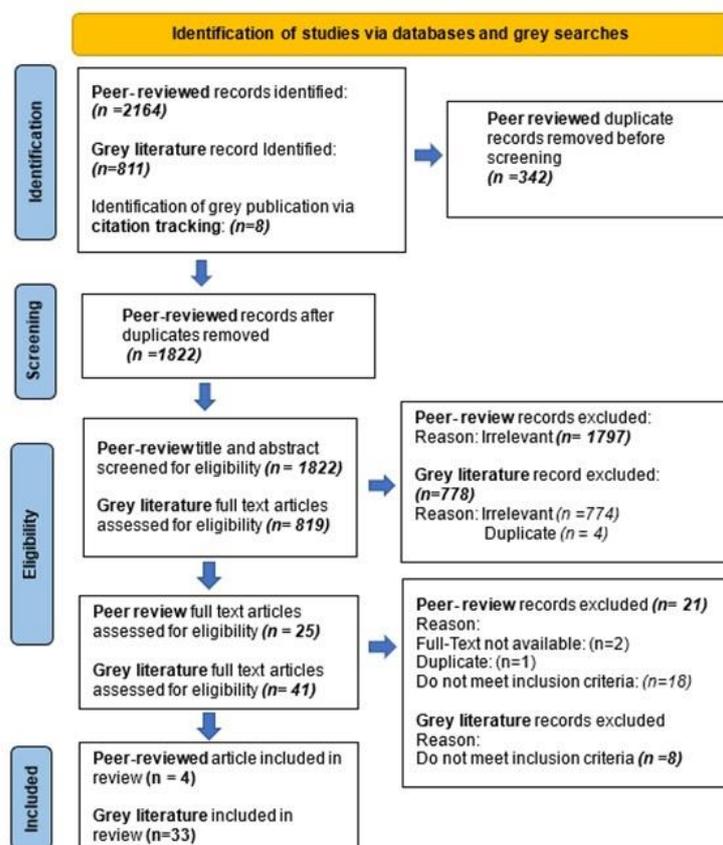


Figure 1. PRISMA diagram

Table 5. Rapid review included peer-reviewed publications.

Kusumowardoyo and Tamtomo (2022); Majnemer et al. (2021); Ronoh (2017); Sinclair (2022).

Table 6. Rapid review included grey literature publications.

(ADPC) (2022); Alexander and Sagamola (2014); Bolte (2014); Christian Blind Mission (2012); Connecticut Developmental Disabilities Network (2005); Curtin (2009); (Dion & Qureshi, 2015); Ferretti and Khamis (2014); Fiji Disabled Peoples Federation (2013); Global Protection Cluster (2020); Government Accountability Office (2019); Grech (2023); Guernsey and Scherrer (2018); N. Gvetadze (2021); N. Gvetadze and Tikhanovich (2021); N. a. P. Gvetadze, P. (2022); Handicap International (2011); Hans (2012); Humanity & Inclusion (2020); International Disability Alliance (2020); International Federation of Red Cross (2018); Narayan (2019); National Disaster Management Authority (2014); National Institute for the Empowerment of Persons with Visual Disabilities (2020); Patri (2015); Pregel and Le Fanu (2020); Robinson (2017); (Robinson, 2020); UN Human Rights (2020); UN

Women (2020); USAID and NFD-N (2021); Uzair et al. (2022); World Federation of the Deaf (2020).

Table 7. Rapid review informed national DiDRR principles.

National DiDRR principles:

1. Principle of strength-based emergency support for people with disability.
 2. Principle of human rights to protect of people with disability in emergencies.
 3. Principle of equal partnerships among emergency management stakeholders.
 4. Principle of diversity and inclusion in DRR planning and practices.
 5. Principle of cultural competence across DRR activities.
 6. Principle of anti-discrimination to protect of people with disability in emergencies and beyond.
 7. Principle of accessibility – ensuring emergency services, messages and infrastructure are accessible to and accommodating of people with disability.
 8. Principle of person-centred emergency preparedness support for people with disability.
 9. Principle of education and awareness to support emergency preparedness for people with disability.
-

Table 8. Rapid review informed national DiDRR standards.

National DiDRR standards:

1. Disability accessible emergency communication rules or guidelines.
 2. Disability accessible emergency transport rules or guidelines.
 3. Disability accessible emergency shelter rules or guidelines.
-

Table 9. Rapid review informed DiDRR structural barriers.

1. Inaccessible DRR assets.
 2. Deficiencies in DRR co-design practices.
 3. Ableist DRR practices and processes.
 4. Gaps in DRR cultural competence.
-

National DiDRR guiding principles and related DiDRR structural barriers

Inductive thematic analysis of the 37 included publications (i.e., 4 peer-reviewed publications and 33 grey literature publications) revealed the following nine themes each of which describe National DiDRR principles (as shown in italics). Two peer-reviewed publications discussed *strength-based emergency support of people*

with disability. this principle can be practically implemented by broadly embracing the disability inclusion mantra of 'nothing about us without us' within emergency planning and decision-making (Majnemer et al., 2021) as well as through the conducting of capacity building activities for people with lived experience of disability in disaster risk reduction practice (Kusumowardoyo & Tamtomo, 2022). Six grey literature publications covered this strength-based principle (e.g., Robinson, 2020). The grey literature supported empowering people with disability in inclusive disaster risk management via direct representation in DRR activities, the raising of self-esteem through training, access to assistive devices, and appointments to roles reflective of strengths and abilities (Bolte, 2014; Handicap International, 2011). Empowered through these practical measures, individuals with disability develop capacity to respond effectively to disaster situations (Bolte, 2014). Other examples of strength-based emergency support included making sure that planning decisions around emergency management encompass the interests of people with disability and that DRR activities are empowering of people with disability via their leadership and engagement (Fiji Disabled Peoples Federation, 2013; Guernsey & Scherrer, 2018; N. Gvetadze & Tikhanovich, 2021).

Two peer-reviewed publications covered the principle of *human rights to protect people with disability in emergencies* (e.g., Kusumowardoyo & Tamtomo, 2022). Majnemer et al. (2021) stressed that disability rights need to be valued and adopted within pandemic planning and decision-making activities. Five grey literature publications raised this human rights principle (e.g., N. a. P. Gvetadze, P., 2022; National Institute for the Empowerment of Persons with Visual Disabilities, 2020). The grey literature highlighted the importance of valuing and maintaining the human rights of people with disability throughout pandemic responses, increasing awareness of these rights in disaster management operations, and applying such awareness through respectful interactions between DRR personnel and people with lived experience of disability (Global Protection Cluster, 2020; International Federation of Red Cross, 2018; National Disaster Management Authority, 2014).

Two peer-reviewed publications raised the principle of *equal partnerships among emergency management stakeholders*. Encouraging people with disability to hold active roles as key DRR stakeholders, Kusumowardoyo and Tamtomo (2022) called for greater collaboration between organisations of people with disabilities and DRR organisations. Majnemer et al. (2021) also supported broad guidance around active partnering with people with lived experience of disability in pandemic response planning decisions which impact on this population. Eleven grey literature documents discussed this principle (e.g., Dion & Qureshi, 2015; Guernsey & Scherrer, 2018; N. a. P. Gvetadze, P., 2022; Robinson, 2017). These publications recognised a need for valuing and partnering with people with disability as 'thought leaders' in the identification of disability risk management (DRM) challenges (i.e., agenda setting) as well as by informing affordable and practical DRM measures (Bolte, 2014; Ferretti & Khamis, 2014; Uzair et al., 2022). Further to encouraging equal partnerships and participation, the grey literature also raised a need to consult with people with disability across disaster preparedness and recovery phases, to listen to their particular needs, and to attain balanced

representations of people with lived experience of disability on DRR committees (Handicap International, 2011; International Federation of Red Cross, 2018; Narayan, 2019; Robinson, 2020).

Bringing attention to the DiDRR structural barrier of *deficiencies in DRR co-design practices*, three peer-reviewed publications described the principle of *diversity and inclusion in DRR planning and practices* (e.g., Majnemer et al., 2021). Peer reviewed papers promoted the inclusion of people with disability in DRR through the application of universal design principles and the co-design of DRR practices (Kusumowardoyo & Tamtomo, 2022; Sinclair, 2022). Eight grey literature publications also discussed the principle of diversity and inclusion within a DRR context (e.g., Global Protection Cluster, 2020; Guernsey & Scherrer, 2018; Humanity & Inclusion, 2020). DRR and DRM practices need to be more inclusive by recognising and encouraging gender equity and promoting more women with disability into DRR leadership positions (Bolte, 2014; Christian Blind Mission, 2012; Ferretti & Khamis, 2014; N. Gvetadze, 2021; Robinson, 2017).

One peer-reviewed publication discussed the principle of *cultural competence across DRR activities*. Sinclair (2022) highlighted a need to grasp the cultural needs of emergency management stakeholders with lived experience of disability. Four grey literature publications focused on cultural competence throughout DRR activities (e.g., Grech, 2023; Guernsey & Scherrer, 2018). Highlighting a need to redress *gaps in DRR cultural competence*, it was acknowledged that inclusive DRR design needs to factor in cultural differences in determining and valuing the needs of people with disability in order to avoid the simplistic treatment of these people as a homogenous group (Robinson, 2020; Uzair et al., 2022).

Redressing the DiDRR structural barrier of *ableist DRR practices and processes*, one peer-reviewed publication discussed the principle of *anti-discrimination to protect people with disability in emergencies and beyond* (Kusumowardoyo & Tamtomo, 2022). Eight grey literature publications discussed this principle (e.g., Fiji Disabled Peoples Federation, 2013; N. Gvetadze, 2021). The grey literature broadly called for non-discriminatory distribution of emergency services together with availability of emergency transport, evacuation and shelter procedures that do not discriminate against people with lived experience of disability (Alexander & Sagramola, 2014; USAID & NFD-N, 2021). The language communicated and the attitudes held by the media as well as other stakeholders should not discriminate against people with disability in emergency management responses or anywhere else in society such as employment (Handicap International, 2011; Pregel & Le Fanu, 2020). The grey literature also endorsed ideas around the training of frontline emergency staff and embracing inclusive and accessible participation in DRR to reduce disability discrimination (Guernsey & Scherrer, 2018; Humanity & Inclusion, 2020).

Targeting *inaccessible DRR assets*, three peer-reviewed publications raised the principle of *accessibility (i.e., emergency supports being accessible to and accommodating of people with disability)* (e.g., Sinclair, 2022). Peer-reviewed literature promoted a need for DRR services and emergency communications to be consistently accessible to people with lived experience of disability and accommodating of their needs (e.g.,

providing emergency facilities and procedures which are accessible to individuals with Intellectual and Developmental Disabilities (Kusumowardoyo & Tamtomo, 2022; Majnemer et al., 2021). Further targeting this structural DiDRR barrier, eighteen grey literature publications offered broad guidance about accommodation and accessible emergency supports, infrastructure and communications including emergency shelter (e.g., lighting, redressing obstacles for persons with low vision) and accessible transport options for people with disability (e.g., Alexander & Sagramola, 2014; Connecticut Developmental Disabilities Network, 2005; Curtin, 2009; Fiji Disabled Peoples Federation, 2013; N. Gvetadze, 2021; Hans, 2012; Narayan, 2019; National Disaster Management Authority, 2014; Robinson, 2020). The grey literature also valued the availability of emergency information in a range of accessible formats (e.g., audio, large print, braille, drawings, symbols), to be reached from accessible sources (e.g., websites, helplines, the use of interpreters during emergency announcements), to have reliable content, and to use plain language (Dion & Qureshi, 2015; Handicap International, 2011; International Disability Alliance, 2020; National Institute for the Empowerment of Persons with Visual Disabilities, 2020; Pregel & Le Fanu, 2020; UN Human Rights, 2020; UN Women, 2020; Uzair et al., 2022; World Federation of the Deaf, 2020).

Eight grey literature publications discussed the principle of *person-centred emergency preparedness support for people with disability* (e.g., Alexander & Sagramola, 2014; Narayan, 2019). The need for close consultations with people with disability during recovery and response operations was emphasised to meet their specific requirements across national and local levels via access to targeted support and tailored plans (Global Protection Cluster, 2020; Government Accountability Office, 2019; N. Gvetadze, 2021; Handicap International, 2011; International Disability Alliance, 2020; UN Human Rights, 2020).

Two grey literature publications called for the progression of emergency preparedness for people with lived experience of disability via the principle of *education and awareness to support emergency preparedness for people with disability*. The grey literature endorsed the fusing of educational messages of resilience and emergency preparedness planning within community-based DiDRR projects and programs together with the wide distribution of accurate information to people with disability in emergency situations (e.g., helping to reduce confusion about pandemic causes and their impacts) (Grech, 2023; Pregel & Le Fanu, 2020).

National DiDRR guiding standards and related DiDRR structural barrier(s)

Raising the potential for national guiding standards to help to *redress inaccessible DRR assets*, two peer reviewed publications recognised *disability accessible emergency communication rules or guidelines*. Communication accessibility guidelines supported DRR communication with the deaf community (e.g., distributing pandemic informational materials which are accessible through the use of visual icons and animated gifs) (Kusumowardoyo & Tamtomo, 2022; Sinclair, 2022). Four grey literature publications offered guidance around accessible emergency communication (e.g., Christian Blind Mission, 2012). The grey literature supported webpage design that maps to web content accessibility standards and

which ultimately benefit people with and without disability, the design of emergency management video content as directed by national deaf associations, and communications which are guided in the use of plain language (International Disability Alliance, 2020; Robinson, 2020; Uzair et al., 2022).

Also addressing the DiDRR structural barrier of *inaccessible DRR assets*, two grey literature publications supported *disability accessible emergency transport rules or guidelines*. Encouraging emergency preparedness, the grey literature called for the abolition of mobility barriers for people with disability during emergencies by meeting their access needs in accordance with national transportation accessibility guidelines (i.e., guidelines that encourage the availability of accessible information about emergency transport options and the availability of accessible emergency vehicles (Alexander & Sagramola, 2014; Uzair et al., 2022).

Seven grey literature publications raised the topic of *disability accessible emergency shelter rules or guidelines* (e.g., Christian Blind Mission, 2012; Hans, 2012). National guidance on emergency shelter design highlighted the need to provide for support animals, the accommodation of people with disability including those who are particularly affected by extreme variations in temperature (i.e., hot or cold), together with the advancement of disability access via national building codes, universal design elements, and accessibility standards (e.g., signage, building ramps, hand rails) (Connecticut Developmental Disabilities Network, 2005; N. Gvetadze, 2021; Handicap International, 2011; Narayan, 2019; Uzair et al., 2022).

The findings of our rapid review elucidate a range of national guiding policies (i.e., principles and practice standards) from various countries outside of Australia which assist to pragmatically address the multifaceted structural barriers that hinder full accessibility and safety for individuals with disabilities during emergencies. These barriers can manifest as emergency warning systems that are not accessible to everyone, making it difficult for some to receive, understand, or act upon crucial safety information. Additionally, evacuation procedures often overlook the unique needs of people with disabilities. For instance, some individuals may lack appropriate transportation or have no accessible destination, rendering standard evacuation orders futile for them.

Discrimination further compounds these issues by marginalising people with disability, effectively making them feel alienated and unwelcome in emergency planning contexts. Frequently, emergency management and disaster preparedness initiatives fail to include people with disability in pre-planning stages and response exercises, based on ableist assumptions about their interest or capacity to engage in such activities. This exclusion not only limits their ability to learn about potential risks but also restricts opportunities for people with disability to develop tailored emergency preparedness plans that address their specific needs and risk situations. Exclusionary DRR activities can also dismiss the cultural differences which exist among people with disability. Collectively, these structural barriers underscore the need for more inclusive disaster risk reduction strategies.

Disasters expose the everyday challenges that people with disabilities face, highlighting the urgent need for comprehensive, whole-of-government and whole-

of-society approaches to foster true inclusion. Such policies must not only address emergency management but also ensure accessibility and equitable opportunities across all aspects of public life. In the critical discussion to follow, we cover evidence-based ways in which national guiding DiDRR principles and standards as identified from outside of Australia can be pragmatically applied in holistic (i.e., whole-of-government/whole-of-society) policy efforts to remove or reduce structural barriers impeding DiDRR (see Figure 2). And in particular, the application of co-designed policy responses to address the various structural barriers which can limit the effective governance of disaster risks for people with disability.

The four structural barriers to DiDRR as revealed in our rapid review and to be critically discussed in this article are: 1) inaccessible DRR assets; 2) deficiencies in DRR co-design practices; 3) ableist DRR practices and processes; and 4) gaps in DRR cultural competence. Core to the findings from this rapid review, and highlighted throughout our discussion, individuals with lived experience of disability and their representative organisations need to be recognised and valued as key stakeholders in the genuine co-design of DRR policies and practices.

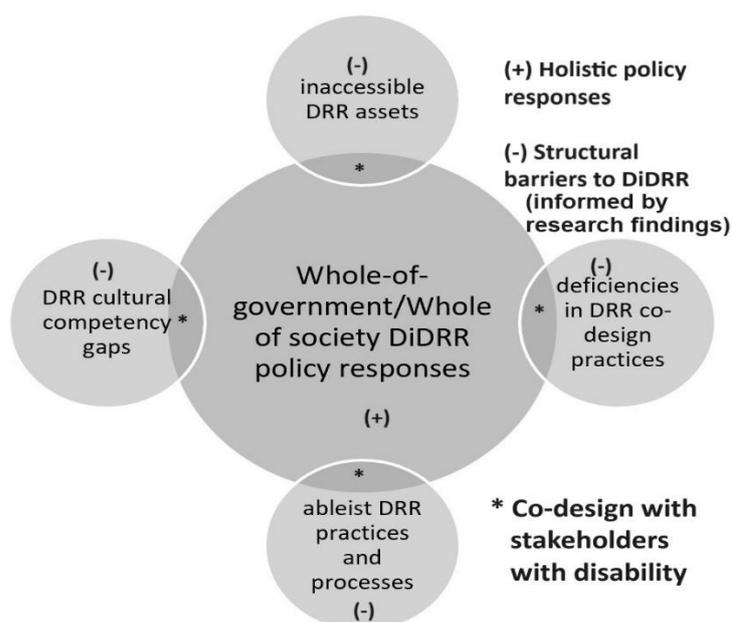


Figure 2. Holistic DiDRR policy responses to disability risk reduction structural barriers.

People with disability in disaster situations experience a loss of independence when confronted with *inaccessible DRR assets* (e.g., inaccessible buildings, emergency transport, emergency communications, information, community activities, etc) (Raja & Narasimhan, 2013; Ton et al., 2021). A whole-of-government approach to DiDRR not only embraces an overarching principle of accessibility, but collaboratively, cooperatively, and pragmatically acts to implement this value. The implementation of this principle includes adherence to communication, transport

and building disability design standards in the delivery of DRR physical assets. Enabling this adherence, coordinated policy efforts among commonwealth, state and local governments could see the future co-design, implementation, and monitoring of an Australian DiDRR accessibility standards framework. The benefits from investing in this national framework hold potential to flow across departments and beyond pressing DRR safety objectives. For instance, having more publicly operated and accessible vehicles available assists to not only meet immediate disability needs in emergency situations, but to also advance the broader employment-related transport needs of people with disability. Moreover, a whole-of-society approach to DiDRR could help to improve the mainstream access of people with disability to community and cultural activities in non-disaster times. This approach would involve key stakeholders including: the department of social services (commonwealth level), department of communities (state level) and community services (local level) collaboratively working together to co-develop and implement cultural inclusion policies; non-government organisations (e.g., DPOs) advocating for disability inclusion rights; the private sector promoting accessible community and cultural events; community organisations' involvement in the planning and implementing of disability inclusive local events; the media advertising details about community and cultural events in disability accessible formats; and crucially, people with lived experience of disability themselves remaining central to the co-design of these events. This spirit of collaboration among diverse policy stakeholders to improve disability access to community and cultural events within a whole-of-society approach could be adapted and applied with the aim of advancing safety for all citizens in disaster situations and beyond. By building social cohesion, this collaborative approach can act as a protective factor for people in emergencies as their voices are heard by decision makers (Aldrich, 2011; Sobhaninia, 2024; Uslaner, 2016). Recognising the critical work of (Aldrich, 2011) on increasing social capital in non-disaster times, we extend on this work by raising prospects for the building of social capital but with a focus on disability inclusion through DiDRR.

Helping to redress *deficiencies in DRR co-design*, findings from this rapid review identified the co-design practices in partnership with people with lived experience of disability as a critical principle guiding DiDRR. Co-design is recognised as a practice of co-creation through which people are included in design teams on the basis of the expertise accompanying their lived experience (Cafferty, 2021; Trischler et al., 2018). Co-design involves practice improvement by widely engaging with public, private and other stakeholders in a collaborative process through which policy ideas are investigated and revised (Shannon & O'Leary, 2020). Co-design of DRR policy and practices in a whole-of government approach is not without its challenges. These challenges include: a need to maintain accountability of government funding; disrupting the silos arising from vertical management styles and departmentalism; dealing with stakeholder coordination challenges; and managing the behaviour of individuals (Hunt, 2005). On this latter point, it is critical that DRR policymakers do not attempt to silence the voices of individuals with lived experience of disability. Stakeholders with disability need to be actively included in

the co-design of risk reduction strategies through accommodating policy and practices and to experience self-empowerment by taking their share of personal responsibility (e.g., having control through personal emergency preparedness and actively contributing to reducing the structural DiDRR barriers as raised in this article). Remaining cognisant of the above-mentioned possibilities for deficiencies in the co-design of DRR practices, together with the warning of co-design as a ubiquitous term and one which is lacking appreciation in a contemporary policy context, co-design of risk management options and policy measures can nevertheless be successfully implemented in the complex field of DRR (Bwambale & Kervyn, 2021; Nguyen et al., 2017; Tremblay, 2023). One way to mitigate the challenges to co-production while increasing the relevance, quality, and utility of DiDRR is to facilitate reflective dialogue among collaborators to ensure that principles, typically experienced as abstract, and hard to operationalise, can be translated into feasibly implemented strategies. Co-production that adopts a learning mindset (Bourke et al., 2024) undertaken in partnership with others who have key responsibilities and contributions can enhance inclusive strategy development for more effective implementation.

While it is possible for well-intentioned and respectful interactions to be promoted between DRR staff and people with disability (Global Protection Cluster, 2020; International Federation of Red Cross, 2018; National Disaster Management Authority, 2014), it is appropriate to recognise these are not mutually exclusive groups. As part of an inclusive whole-of-government approach to the authentic co-design of DRR policy and practice, there needs to be strong representations of DRR government and agency personal with lived experience of disability. A strong policy example of a DiDRR diversity and inclusion measure is the implementation of employment quotas to efficiently increase the representation of staff with disability across DRR roles in government and elsewhere. Specifically, gains in representation can be attained by filling DRR roles, including policymaking and leadership roles, with people who have lived experience of disability and where designated positions are commensurate with their skills, qualifications and abilities. Furthermore, providing professional development opportunities, accommodations, and accessible facilities (wherever needed) can help employees with disability to retain their respective DRR positions, reach their full potential, and be rewarded through promotions.

Under a whole-of-society approach to DRR, inclusive policymaking supports citizen participation in reducing disaster risks not only for individuals, but also for the community at large. As part of this holistic policy approach, a shared responsibility framework is applied to emphasise the need for DRR stakeholders (government, private, DPOs, individuals with disability, etc) to advance safety and wellbeing outcomes via a range of measures. These measures include mutual adjustment through co-design as shared learnings transforms individual responsibility to have a DRR plan in place, while collective DRR planning assists in the protection of individuals with disability and communities more broadly. DiDRR codesign thus results in reciprocal learning and modifications which are attained through listening to various DRR stakeholders, adopting an intersectional lens,

providing accessible communication and consultation activities, and taking actions which are informed by lived experience of disability. This inclusive approach thus requires individuals with disability and their representative organisations along with other stakeholders to be actively involved in the emergency management sector to transform DRR activities; and with *all stakeholders* respected and treated as vital players in the co-design process.

Responding to *ableist DRR practices and processes*, our review reveals capacity for the principle of anti-discrimination to be widely and pragmatically applied in various ways to better protect people with disability not just in emergency situations, but beyond. Ableist attitudes as embraced and perpetuated through damaging media messages (Handicap International, 2011; Pregel & Le Fanu, 2020) can be targeted through collaborative and coordinated interagency efforts. These efforts are reflected in robust legislative frameworks which support the planning, coordination and funding needed to advance disability inclusion (ESCAP, 2020). One such legislative initiative could involve a whole-of-government review of the Australian Disability Discrimination Act 1992 (DDA) with the goal of identifying issues that once addressed would offer improved legal protections for people with disability in emergency events as well as other situations. For example, a strengthening of the DDA in terms of accessible buildings including emergency shelters would better protect people with disability across emergency, employment, and social situations.

Responding to the DiDRR structural barrier of *gaps in DRR cultural competence*, cultural competencies encompass the attitudes, behaviours and policies allowing DRR personnel to understand various cultural beliefs and practices impacting upon emergency management activities (Ethnic Communities' Council of Victoria, 2006; Nwankwo et al., 2019). One way in which cultural competency gaps across DRR practices can be redressed is via a comprehensive, whole-of-government response which widely embraces the principle of education and awareness-raising. And in particular, conducting mandatory cultural competency training across government departments and agencies for all staff at all levels who are involved in DRR operations. DiDRR also embraces intersectionality in the co-design of DRR programs and practices by listening to and engaging with people with disability from diverse cultural backgrounds whose intersecting identities result in multiple forms of marginalisation.

Crucially, environmentally responsible DiDRR respects and incorporates the knowledge of Indigenous Australians with disability about practical, sustainable, and environmentally conscious ways of increasing the safety of people with disability and others through disaster preparedness. This approach aligns with and builds upon the evolving field of ecosystem-based disaster risk reduction (Eco-DRR) that encompasses sustainable environmental management measures to prevent or reduce disaster impacts (Joseph et al., 2024; Ogunwumi & Armstrong, 2022). Through participatory processes, Eco-DRR encourages emergency practice planning and implementation which is highly localised and context specific ((Doswald & Estrella, 2015; Walz et al., 2021). Eco-DiDRR too supports

contextualised and co-designed policy, processes and practices by valuing intersectionality and learning from historical and current experiences of Indigenous Australians with lived experience of disability.

Our research and analysis as critically discussed above holds two pragmatic DiDRR policy implications of which Australian emergency management policymakers and practitioners need to be aware. First, as informed by our rapid review, we recognise possibilities for national guiding DiDRR principles and standards external to Australia to be practically implemented in holistic policy efforts to redress DiDRR structural barriers. And second, fundamental to these efforts is the recognition of a need for inclusive DRR policy responses that are co-designed with Australians with disability.

Limitations

Reflecting the limitations involved in the conducting of any rapid review of the literature (Khangura et al., 2012), this exploratory study is constrained by the search terms applied and the databases accessed. While our rapid review has reported on a solid body of knowledge in addressing each of the research questions raised, future studies are nevertheless needed to test for the possibility of other DiDRR guiding principles and standards existing outside of Australia. Studies could also investigate DiDRR structural barriers that might also exist beyond those identified and discussed in this rapid review along with the respective capacities for these to be removed or at least reduced in whole-of-government and whole-of-society DiDRR policy responses.

Conclusion

This investigative study revealed national DiDRR guiding principles (i.e., strength-based emergency support, human rights, equal partnerships, diversity and inclusion, cultural competence, anti-discrimination, accessibility, person-centred, and education and awareness), national standards (i.e., accessible emergency communication, transport and shelter rules and guidelines) as well as related structural barriers (i.e., inaccessible DRR assets, DRR co-design deficiencies, ableist DRR practices and processes and gaps in DRR cultural competence). Our rapid review of the scholarly and grey literature has also assisted to fill pressing knowledge gaps in relation to the practical applications of the aforementioned DiDRR national guiding standards and principles external to Australia. From this pragmatic standpoint, we have raised possibilities for the DiDRR structural barriers as identified in our review to be redressed or reduced through whole-of-government and whole-of-society policy responses. Common to these holistic policy responses is the genuine inclusion and participation of people with lived experience of disability as key stakeholders in their co-design. Such inclusion is also required in the co-design of DRR assets enabling the availability of accessible emergency transport, accommodation and communication options; together with Eco-DiDRR co-design where intersectionality with lived experience of disability and Indigenous knowledge is respected and actioned. Crucially, our research

highlights potential for co-designed DiDRR policies and practices to offer opportunities to increase the social and economic participation of people with disability which extend beyond immediate goals of reducing emergency risks.

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