

Review Article

Disability-inclusive disaster management in India integrating healthcare, the National Building Code and Indian Public Health Standards: a narrative review

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ABSTRACT

India's disaster management framework, established under the Disaster Management Act of 2005, addresses hazards like floods, cyclones, earthquakes, heatwaves, landslides, and heavy rain. However, the 26.8 million people with disabilities in India 2.21% of the population per the 2011 Census, with global estimates suggesting up to 15-24.9% face disproportionate risks, including mortality rates up to four times higher than others. Despite increased healthcare spending (from 1.2% of GDP in 2014-15 to 2.1% in 2022-23) and programs like Ayushman Bharat and Niramaya Health Insurance, many healthcare facilities and disaster shelters remain inaccessible for persons with disabilities. The National Building Code (NBC) of 2016 and Indian Public Health Standards (IPHS) of 2022 set standards for accessible infrastructure and emergency preparedness, yet compliance is inconsistent. This narrative review explores how integrating healthcare, building codes, and public health standards can foster a disability-inclusive disaster management system. It highlights barriers, such as inaccessible shelters, limited disaster management training for persons with disabilities, and attitudinal challenges, and suggests solutions like retrofitting facilities, developing Information, Education, and Communication (IEC) materials/Standard Operating Procedures (SOPs), and boosting community involvement to ensure equitable safety.

Keywords: Disability-inclusive disaster management, IPHS, National building code, Healthcare infrastructure

INTRODUCTION

India has experienced a significant surge in the severity and frequency of natural disasters in recent years. Its diverse landscape is prone to floods in states like Assam, West Bengal, Bihar, and Kerala; cyclones along coasts like Andhra Pradesh, Odisha, Tamil Nadu, and West Bengal; earthquakes and landslides in the Himalayas, including Himachal Pradesh, Sikkim, and Uttarakhand; and heatwaves in northern and central India.¹ The Disaster Management Act of 2005, overseen by the

National Disaster Management Authority (NDMA), provides a framework for risk mitigation, preparedness, response, and recovery.² Yet, for the 26.8 million people with disabilities 2.21% of the population per the 2011 Census, though global estimates suggest a higher prevalence this system often falls short.^{3,4} People with disabilities face obstacles like inaccessible evacuation routes, shelters lacking ramps or braille signage, and warning systems without sign language or audio options, increasing their vulnerability during crises.⁵ As a signatory to the Sendai Framework for Disaster Risk

Reduction (2015-2030), which calls for inclusive resilience, India must integrate healthcare infrastructure, the National Building Code (NBC), and the Indian Public Health Standards (IPHS) to better protect persons with disabilities. This paper examines efforts to create a disability-inclusive disaster management approach, identifies gaps in accessibility and implementation, and proposes practical steps to build a more equitable and resilient system through a collective approach.

METHODS

This review adopted a narrative approach to synthesize empirical and theoretical literature on Disability-inclusive Disaster Management in India and its inclusion with healthcare infrastructure, the National Building Code (NBC), and Indian Public Health Standards (IPHS).

Search strategy: Literature was identified through searches of PubMed, DOAJ, and Google Scholar, supplemented by gray literature from institutional and governmental healthcare bodies. The search was conducted on 27th May, 2026. Keywords included: Disability AND disaster management AND healthcare AND accessibility AND (NBC OR "National Building Code") AND (IPHS OR "Indian Public Health Standards") AND India. Boolean operators were used to combine and refine search results.

Inclusion and exclusion criteria

The review included studies, reports, guidelines, policies, and official documents addressing disability-inclusive disaster management, healthcare accessibility, disaster preparedness, response, evacuation, and rehabilitation for persons with disabilities. Relevant Indian policies, standards, and guidelines, particularly the National Building Code (NBC) and Indian Public Health Standards (IPHS), were included. Relevant international literature was also considered where necessary to provide contextual or comparative evidence.

Publications available in English were included. Studies or documents unrelated to disability, disaster management, healthcare accessibility, NBC, or IPHS, duplicate publications, publications with insufficient relevant information, and non-authoritative sources such as news articles and unsupported web content were excluded.

Data extraction and analysis

A thematic synthesis approach was used to organise the data thematically and synthesise narratively to identify common barriers, existing provisions, implementation gaps, and opportunities for integrating disability-inclusive approaches into disaster management, healthcare facilities, NBC, and IPHS in the Indian context. Due to the narrative nature of this review, no formal risk-of-bias assessment was conducted.

DISABILITY AND DISASTER VULNERABILITY

India's 26.8 million people with disabilities, as reported in the 2011 Census, face heightened risks during disasters due to physical, sensory, and socio-economic barriers.³ Systematic reviews highlight their increased vulnerability; for instance, a global analysis of disaster mortality found that people with disabilities are up to four times more likely to die during disasters, as seen in the 2011 Tohoku earthquake in Japan.⁶ Another review emphasizes that inaccessible infrastructure, such as evacuation paths without ramps or shelters lacking tactile paving, significantly exacerbates risks for those with mobility, visual, or hearing impairments.⁷ Socio-economic factors, including poverty, often limit access to assistive devices like wheelchairs or hearing aids, further increasing vulnerability.⁴ Early warning systems lacking accessible formats, such as sign language or braille, exclude many, while disasters can worsen mental health challenges, yet India's disaster response plans rarely prioritize psychosocial support.⁵ As a signatory to the Sendai Framework (2015-2030), India is committed to inclusive disaster risk reduction, but achieving this requires overcoming gaps in infrastructure, planning, and training to ensure equitable protection for people with disabilities.⁵

DISABILITY-INCLUSIVE DISASTER MANAGEMENT FRAMEWORK

India's disaster management system, guided by the National Disaster Management Authority (NDMA), State Disaster Management Authorities (SDMAs), and National Disaster Response Force (NDRF), focuses on risk reduction, early warnings, rapid response, and sustainable recovery.² For persons with disabilities, effective preparedness hinges on integrating accessible healthcare, resilient infrastructure, robust public health standards, and complementary initiatives.

Healthcare infrastructure

Access to healthcare is critical for persons with disabilities during disasters, as they often require specialized support, such as mobility aids, sensory devices, or mental health counseling.⁴ The Ayushman Bharat scheme provides up to 500,000 INR per family for medical care, while the Niramaya Health Insurance Scheme offers targeted coverage for persons with disabilities.^{8,9} With over 177,000 Ayushman Arogya Mandirs nationwide, India has expanded primary care access, yet many facilities lack accessibility features like ramps or tactile pathways, as noted by ASTHA in Delhi (July 2025).¹⁰ Primary Health Centers (PHCs) and Community Health Centers (CHCs) serve as frontline responders but often fail accessibility audits, lacking braille signage or trained staff.¹¹ Mobile Medical Units (MMUs) deliver care to remote areas during crises but rarely include equipment tailored for persons with disabilities, such as wheelchairs or hearing aids,

particularly in rural regions.¹² Enhancing healthcare infrastructure with accessible facilities and specialized resources is vital for inclusive disaster preparedness.

National Building Code (NBC)

The National Building Code (NBC) of 2016, developed by the Bureau of Indian Standards (BIS), sets standards for accessible and disaster-resilient infrastructure, requiring features like ramps, elevators with braille markings, and tactile pathways, alongside designs to withstand earthquakes and fires.¹³ While cyclone shelters in Odisha demonstrate resilient infrastructure, many lack accessibility features, limiting safety for persons with disabilities.¹¹ Enforcement of accessibility audits is weak, especially in rural areas, where older buildings often fail to meet standards.¹³ Retrofitting existing structures and training architects to prioritize inclusive design can ensure disaster shelters and public buildings are safe for all.

Indian Public Health Standards (IPHS)

The Indian Public Health Standards (IPHS) of 2022, set by the Ministry of Health and Family Welfare, establish benchmarks for public health facilities, requiring accessibility features like ramps and braille signage, as well as emergency preparedness measures, such as medical stockpiling and staff training.¹² For example, Community Health Centers must provide one accessible toilet per six beds and ensure 340-450 liters of water per bed daily. However, these standards are underutilized in disaster planning, with minimal emphasis on disability-specific needs, such as sensory aids or rehabilitation services.¹ Aligning IPHS with NDMA guidelines can ensure health facilities are accessible and prepared for crises.

Accessibility to healthcare facilities is a critical issue, particularly in urban and hilly areas where land scarcity complicates adherence to IPHS guidelines. While IPHS recommends facilities be accessible via main roads, this is often unfeasible in hilly terrains with narrow roads, posing significant challenges for persons with disabilities.¹²

Broader Initiatives

Complementary initiatives support disability-inclusive disaster risk reduction. The United Nations Development Programme (UNDP) promotes accessible communication and engagement with Disabled People's Organizations (DPOs) through its toolkit.¹¹ The Aga Khan Development Network's Family Emergency Preparedness Plan encourages personalized disaster planning but needs greater focus on persons with disabilities.¹⁴ UNICEF prioritizes inclusive school safety programs to protect children with disabilities during disasters.⁵ The NDMA's early warning systems require multi-format alerts, such as sign language and audio-visual messages, to reach

persons with disabilities effectively.¹ Better coordination and a stronger focus on disability-specific needs are essential for comprehensive inclusion.

Gaps in implementation

Despite progress, India's disaster management system falls short for persons with disabilities. Many healthcare facilities and disaster shelters lack accessibility features, violating IPHS and NBC requirements.^{12,13} Urban hospitals designated as disaster hubs often lack tactile pathways, while rural PHCs and CHCs rarely have trained staff or sensory aids.¹¹ The NDRF and State Disaster Response Force (SDRF) lack disability-specific training, limiting their ability to assist during evacuations.¹ Early warning systems are not fully accessible, excluding those relying on sign language or braille.¹⁵ Limited DPO involvement and insufficient data on persons with disabilities hinder planning.¹¹ The 2020 COVID-19 response highlighted these gaps, as underutilization of disability-inclusive guidelines left persons with disabilities vulnerable.⁴

CONCLUSION

India's disaster management framework, anchored by the NDMA, has made strides in addressing multi-hazard risks but remains insufficiently inclusive for persons with disabilities. By integrating healthcare infrastructure, the National Building Code, and Indian Public Health Standards, India can create a resilient and equitable system. Accessible health facilities, disaster-resilient shelters, and inclusive public health measures are critical to protecting persons with disabilities during crises. Enforcing standards, retrofitting infrastructure, training responders, and engaging communities will align India's efforts with the Sendai Framework. Stakeholders, including government agencies, DPOs, and international partners, must collaborate to foster a disaster management ecosystem that prioritizes equity and inclusion.

Recommendations

To build a disability-inclusive disaster management ecosystem, India must address existing gaps through targeted actions. Healthcare infrastructure should be strengthened by retrofitting PHCs, CHCs, and Ayushman Arogya Mandirs with ramps, tactile pathways, and braille signage in accordance with IPHS, while stockpiling disability-specific supplies such as wheelchairs, hearing aids, and sensory kits.

Mobile Medical Units (MMUs) should be equipped with accessible equipment, and healthcare staff should be trained to assist persons with disabilities during disasters. Disaster shelters and public buildings should undergo regular accessibility audits, particularly in rural areas, to ensure compliance with National Building Code (NBC) standards, alongside training for architects and engineers in inclusive design. IPHS should be integrated with

NDMA guidelines to ensure disability-specific medical support, including rehabilitation services, and healthcare workers should receive training in disability-inclusive emergency care and psychosocial support. Early warning systems should be developed in multiple accessible formats, including sign language videos, audio messages, and braille-compatible systems.

Persons with disabilities and Disabled Persons' Organizations (DPOs) should be actively involved in disaster planning and tabletop exercises, drawing on models such as those implemented in Central Java, Indonesia, while disability-specific strategies should be incorporated into the Aga Khan Development Network's Family Emergency Preparedness Plan. Technology such as drones and sensors may also be leveraged for disaster rescue operations, with attention to locating and protecting assistive devices such as wheelchairs and hearing aids.

Mental health should be integrated into disaster preparedness and response frameworks, as psychological distress and anxiety affect nearly one in four individuals with chronic conditions in India, highlighting the need for psychosocial support within disaster response systems.¹⁶ Such support should be incorporated into disaster response plans in accordance with IPHS and relevant advocacy initiatives to address the psychological impact of disasters on persons with disabilities.

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