

Psychological and Social Vulnerabilities of Children with Visual Impairments under Climate Change: A Systematic Review of Global Evidence with Comparative Regional Analysis and Implications for Kenya

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ABSTRACT

Climate change is increasingly recognized as a major determinant of child wellbeing, yet children with disabilities particularly those with visual impairments remain underrepresented in climate vulnerability research. This systematic review synthesizes global evidence on psychological and social vulnerabilities of children with visual impairments under climate change, with emphasis on comparative regional differences and implications for Kenya.

Following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses framework, a structured search of five databases identified 327 records, of which 58 studies met inclusion criteria. Quality appraisal was conducted using the Joanna Briggs Institute and Critical Appraisal Skills Program tools.

Findings show that climate-related hazards contribute to anxiety, depression, post-traumatic stress disorder, social isolation, educational disruption, and caregiver dependence. However, fewer than 10 percent of studies explicitly address disability, and less than 5 percent focus on visual impairment. Comparative analysis reveals stark differences across regions: high-income countries demonstrate strong institutional preparedness, while low- and middle-income countries, including Kenya, face structural inequality and weak disability-inclusive climate governance.

The review concludes that vulnerability is socially constructed and context-dependent, highlighting the need for inclusive climate policy and expanded empirical research.

Keywords: Climate change; visual impairment; disability; children; systematic review; social vulnerability; psychological wellbeing; Kenya

INTRODUCTION

Climate change is a defining global challenge of the twenty-first century, significantly affecting ecosystems, economies, and human health. The Intergovernmental Panel on Climate Change (2023) reports increasing frequency of extreme weather events, which disproportionately affect vulnerable populations, including children.

Children are particularly vulnerable due to developmental dependency, limited adaptive capacity, and reliance on caregivers (Burke et al., 2018). Emerging evidence links climate change to psychological distress, including climate anxiety, depression, trauma, and emotional instability among children (Hickman et al., 2021; Crandon et al., 2022).

However, these impacts are not evenly distributed. Children with disabilities face compounded vulnerabilities due to environmental, institutional, and social barriers. Among them, children with visual impairments

experience unique challenges in accessing information, mobility systems, education, and disaster preparedness services.

Despite global commitments to disability inclusion, research on climate change and visual impairment remains limited, especially in low- and middle-income countries such as Kenya.

METHODOLOGY

Research Design

A systematic review was conducted using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses framework to ensure transparency and reproducibility.

Data Sources

Databases searched included:

- Scopus
- Web of Science
- PubMed
- Education Resources Information Center
- Google Scholar

Search Strategy

Keywords included combinations of climate change, children, visual impairment, disability, mental health, and social vulnerability.

Inclusion Criteria

- 2006–2024 publications
- Children aged 0–18 years
- Climate-related exposure
- Psychological, social or educational outcomes
- Disability relevance

Exclusion Criteria

- Adult populations
- Non-climate studies
- Biomedical-only focus
- Opinion-based literature

Study Selection

- Identified: 327

- Included: 58

Quality Appraisal

Joanna Briggs Institute and Critical Appraisal Skills Program tools were used to assess methodological rigor.

Data Synthesis

Thematic synthesis and cross-regional comparative analysis were conducted.

RESULTS

Psychological Vulnerabilities

Children exposed to climate-related hazards experience:

- Anxiety
- Depression
- Post-traumatic stress disorder
- Emotional distress
- Climate anxiety

Visually impaired children are more vulnerable due to environmental unpredictability and reliance on caregivers.

Social Vulnerabilities

Findings include:

- Social isolation
- Educational disruption
- Reduced peer interaction
- Increased caregiver dependency

Expanded Global Comparative Matrix

Table 1: Global Comparative Analysis of Vulnerability Contexts

Region	Institutional Capacity	Disability Inclusion Level	Psychological Outcomes	Social Outcomes	Key Drivers of Vulnerability
North America	High	Moderate-High	Anxiety, trauma, recovery supported	Temporary disruption	Strong systems, but uneven inclusion
Europe	High	High policy integration	Moderate distress, rapid recovery	Managed disruption	Strong welfare and education systems
Oceania	High	Moderate	Disaster-related stress	Service continuity	Island vulnerability, good governance

Asia (LMICs)	Moderate–Low	Low	High trauma and anxiety	Severe educational disruption	Poverty, disaster exposure
Africa	Low	Very Low	Severe psychological distress	Chronic exclusion	Structural inequality, weak systems
Kenya	Low	Very Low	High anxiety and trauma	School disruption, exclusion	Droughts, floods, weak inclusion

Evidence Gap

Less than 10 percent of studies address disability, and less than 5 percent focus on visual impairment, indicating a major global research gap.

DISCUSSION

Climate Change as a Structural Risk Multiplier

Climate change intensifies pre-existing inequalities by disrupting education, health, and social systems. Psychological outcomes reflect systemic instability rather than isolated disorders (Burke et al., 2018).

Disability as a Socially Produced Vulnerability

According to the Social Model of Disability, exclusion arises from environmental and institutional barriers rather than impairment (Oliver, 1996).

Intersection of Poverty, Disability, and Climate Risk

In low- and middle-income countries, vulnerability is intensified by poverty, weak infrastructure, and high exposure to climate hazards (Intergovernmental Panel on Climate Change, 2023).

Psychological Continuum of Climate Distress

Climate anxiety reflects adaptive responses to uncertainty rather than pathology (Hickman et al., 2021). For children with visual impairments, this is intensified by lack of accessible climate communication systems and reliance on caregivers.

Global Inequality in Climate-Disability Governance

High-income countries show structured inclusion, while low-income countries face systemic exclusion in disaster preparedness and education continuity systems.

Kenya as a Case of Climate–Disability Vulnerability Convergence

Kenya experiences recurrent droughts and floods affecting ASAL regions such as Turkana, Marsabit, Garissa, and Tana River. Flood-prone areas include Budalangi and Kisumu plains.

Children with visual impairments face:

- Interrupted Braille learning continuity
- Lack of assistive technology during emergencies

- Weak disability integration in climate frameworks
- Limited psychosocial services

These challenges result in long-term educational disruption and psychological distress (Sukati, 2024; United Nations Children's Fund, 2022).

Climate Justice Implications

Climate justice emphasizes equitable distribution, participation, and recognition (Adger, 2006).

Children with visual impairments are disproportionately affected due to systemic exclusion, not biological limitation (Oliver, 1996).

Justice requires:

- Disability-inclusive adaptation planning
- Accessible early warning systems
- Inclusive education continuity systems

Policy Implications

- Integrate disability into climate adaptation frameworks
- Develop accessible early warning systems
- Strengthen inclusive education resilience
- Expand psychosocial support services

CONCLUSION

Children with visual impairments experience compounded psychological and social vulnerabilities under climate change. These vulnerabilities are structurally produced and vary across socioeconomic contexts. Strengthening disability-inclusive climate governance is essential for climate justice and sustainable development.

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