Study points to ways of involving visually impaired people in environmental disaster prevention

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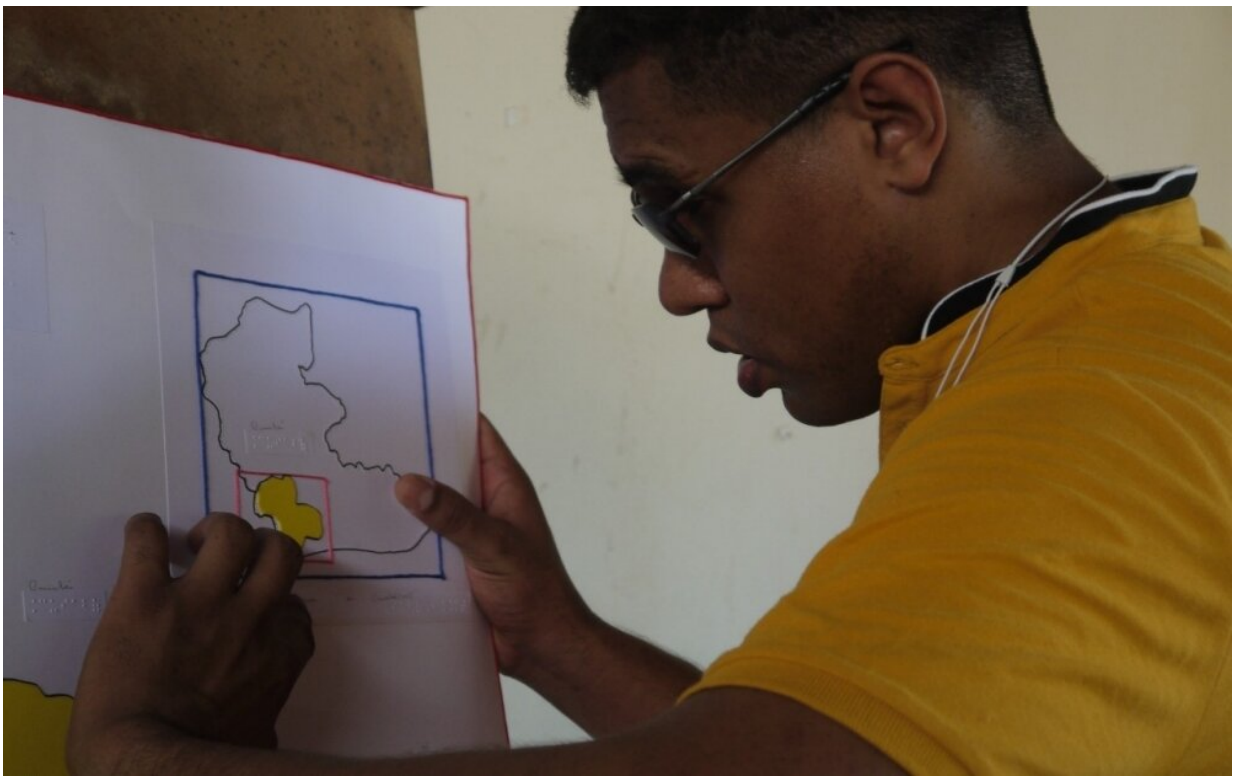

Brazilian researchers show that inclusion is necessary if disaster prevention policy is to avoid the “invisibility” of these people and reduce the barriers that intensify vulnerability. Credit: Giselly Gomes/GPEA

According to the latest report of the Intergovernmental Panel on Climate

Change (IPCC), almost half the world's population—about 3.3 billion to 3.6 billion people—live in contexts that are highly vulnerable to the impact of climate change. Social inequality greatly increases this vulnerability.

To investigate the effects of inequality on environmental risk reduction and disaster prevention programs, researchers in Brazil affiliated with the Federal University of Mato Grosso (UFMT) and the National Disaster Surveillance and Early Warning Center (CEMADEN) conducted an exploratory qualitative study focusing on visually impaired people.

Starting with the question of how to include the visually impaired in discussions about risk reduction and climate change mitigation policies, the researchers concluded that despite legal progress a number of barriers continue to hinder social participation in many areas, especially decision-making fora. These obstacles reinforce the dependency of the visually impaired and perpetuate their "invisibility."

"People with disabilities and organizations that work with them aren't included sufficiently in discussions of environmental policy. On the other hand, institutions that deal with environmental management don't think about how to create forms and spaces to include them. Their invisibility is so great that we don't even have any data on the topic. They haven't been involved in action to prevent environmental disasters and adapt to climate change. We hope this study can somehow educate institutions on the need to develop more inclusive policies," sociologist Victor Marchezini says. Marchezini is a researcher at CEMADEN and a co-author of an article on the study published in the *International Journal of Disaster Risk Science*.

"Learning about environmental disaster hazards showed me how important it is to listen to these people. If they participate in the process,

formulating public policy takes a different route to become more inclusive," said Gomes, who is currently working with the Mato Grosso State Institute for the Blind (ICEMAT), one of three organizations that contributed to the study, which began in 2017. The others were the state's Center to Support the Inclusion of Special Education (CASIES) and AMC, its association for the blind.

Participatory methodology

The researchers contacted three institutions that work with the visually impaired in Cuiabá, the capital of Mato Grosso state, to request data on their places of residence and movements around the city in order to see if they were exposed to such hazards as landslides and floods, among others.

With a population of some 623,000, Cuiabá faces infrastructure problems due to urban expansion into environment protection areas. Many poor families live in informal settlements on floodplains along the Cuiabá River and its tributaries without sanitation, garbage collection and other essential services.

The researchers used the data collected from the institutions and maps of high-risk areas provided by the city's civil defense center and the national geological service (CPRM) to create maps georeferencing the homes and places most frequented by 21 visually impaired people living in Cuiabá and seven in Várzea Grande, a municipality in the metropolitan area.

Gomes conducted informal conversations and participatory observations in the three institutions, as well as 15 interviews with visually impaired subjects at ICEMAT, asking about climate change, disaster hazards, vulnerability, and the role of education. The interviews also touched on how hard it can be for the visually impaired to avoid or cope with

obstacles in the event of flooding, landslides and other environmental disasters.

"When my children aren't with me or go to their father's, I don't go out at all," a 48-year-old partially sighted woman said.

"Day and night, we try to be with other people. […] If a disaster occurs, most people will be at work or school. [...] If there's a fire, the alarm sounds and we all head outside walking side by side. […] I can't see how to create something specific for the visually impaired, but I hope it can be done," a 50-year-old partially sighted man said.

Preliminary results were shared in 2018 at a workshop attended by about 100 people, 60 of whom were visually impaired. Creation of a smartphone app that would help the visually impaired find information to meet their needs was proposed during the event.

Another proposal led to the creation of a tactile map of high-risk areas, in collaboration with a professor, technicians from CASIES, and specialists in Braille, a system of raised dots representing letters, characters or symbols (including punctuation, numbers, algebraic expressions and musical notes) in 63 combinations.

The main outputs were as follows: (1) a mapping method showing where the visually impaired are exposed to risks of landslides and floods, as a basis for the production of tactile risk maps tailored to their needs; (2) inclusion of their views on their own vulnerabilities and capabilities with respect to the impact of climate change; and (3) an inclusive education initiative to surmount the disabling barriers that intensify vulnerability.

Public policy

According to the latest census, conducted in 2010 by IBGE, the national

statistics bureau, almost 46 million Brazilians (24% of the population) declared that they had some degree of difficulty with at least one of four basic skills (seeing, hearing, walking and climbing stairs) or had a mental or intellectual disability, and 18.8% of these said they were visually impaired.

However, this contingent is not highlighted among the 8.2 million Brazilians in 2,471 households living in high-risk areas. Disaggregated data and hazard maps are considered key public policy inputs for disaster mitigation.

As for Brazil's National Civil Defense Policy (PNPDEC, Law 12,608/2012), it merely requires the national civil defense council to "propose ways and means of meetings the needs of children, pregnant women, the elderly and the disabled in disaster situations."

"I try every day to provoke through education so that these people are included in surveys and public policy formulation," Gomes said. "On the other hand, they're still waiting for results and inclusion. It's important to understand that some people are more affected even in high-risk situations that affect everyone, and they need to talk about how they're affected."

In the study, the researchers stress the need for visually impaired people to be involved in contingency planning, drills, and evacuation exercises to increase preparedness, especially if they have children, adding that education is fundamental in this process, to transform institutions and bring them together with people who have a special need to be prepared for disaster risk reduction, including climate change adaptation.

"I'd like this research to be broadened and I'd like these issues to be part of the school curriculum so people are better prepared and included," Gomes said.

More information: Giselly Gomes et al, (In)visibilities About the Vulnerabilities of People with Visual Impairments to Disasters and Climate Change: A Case Study in Cuiabá, Brazil, *International Journal of Disaster Risk Science* (2022). DOI: 10.1007/s13753-022-00394-6

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