

Participatory accessibility audits as a tool for disability-inclusive health systems: Findings from two Indian states

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ABSTRACT

Introduction: Persons with disabilities face a higher need for healthcare but face challenges accessing healthcare. Despite policy developments in India, progress towards accessibility of healthcare facilities for persons with disabilities has been slow.

Methods: This study used a participatory accessibility audit approach conducted in partnership with the government authorities to evaluate disability accessibility of 35 government hospitals in the states of Madhya Pradesh and Goa in India. A checklist was developed using reference guidelines and consultations with a community advisory board. After piloting, audits were conducted by persons with disabilities recruited as field investigators with training and support provided.

Results: The audits showed that while hospitals have made efforts towards physical accessibility such as through ramps, many of them were inappropriate. There were large gaps in terms of accessibility for persons with sensory impairments. After the audits, the findings were shared at the state and district levels by the auditors and research team, and action plans were co-created with government officials. Early signs of change are being seen in certain districts.

Conclusion: While the study shows mixed progress towards ensuring accessibility in government hospitals, it demonstrates a model of participatory accessibility audits. Participatory audits provide a rigorous, rights-based, and scalable model for accountability and change. They have widespread transferability for improving accessibility for disability communities in diverse sectors as well as for improving access to healthcare for diverse marginalised communities. However, ensuring success of the model depends on trusted partnerships between government, disabled people's organisations, health providers and researchers.

1. Introduction

One in six people in the world have some form of disability [1]. In India, official estimates of persons with disabilities as a proportion of population vary between 2.2% to 10% [2,3]. Persons with disabilities have a higher need to and access healthcare facilities more often, but face significant challenges accessing them including navigation, costs, information access, inadequate resources, non-inclusive infrastructure, and stigma and discrimination [4–8]. Barriers in service delivery are not limited to India or LMICs but also present in HICs such as the UK [9]. This can include inaccessible design of the outpatient area, toilets, ramps, pathways, and parking—making it difficult for persons with

mobility impairment [5–8]. Further, sensory-overstimulating clinical environments, rigid appointment systems, limited consultation time, and inaccessible information and communication, including the lack of sign language interpreters and alternative communication tools can disproportionately affect persons with sensory and cognitive, disabilities [5,6,10]. These barriers result in a higher unmet health need in those with disabilities—up to five times higher than those without disabilities in India [11].

1.1. Disability inclusion in India

Over the last decade there have been numerous progressive policy

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developments in India towards disability inclusion. After ratifying the UN Convention on the Rights of Persons with Disabilities (CRPD) in 2007, India enacted a landmark legislation, the Rights of Persons with Disabilities Act (RPDA) 2016. RPDA under Section 25 (b) and 40 mandates “*barrier-free access in all parts of Government and private hospitals and other healthcare institutions and centres*”. Just prior to the legislation, the government had also launched the Accessible India Campaign (AIC). There has also been development of numerous guidelines towards setting standards for accessibility. The Ministry of Housing and Urban Affairs released the Harmonised Guidelines and Standards for Universal Accessibility in India in 2021.

Madhya Pradesh (MP) was awarded as the best state under the AIC in 2023 for work done under the Directorate of Social Justice & Empowerment. The State of Goa has been a pioneer in the context of rights of persons with disabilities, and is well known for organizing the popular International Purple Fest which celebrates the lives of people with disabilities.

Despite these progressive laws, schemes and programmes in both the states and in the wider country, there are concerns about the actual progress on the ground. For instance, the flagship AIC targets only the 50 most important buildings in Tier I cities and 25 key buildings in Tier II cities. In contrast, the majority (69.9%) of persons with disabilities in India live in rural areas, where the AIC has limited reach even after the last ten years [12]. A timely impetus was provided by the Supreme Court of India in 2024 in a landmark ruling on the accessibility of public buildings, where the Court directed the Government to frame accessibility rules [13].

1.2. Disability involvement towards accessibility

There is a need to identify systems and processes that can facilitate a meaningful approach to identifying and making the necessary changes. It is worth asking what alternatives exist to a top-down accreditation and enforcement approach? Moreover, what about accessibility of essential services like health in Tier II cities (populations between 50,000 and 99,999)? Is it this gap that the iHEAR AccessMatters project aimed to fill in the States of Goa and MP.

While the Ministry of Health & Family Welfare developed the Indian Public Health Standards to guide public health facilities, these standards offer minimal disability-specific provisions beyond basic features such as ramps and handrails and lack explicit, comprehensive criteria addressing the needs of persons with disabilities [14]. Furthermore, the practical feasibility of implementing the Accessible India Campaign (AIC) audit checklists remains questionable, given their length, complexity, and the large number of variables they require auditors to assess [15]. The Supreme Court of India has therefore rightly commented that these are an ‘aspirational ceiling’ rather than a ‘non-negotiable floor’.

The WHO Global Report on Health Equity for Persons with Disabilities highlights the need to consult individuals with disabilities in the integration of disability inclusion into public health initiatives [1]. A participatory approach is also recommended in disability research to improve quality and relevance [16,17]. The project, therefore, used a participatory approach by involving people with disabilities to examine the accessibility of government hospitals in the states of MP and Goa for the disability community. Through this, the project aimed to understand how participatory approaches can be used to advocate for more accessible public sector health facilities.

This manuscript takes a two-pronged approach. On one hand, we attempt to show the validity of a participatory audit and lived experience approach—that meaningful findings can be generated. On the other hand, we attempt to show the transferability of the participatory audit approach—that this model is worth emulating—not only for audits in diverse spaces for the disability community, but also with other identity-based marginalised communities.

2. Methods

2.1. Participatory approach

The use of a Community Based Participatory Research (CBPR) approach was implemented in different ways [16,18]. The research team was composed primarily of persons with disabilities. The team was guided by a Community Advisory Board (CAB) composed of disability rights advocates and persons with expertise in accessibility audits. For data collection, all Field Investigators (FI) involved were persons with disabilities, and audits were conducted with support from a Disabled Persons' Organisation (DPO) [19]. Finally, to ensure the action element, dissemination-action meetings were held both at the state and district levels.

2.2. Development of audit checklist

To ensure participation and transferability, the audits were conducted by FIs who are persons with disabilities without any necessary prior experience in conducting similar audits. Given the limited resources in the project, a simplified yet comprehensive audit checklist was developed that could be implemented without elaborate training or supervision. For this, the research team referred to the following three standards:

- (i) Harmonised Guidelines and Standards for Universal Accessibility in India (2021);
- (ii) Sightsavers checklist; and
- (iii) Accessibility Standards for Healthcare (MoHFW).

The draft of the checklist was reviewed by the community advisory board and their inputs incorporated. The final audit checklist had around 180 items. The audit checklist was made available both on a Google Form as well as on a document as a soft copy and hard copy, in English and in Hindi. It contained the following sections:

- (i) External common areas: external pathways, parking, outdoor water provision
- (ii) Internal common areas: reception, staircases and ramps, toilets, indoor drinking water provisions, elevators and lifts, waiting areas
- (iii) Internal restricted areas: Wards and emergency routes
- (iv) Equipment: Various equipment across departments
- (v) Information and way-finding: signages, maps and information systems
- (vi) Digital accessibility: website accessibility

2.3. Health systems engagement

The team engaged with key government stakeholders in both states to get the necessary support and permissions to conduct the audits. This was done through in-person meetings on the sidelines of other events, through prior appointments and virtually. In Goa, the project involved a close collaboration with and support from the Office of the State Commissioner of Persons with Disabilities (SCPD), a quasi-judicial body. In MP, with the help of a letter of support from the MP SCPD, permission and support was received from the Mission Director at National Health Mission MP. In both the states with the help of the government stakeholders a list of hospitals was identified for the conduct of the audit.

2.4. Recruitment and training of field investigators (FIs)

Once the audit checklist was developed and government permissions were received, the next step was to identify FIs for the conduct of the audits. This was done through the Designbridge Foundation in Goa and Madhya Pradesh Viklang Manch (a DPO) in MP. Although all the FIs

were persons with disabilities there was a dominant representation of men with mobility and visual impairment.

Two separate one-day trainings were conducted by access audit experts in Goa and MP. The training covered principles of accessibility, universal design, accessibility standards, step-by-step orientation to the audit checklist, research ethics, observation methods, and photographic documentation. FIs suggested that in the future, training duration be extended to two or three days instead of one, with a stronger emphasis on practical, hands-on components.

2.5. Piloting

Before starting the actual audits, pilot audits were conducted by team members in government hospitals in Bhopal to revise and refine the audit tool. Subsequently, the final version of the audit checklist was shared with all FIs and regular coordination by the team supported the FIs to conduct the audits.

2.6. Audits

A total of 35 audits were conducted across the states of MP and Goa. 24 audits were conducted in MP between the months of September 2024 and January 2025. These included health facilities in the capital city of Bhopal (Tier-II city) and 23 District Hospitals. Each audit was completed by a trained FI, often conducted as a team with other persons with disabilities, and with the research team provided support (virtually/on the phone). Some of the audits were done by team members who were also persons with disab.

11 audits were conducted in Goa, between November 2024 and January 2025. In accordance with the recommendation of the Goa SCPD, this list included hospitals such as community health centres, sub-district hospitals and specialised care hospitals. The Goa audits were conducted by two FIs together with an architect and staff member from the DPO.

Apart from support during the audits, meetings were held every few weeks between the research team and the FIs to share experiences and learnings. Each field investigator was expected to fill a Google Form with the audit checklist, as well as prepare an audit report covering the checklist including any qualitative observations. For this, a report format was created by the research team, reviewed by the CAB and shared with the FIs. The FIs were also asked to take photographs with due care of key elements of the audit. As reasonable accommodations, research team members assisted several FIs in preparing the reports.

An official letter from Sangath was provided to each of the FIs authorizing the FI to conduct the audits. When going to the hospitals, the FIs showed this and the overall permission letter from NHM where required. Nevertheless, in some of the health facilities the FIs required support from the team in navigating hospital-level administration which was provided. Sometimes, obtaining permission from hospital administrations took two to three days.

Certain aspects of the audits were easier to conduct such as external areas, internal common areas, wards, and washrooms. In contrast, auditing equipment, digital accessibility, and restricted internal areas were more challenging to assess. Since most of them were men, they faced difficulties accessing and auditing women-only areas such as maternity wards. This highlighted the need to increase gender diversity among FIs.

2.7. Review and data cleaning

Once the FIs completed their first draft of the audit reports, the research team reviewed and edited them to ensure consistency, accuracy and clarity of findings. This was done by triangulating the inputs provided on Google Forms, with the reports and photographs submitted by the FIs, as well as through multiple conversations with the respective FIs. Using this, the research team prepared detailed hospital-level audit

reports for each health facility audited for submission to the respective hospital authorities and to the state government. The reports contained the findings, photographs, recommendations, and a summary and guide to the report.

2.8. Data analysis

Once the final versions of the reports were ready, data was collated using Microsoft Excel, cross-checking between the Google Form data, reports and photographs to ensure accuracy. In this paper, audit results of some of the variables that were adequately captured in both states have been collated and presented using summary statistics. This has been presented at the state level and as per type of healthcare facility in Table S1 (in Supplementary Material). In addition, we developed domain-level scores and have presented it as an infographic.

To calculate domain-level scores, each of the items was assigned a score of one each. Each domain had varying number of items ranging from three to eight. All items mentioned under each domain in Table 1 and 2 were included with the exception being the domain of drinking water, which was omitted, as it was not evaluated in Goa. Items with more than two possible responses were transformed into binary items and missing and non-applicable values were given a score of zero. The denominator for each domain was the maximum possible score which was equal to the total number of items under that domain. Domain-level scores were first calculated for each healthcare facility and then average for each state was calculated. Each of the items were given equal weightage to calculate domain-level scores and to calculate overall score.

2.9. Debriefing discussions with FIs

After the completion of audits, we conducted two virtual debriefing group discussions with FIs from both states in March 2025. with each session lasting 90 min. A total of 16 FIs took part in the discussion. These were conducted in a mix of English and Hindi. Through these discussions, FIs shared their experiences in the project.

2.10. Process of action plan development

The action component of the research project included a process to co-develop hospital-specific action plans. For this, two different state-level dissemination-action-training events were conducted [17].

In Goa, the event was held in collaboration with the SCPD office. The 50+ attendees included representatives from the SCPD, Department of Empowerment of Persons with Disabilities, representatives from health education institutions, members of various state-level community-based organisations, hospital administrators from a majority (7 of the 11) of the audited facilities and both the FIs and the research team.

In MP, the event was held in collaboration with the National Health Mission-MP with 130+ civil engineers employed by the NHM. The event was attended by the Mission Director of NHM Bhopal, Chief Engineer, and various sub engineers, electrical sub engineers, executive engineers and assistant engineers, as well as most of the FIs and the research team.

To develop the action plans, a section of both events focussed on small group discussions where the hospital administrators (in Goa) or the engineers (in MP) sat together with the FI that conducted the audit of their respective hospital. In these discussions, using the insights and recommendations from the hospital audit reports, the groups discussed what improvements were feasible and could be implemented practically. This was documented as a series of unique action points that suited the specific needs of each of the hospitals. Each group was then asked to present their plan while others, including the state level officials, offered suggestions on how to implement it including sources of funding.

Once the action plans were co-developed, the FIs conducted district level meetings in their respective districts. These meetings typically brought together key government stakeholders, including the Chief

Medical and Health Officer (CMHO), Civil Surgeon, and NHM engineers. During the meetings, audit reports along with the action plans were presented, and discussions focused on actionable next steps for improving hospital accessibility. The meetings were well-received across most districts, with officials expressing commitment to implementing feasible changes. In several districts, the events received coverage in local media, amplifying awareness and reinforcing accountability for disability inclusion in public health infrastructure.

2.11. Ethics

Ethics approval for the study was granted by the Sangath Institutional Review Board (Reference number: AB_2024_103 | 72,710).

3. Results

3.1. Findings from the audits

3.1.1. External pathways and parking

Across both states, external pathways were wide. While 50% of facilities in MP had obstructions in external pathways (Image 1), in Goa fewer did (18%). Some pathways were blocked by ongoing construction, and parked vehicles limiting safe movement. Dedicated drop-off zones were absent except for one hospital in Goa. No hospitals in MP and only two hospitals in Goa had Tactile Ground Surface Indicators (TSGI) externally for guiding people who are visually impaired. The audit results have been summarised in Table 1 (at the end of the article) and in Table S1 (in Supplementary Material 1).

Cattle-catchers (also known as cattle grids or cattle guards) are a series of horizontal metal pipes set across the roadway, typically near the main entrance, to prevent cattle such as stray cows from entering the



Image 1. External entrance.

An external entrance with obstructions that make it narrow, with a cattle-catcher on the floor.

Table 1

Some of the findings from the audits presented state-wise.

Characteristics	Overall (n = 35)	MP (n = 24)	Goa (n = 11)
1. External Pathways & Parking			
External pathways adequately wide	30 (85.7%)	20 (83.3%)	10 (90.9%)
External pathways free from obstructions	21 (60%)	12 (50%)	9 (81.8%)
External pathways have TSGI	2 (5.7%)	0 (0%)	2 (18.2%)
Marked drop-off zone for persons with disabilities	1 (2.9%)	0 (0%)	1 (9.1%)
Distance between parking and the main building less than or equal to 30 m	22 (62.9%)	20 (83.3%)	2 (18.2%)
Designated and reserved accessible parking spaces	9 (25.7%)	4 (16.7%)	5 (45.5%)
Parking attendant available	0 (0%)	0 (0%)	0 (0%)
Designated parking areas denoted with universal symbol of accessibility	6 (17.1%)	3 (12.5%)	3 (27.3%)
2. Reception and information counters			
Designated counter or help desk for persons with disabilities	6 (17.1%)	5 (20.8%)	1 (9.1%)
Reception counter clearly visible from the entrance	26 (74.3%)	19 (79.2%)	7 (63.6%)
Can reach reception using TSGI	2 (5.7%)	0 (0%)	2 (18.2%)
Sign language interpreter available	0 (0%)	0 (0%)	0 (0%)
Lowered reception counter for wheelchair users	0 (0%)	0 (0%)	0 (0%)
3. Information and way-finding			
Visual signs use high-contrast, easy to read fonts	30 (85.7%)	20 (83.3%)	10 (90.9%)
Signages anti-glare	20 (57.1%)	14 (58.3%)	6 (54.5%)
Signages have appropriate pictograms	11 (31.4%)	7 (29.2%)	4 (36.4%)
Signs supplemented by a text in embossed letters or in Braille	0 (0%)	0 (0%)	0 (0%)
Tactile map present	1 (2.9%)	0 (0%)	1 (9.1%)
4. Stairs			
Handrails continue on landings	15 (42.9%)	9 (37.5%)	6 (54.5%)
Stairs is adequately wide (1500 mm)	28 (80%)	18 (75%)	10 (90.9%)
Continuous handrails provided on both sides of the staircase	5 (14.3%)	4 (16.7%)	1 (9.1%)
Two sets of handrails installed at a height of 750 mm to 900 mm	0 (0%)	0 (0%)	0 (0%)
There is colour contrast between risers and treads	5 (14.3%)	4 (16.7%)	1 (9.1%)
5. Ramps			
Ramp with gradient of or less than 1:12	20 (57.1%)	17 (70.8%)	3 (27.3%)
Ramp obstruction free	22 (62.9%)	17 (70.8%)	5 (45.5%)
Handrails on both sides	8 (22.9%)	6 (25%)	2 (18.2%)
Two sets of handrails at 750 and 900 mm	2 (5.7%)	1 (4.2%)	1 (9.1%)
Ramp at least 1200 mm wide	28 (80%)	19 (79.2%)	9 (81.8%)
Surface has colour contrast	9 (25.7%)	8 (33.3%)	1 (9.1%)
Handrails continue on landing	4 (11.4%)	3 (12.5%)	1 (9.1%)
6. Elevators			
Lifts available between all floors	22 (62.9%)	14 (58.3%)	8 (72.7%)
Handrails available on 3 sides of lift at 900 mm height ¹	7 (31.8%)	2 (14.3%)	5 (62.5%)
Control panel is at an accessible height for wheelchair-users ¹	2 (9.1%)	1 (7.1%)	1 (12.5%)
Controls are braille-enabled ¹	8 (36.4%)	5 (35.7%)	3 (37.5%)
Mirror on rear wall ¹	1 (4.5%)	0 (0%)	1 (12.5%)
Audio signage/ floor announcements ¹	5 (22.7%)	2 (14.3%)	3 (37.5%)
Lift is at least 1500 mm x 1500mm ¹	11 (50%)	5 (35.7%)	6 (75%)
7. Waiting areas			

(continued on next page)

Table 1 (continued)

Characteristics	Overall (n = 35)	MP (n = 24)	Goa (n = 11)
Waiting spaces located conveniently close to key utilities and functions	28 (80%)	18 (75%)	10 (90.9%)
Reserved seats for persons with disabilities	0 (0%)	0 (0%)	0 (0%)
Few waiting spaces available under quiet areas or silent zones	25 (71.4%)	19 (79.2%)	6 (54.5%)
8. Corridors			
Corridors at least 1200 mm wide	34 (97.1%)	23 (95.8%)	11 (100%)
Floor surfaces non-slippery, flat, firm, and non-glare	6 (17.1%)	4 (16.7%)	2 (18.2%)
Internal corridors are well lit	19 (54.3%)	13 (54.2%)	6 (54.5%)
TGSI available in corridors	6 (17.1%)	1 (4.2%)	5 (45.5%)
9. In-patient wards			
Room clear of any obstacles and hazards	28 (80%)	18 (75%)	10 (90.9%)
Surfaces in the room have high contrast	28 (80%)	17 (70.8%)	11 (100%)
There is at least one bed with adjustable height	15 (42.9%)	6 (25%)	9 (81.8%)
10. Toilets			
Emergency bell is present	0 (0%)	0 (0%)	0 (0%)
Doors open outward	2 (5.7%)	2 (8.3%)	0 (0%)
Mirror is present	3 (8.6%)	0 (0%)	3 (27.3%)
Accessible toilet signage	2 (5.7%)	1 (4.2%)	1 (9.1%)
11. Drinking water facilities²			
Drinking water space hygienic and safe to move		4 (16.7%)	
Drainage covers, gratings and proper slopes provided for water spillage		1 (4.2%)	
Floor is not slippery		2 (8.3%)	
Taps are easy to open (do not require fine motor skills)		0 (0%)	
Multiple waterspouts provided, with at least one at a lower height of 750 mm		0 (0%)	
12. Emergency exits			
Emergency exit have a minimum width of at least 1200 mm without obstructions	24 (68.6%)	16 (66.7%)	8 (72.7%)
Orientation and direction signs clearly visible, large in size and easy to understand	14 (40%)	9 (37.5%)	5 (45.5%)
Emergency lights installed	12 (34.3%)	10 (41.7%)	2 (18.2%)
Exit maps in braille or tactile form	0 (0%)	0 (0%)	0 (0%)
Functioning fire alarm	16 (45.7%)	9 (37.5%)	7 (63.6%)

¹ Denominator is the number of facilities with lifts available.

² Not assessed in Goa.

hospitals. Such cattle-catchers were noted in at least seven of the hospitals in MP (Image 1). These catchers however can make it difficult for people with visual impairment, or using crutches or wheelchairs from entering the hospital.

Reserved spaces for parking of vehicles of patients with disabilities were largely absent. Four facilities in MP had them but only for two-wheelers. Five hospitals in Goa had reserved parking for persons with disabilities but two of them were inside the staff parking and hence inaccessible for patients. No hospital with reserved parking had adequate signage both vertically and on the ground. Parking attendants were not available in any of the hospitals. Some of the hospitals in Goa were at an elevation and hence had steep gradients. In some of these, electric buggies were made available by the hospital. No hospitals had TGSI in the parking area.

3.1.2. Reception and information counters

Reception counters varied widely in accessibility. In all the hospitals, the reception counters were too high for wheelchair users, and most lacked tactile ground surface guides/ indicators (TGSI) (94%) or call bells for assistance. Six facilities (5 in MP and 1 in Goa) had dedicated

counters or helpdesks for persons with disabilities but at some of them, staff was not available. In one hospital in Goa a sign saying 'priority for disabled persons' was seen. No hospitals had sign language interpreters. In five hospitals in MP, the space between railings for the queues in the reception was too narrow for wheelchair users to go inside and return (Image 2). In some hospitals assistive devices were available on request.

3.1.3. Information and wayfinding

Information accessibility was a major gap across both states. Signage was mostly of adequate contrast and without glare but were not often at accessible heights (Image 3). Pictograms were present in only some areas of some of the facilities (31%). No facilities had braille signages, or multisensory indicators. Only one of the hospitals audited in MP had TGSI. On the other hand, in Goa, five hospitals had TGSI and one had a tactile map. However, the TGSI were not present in all parts of the hospital and were usually absent externally.

3.1.4. Stairs

In at least three places the stairs were found with a higher than recommended step-height of more than 150 mm. Most places (80%) had stairs that were of adequate width. Very few facilities had handrails on both sides of the stairs and adequate colour contrast (Image 4). Only in about half of the places, handrails continued onto the landing. No facility had handrails at two heights with some facilities having stairs that completely lacked handrails. This impairs the mobility of not just persons with disabilities but also that of the elderly, pregnant women and others.

3.1.5. Ramps

Ramps were common but rarely met all the accessibility standards. Most ramps frequently lacked dual-height handrails (94%), handrails on both sides (70%), adequate colour contrast (64%), slip-resistant surfaces, or TGSI leading up to them. Some of the ramps had irregular corrugated or rumbling surfaces, were too steep, obstructed or too narrow (Images 5, 6 and 7).

3.1.6. Elevators

Elevators, where present (63%), often lacked back mirrors (95%), controls at an accessible height (91%), audio announcements (77%), railings on all 3 sides (68%), and Braille buttons (64%), restricting



Image 2. Registration counter.

People seen queuing up at a registration counter. One of the counters is designated for persons with disabilities and elderly people. The individual rows are too narrow for a wheelchair user to maneuver comfortably, and the counter is too high.



Image 3. Signage.

A blue and white signage in English and Hindi with adequate contrast, lighting and pictograms.



Image 4. Staircase.

A staircase with sufficient width, colour contrast, railings on both sides.

independent use by persons with disabilities (Image 8).

3.1.7. Waiting areas

Waiting areas were generally available near key service points and offered adequate seating in most facilities (80%). No facility had reserved seating for persons with disabilities. Further, clear signage, wheelchair waiting spaces, and TGSi were lacking. Accessibility within upper floors remained limited, and seating was often insufficient at high-traffic points like registration counters. Most of the facilities had some waiting areas in quieter areas or silent zones which are important for patients with sensory sensitivities such as autistic people.

3.1.8. Corridors and in-patient wards

Most corridors were sufficiently wide to allow wheelchair movement (97%) and were adequately lit, yet flooring was often slippery (Image 9). Door handles and accessible labelling were inconsistent, and some facilities had unexpected level changes impeding smooth navigation. Only six of the facilities had TGSi in the corridors (one in MP and five in Goa) (Image 10). Most of the hospitals had wards that were clear of any



Image 5. Obstructed ramp. An external ramp of the hospital with proper railings on one side, but not the other. The ramp is obstructed by a 2-wheeler parked in front of it.

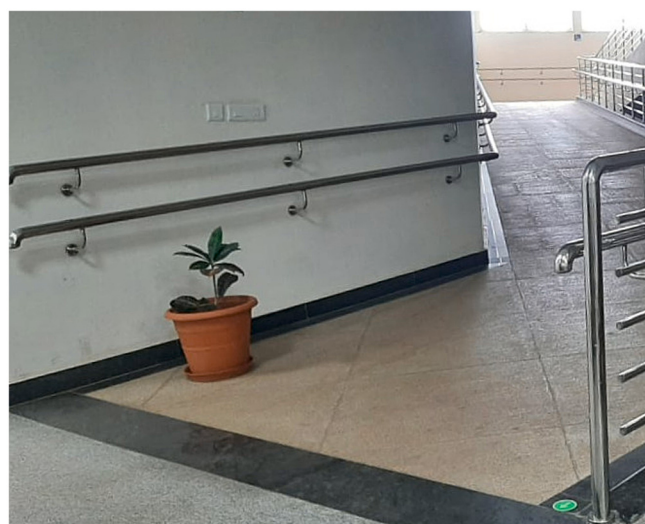


Image 6. Ramp with railings.

A ramp shows proper railings on both sides and adequate edge contrast and lighting. There is a small obstruction on the ramp surface.

obstacles and hazards (80%) and had at least one adjustable accessible bed (80%). However, surfaces in the room often did not have sufficient colour contrast (57%).

3.1.9. Toilets

Accessible toilets were among the most consistent challenges. Some hospitals (4 in MP, 6 in Goa) had one or more toilets designated for



Image 7. Steep ramp.

A ramp is seen to be too steep, lacking in colour contrast or edge markings, and with no railings. The ramp surface is also inappropriate and may be slippery.

persons with disabilities. However, they were often locked, non-functional, undersized or used as storage. Some of these toilets were labelled as “Toilet for specially abled” or as “Handicapped toilet”, thus using inappropriate and outdated terminology. In general, the toilets did not have mirrors (91%), the doors frequently opened inward (94%), and essential features such as handrails, emergency bells, or adequate turning space were missing (Image 11 and 12). The level of cleanliness of the toilets was also in general poor.

3.1.10. Drinking water facilities

While drinking water facilities were available in around one-third of the facilities, many sites lacked adequate signage, hygiene, drainage, adequate lighting, or level access (Image 13). No facility had accessible lever-type taps or additional taps at a lower height for wheelchair users.

3.1.11. Emergency exits

Emergency exits were present in all the hospitals and were mostly of adequate width. But they were inconsistently marked and often lacked signage in multiple languages. Evacuation plans for persons with disabilities were non-existent across both states, and no hospitals had specialised wheelchairs or protocols for emergency evacuation or exit maps in braille or tactile form. Emergency lighting and functional fire alarms were not universal.

Accessibility scores across the various domains presented here are presented in Table 2 here below as well as in Fig. 1 pictorially as well as with state-level differences in Table S2 (in Supplementary Material 2).

3.2. Findings from the action plans

A summary of the action plans is presented in Table 3. Although the action plans outlined practical steps, a structured plan for



Image 8. Elevator.

The interior of an elevator shows railings on 3 sides, but the mirror on the back wall is missing, and there is less contrast between surfaces.



Image 9. Corridor.

A corridor at the hospital with adequate width, lighting and edge markings. No TGSI is seen in the image.

implementation, including clear timelines, assigned responsibilities, ongoing maintenance, and mechanisms to review accessibility regularly based on user feedback was missing from the discussions.

4. Discussion

Despite numerous policy developments towards improving disability



Image 10. TGSI.

Proper TGSI seen leading to several rooms in a hospital with appropriate colour contrast, guiding and warning tiles.



Image 11. Toilet with narrow door.

A toilet cubicle entrance is seen that is too narrow for a wheelchair user to pass through.

accessibility in healthcare, there is a dearth of evidence on the same. There is a need for innovative approaches for meaningful dialogue towards improving accessibility. This novel study used a participatory action research approach by involving people with disabilities to conduct disability accessibility audits of government hospitals in two states in India: MP and Goa. While the study shows mixed progress towards ensuring accessibility in government hospitals, it shows a model



Image 12. Toilet with steps.

The entrance to the reserved bathroom for persons with disability has stairs without appropriate colour contrast or railings leading to it. No TGSI seen in the narrow pathway.

for participatory accessibility audits that is worth emulating.

4.1. Accessibility in government hospitals

The study shows measures taken for physical accessibility in government hospitals. This was evidenced by the widespread presence of ramps, an interest in developing appropriate ramps in the action plans and training, among the CAB, FIs and with the government stakeholders. In addition to government interest, interest in ramp development may also be because of the presence of prominent disability rights advocates with mobility impairments. Despite the presence of ramps, it was starkly seen that none of the ramps met all the requirements outlined in standardised guidelines from the Government of India. Some ramps being totally inaccessible because of their steep gradients suggests a lack of awareness of the guidelines, poor understanding of wheelchair users' needs and that accessibility may be considered in a merely tokenistic manner.

Much of the accessibility measures for people with mobility impairment is also limited to the main entrances. Lack of functional accessible toilets, narrow corridors, lack of reserved seats in waiting areas, lack of accessible water points and reception counters are examples of the same. This shows that the work towards ensuring physical accessibility needs to progress beyond ramps and main entrances.

When it comes to sensory accessibility for people with visual impairment, while there was a near total absence of braille signages and audio warnings, the presence of TGSI in some of the hospitals is a welcome sign. Nevertheless, the TGSI is limited to certain parts of the hospital. For people with hearing impairment, it is a challenging way ahead as none of the requirements of the guidelines were met in any of the hospitals. This includes a lack of sign language interpreters and accessible visual signages.



Image 13. Drinking water facility.
An external drinking water facility is seen with obstructions such as thresholds. The floor is seen to be wet.

Table 2
Domain wise accessibility scores.

Domain	Maximum Possible Score	Mean Score	Mean Score (%)	Standard Deviation (%)
External Pathways & Parking	8	2.6	32.5%	17.7%
Reception and information counters	5	1	19.4%	12.4%
Information and way-finding	5	1.8	35.4%	17.5%
Stairs	5	1.5	30.3%	20.2%
Ramps	7	2.7	38.0%	24.2%
Elevators	7	1.6	22.9%	24.5%
Waiting Areas	3	1.5	50.5%	23.4%
Corridors	4	1.9	46.4%	22.0%
In-patient wards	3	2	67.6%	29.7%
Toilets	5	0.2	4.0%	8.1%
Emergency exits	5	1.9	37.7%	30.2%
Overall	57	18.8	32.6%	11.1%

Remarks: Drinking water as a domain has not been included as it was not assessed in Goa.

4.2. Participatory accessibility audits

Going beyond the findings of the audits themselves, the study presents vital lessons for similar work in the future and in other locations. Earlier studies on disability accessibility have relied either on the Right to Information questions [20] or exclusively on the Central Public Works Department (CPWD) Access Audit Checklist [21,22]. These assessments were limited either by being conducted by a single auditor in a small region [22] or by including only partial representation from the disability community [21]. Therefore, a strength of the study was its

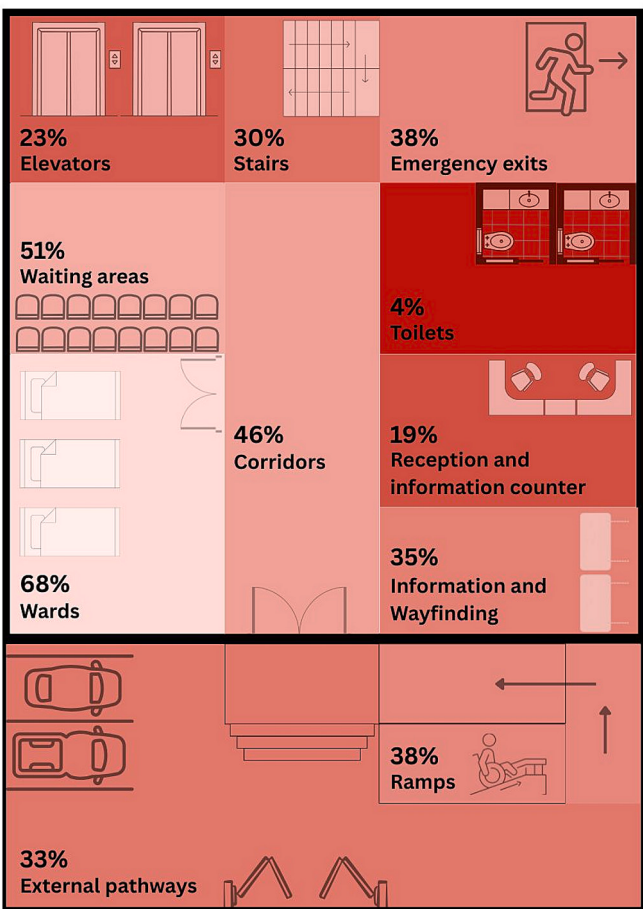


Fig. 1. Accessibility Infographic.
This infographic shows accessibility scores of different parts of the hospital. The background is similar to an architectural blueprint showing different parts of the hospital. Against each part corresponding to each of the domains in Table 2, the mean accessibility score in percentage is shown.

Table 3
Summary of the action plans co-developed.

#	Theme discussed	Plans made
1	External pathways and parking	Improved approach roads without any obstruction. Dedicated reserved parking and drop-off zones for persons with disabilities, along with proper signage
2	Reception and Information Counters	Wheelchair-accessible counters for OPD registration and reception (750 mm height)
3	Information and Wayfinding:	Ramps and railings at medicine distribution centres Installation of appropriate and accessible signage in multiple formats (such as braille, audiovisual) at main entrances, parking areas, corridors, staircases, and rooms, etc.
4	Stairs	Addition of railings on both sides of all staircases
5	Ramps and Elevators	Enhanced visual contrast on steps Making properly designed ramps with mandated inclination and railings on both sides at prescribed heights, anti-skid flooring
6	Waiting areas	Seating near lifts and waiting areas
7	Corridors and in-patient wards	TGSI along corridors and sloped walkways
8	Toilets and drinking water facilities	Widening doors, constructing new accessible toilets, ensuring toilets remain open and are cleaned regularly, installing emergency alarms, adjusting tap heights, improving cleanliness, and providing proper drainage and non-slip flooring and maintaining dry flooring in the said areas.

participatory approach which started from the origin of the study, its

team, CAB and FIs. Now there is a growing number of studies using participatory and co-design approaches with persons with disabilities in healthcare [23,24].

Having someone with the lived experience of the challenges brought in by an inaccessible health facility, that too from the same region, has the potential to bring in unique insights that someone without a disability and its associated lived experience could bring [16,17]. Given the extent of work that is left to be done in terms of accessibility this could also be a viable career development pathway for persons with disabilities, while also contributing to making health facilities accessible.

Most FIs in the project expressed gratitude for being part of the project, as it addressed issues directly affecting their lives. They felt motivated because the project recognized their own challenges and actively worked towards finding solutions, with FIs relating personally to its objectives. Our FIs unanimously agreed that audits should be led by persons with disabilities or individuals with direct experience of disability, as they are better equipped to identify real and practical accessibility barriers. Conducting the audits gave our FIs a sense of power, especially when they saw openness and interest from hospital officials from the two states to make changes based on the findings.

Such a model of community-led or peer-led audits is not new as it has been used widely in the context of participatory rural appraisals (PRA) [25]. However, audits being done in the context of identity-based marginalisation is relatively novel and worth emulating in the context of other communities marginalised based on their identity. For example, a person from the transgender communities would be best placed to audit a facility in terms of its level of trans-inclusion. Similarly, such an approach to audits can also be used in other sectors—for example, students or staff with disabilities auditing educational institutions.

4.3. Focus on action

Our study builds on a similar study conducted in Udupi, a Tier II city in the southwestern state of Karnataka, India [26]. We advanced this work further by focusing on action by co-developing action plans. This is important because access audits by persons with disabilities have been criticised for missing out on policy interventions [27]. This study shows a potential solution in a model where the access audits do not end with the audits themselves but with the auditors advocating for solutions at different levels of the government. It was made possible in this study because of strong support from both the state governments, and key public sector leaders who agreed to the importance of this work, and ensured permissions were provided.

4.4. Way forward

While participatory audits are a good approach in terms of the way ahead, a better approach would be to include persons with disabilities, including DPOs, from the stage of funding, planning and designing of health facilities [17]. Participation and lived experience involvement need to be central considerations at all stages. Having persons who are most affected by a design (or lack thereof) involved in planning and evaluation, at its core is an ethical and moral imperative.

Approaches such as what was done in this study becomes important when there is a relative lack of participation—for example of persons with disabilities—otherwise in health systems planning and implementation. Participatory audits, therefore, are just one of the steps in the larger continuum of participatory approaches that is vital to a *healthy* and responsive health system. The same has been echoed in the WHO Guide for Action with a planned budget on accessibility [28].

In our study, we came across few examples of new buildings under construction where all the aspects of accessibility were not being taken into consideration—showing the need for advanced participatory planning. This approach can be mandated by governments as well as by agencies involved in funding healthcare infrastructure. In this, the

team's involvement in the Lancet's first ever Commission on Disability and Health, and the WHO Disability Health Equity Network (where Sangath and University College of Medical Sciences are founding partners) are key towards disability-inclusive health systems [17].

A challenge in the project was the absence of a simple tool to monitor the implementation towards improvement of accessibility. Hence, appropriate next steps would be to develop an Accessibility Advocacy Toolkit, a refined audit checklist, and accessibility scorecards to enable persons with disabilities to monitor progress independently.

The presence of standardised guidelines such as the harmonised guidelines is great. However, awareness of the same among healthcare planners and engineers is limited showing the need for engagement campaigns and training programmes. The same was flagged by the Supreme Court of India where they noted that accessibility standards framed by ministries lack non-negotiable prescriptions, making it untenable to enforce penalties such as fines or denial of completion certificates based on advisory guidelines [13]. Emphasizing that “progressive realization” of accessibility cannot mean the absence of a minimum mandatory baseline, the Court stressed the need to move beyond merely *sensitizing, recommending, or guiding*.

Training programmes could also not just focus on disability accessibility—which some might see as catering to a segment of the population—but as a form of universal design. A universal design approach helps improve access to healthcare of not only persons with disabilities but also others who may have temporary accessibility needs such as pregnant women, people with temporary disabilities, older persons, etc. Healthcare standards such as Indian Public Health Standards emphasise accessibility but it is limited in its extent and needs to be revised and expanded. Our findings are in sync with the apex court of India's judgement laying down guiding principles on accessibility, including Universal Design, comprehensive inclusion across disabilities (by including provisions for specific conditions such as autism, intellectual disabilities, psychosocial disabilities), integration of assistive technologies, and continuous consultation with persons with disabilities and DPOs.

Finally, for participatory audits, action and planning to be meaningful, practical and feasible it is vital to have trusted partnerships between the government, academia, persons with disabilities and DPOs. In this project, what helped the feasibility included having SS a prominent disability rights advocate who is also a health provider and researcher as well as having persons with disabilities within the government who provided a vital linkage. Our prior work with the disability community also helped. Strong support from the SCPD Goa and NHM in MP was crucial.

4.5. Challenges, learnings and limitations

A discussion on the model of participatory audits will not be complete without an elaboration of the challenges it creates and the need for unique considerations. For example, in our study we had created a budget assuming that an FI will be conducting the audit alone. However, given the obvious lack of accessibility within the health facilities and outside of it, this was challenging and most of our FIs conducted the audits either with another person with disability, or a caregiver or even going as a group.

Lack of appropriate accessible tools also becomes a challenge that needs to be accommodated [16]. For example, a person with visual impairment would need someone to describe the surroundings as well as support to measure, for example, the gradient of a ramp.

There were also challenges of being able to meet the originally planned timelines of the study, and in finding accessible venues for the meetings [16]. These are not challenges that are impossible to overcome but aspects that need to be kept in mind from the stage of budgeting and planning of a project or evaluation study.

More time will need to be spent in developing and adapting tools for the FIs. The audit tools, while comprehensive for evaluating physical

infrastructure, had limited applicability in assessing accessibility for persons with psychosocial, cognitive, or neurodevelopmental disabilities [13]. This limitation underscored the need for more holistic, intersectional tools that address multiple dimensions of accessibility. While the tool did not cover all parts of the hospital, it was quite long to be completed in one day that too with a short one-day training.

Recruitment constraints also affected representation, as most FIs were men with locomotor or visual disabilities, narrowing the range of lived experiences included in data collection and interpretation. A similar limitation has been noted in other studies globally [16]. Hence, similar projects in the future must aim to work with a more diverse and intersectional group of persons with disabilities including women, LGBTQIA+ persons with disabilities as well as more people from Dalit, Bahujan and Adivasi communities.

The project also faced personal and staffing challenges. One key team member fell seriously ill and later passed away, and two others transitioned to higher studies or new professional roles. Despite this, the remaining team members redistributed responsibilities to sustain project momentum, reflecting the team's adaptability and collective commitment.

Finally, report preparation and validation took longer than anticipated due to the need for multiple review rounds with diverse stakeholders: hospital administrators, engineers, disability rights organisations, and accessibility experts. While this prolonged process delayed dissemination, it enhanced the quality, credibility, and acceptance of the reports.

Overall, these experiences emphasise the importance of flexible timelines and budgets, structured government engagement strategies, proactive stakeholder communication to ensure that participatory research of this kind remains both rigorous and sustainable.

4.6. Conclusions

While on one hand the study shows mixed progress towards ensuring accessibility in government hospitals, on the other hand, it demonstrates a model of participatory accessibility audits. Participatory audits provide a rigorous, rights-based, and scalable model for accountability and change. Such participatory accessibility audits have widespread transferability and can have potential impact in terms of improving accessibility for disability communities in diverse sectors but also a model towards working for improving access to healthcare for diverse marginalised communities. However, ensuring success of the model depends on trusted partnerships between government, disabled people's organisations, health providers and researchers. Trusted partnerships keeping persons with disabilities at the centre are critical to achieving disability justice within healthcare. The iHEAR AccessMatters project has demonstrated that accessibility and inclusion in healthcare can be best achieved when persons with disabilities are at the center of research, design, and advocacy in line with the disability rights slogan *Nothing about us, Without us*. By bridging evidence with action and fostering government partnerships, the project has laid a foundation for systemic change showing that inclusive healthcare is not only a policy goal but an achievable reality.

CRedit authorship contribution statement

Harikeerthan Raghuram: Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Shilpee Verma:** Writing – review & editing, Writing – original draft, Project administration, Methodology, Investigation, Data curation. **Eesha Lavalekar:** Writing – review & editing, Writing – original draft, Project administration, Methodology, Data curation. **Anoushka Virk:** Writing – review & editing, Project administration, Methodology, Investigation, Data curation. **Anant Bhan:** Writing – review & editing, Supervision, Project administration, Methodology, Funding acquisition,

Conceptualization. **Satendra Singh:** Writing – review & editing, Validation, Supervision, Project administration, Methodology, Funding acquisition, Conceptualization.

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The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.dialog.2026.100342>.

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