Ethiopian Journal of Environmental Studies & Management 17(5): 623 – 632, 2024
ISSN:1998-0507 doi: https://ejesm.org/doi/v17i5.6
Submitted: November 1, 2024 Accepted: Debember 18, 2024

UNIVERSAL ACCESSIBILITY: AN ASSESSMENT OF IRRUA SPECIALIST TEACHING HOSPITAL, IRRUA, EDO STATE, NIGERIA

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Abstract
Healthcare services are a vital public service meant to safeguard and enhance public health across all demographics including people with disability (PWD). However, advancements in technology and medical specialities can sometimes create unequal access, leading to potential discrimination and emergencies. To address this, healthcare facilities must be universally accessible, accommodating individuals with disabilities or temporary impairments to ensure fair access to care. In Edo State, Nigeria, individuals with disabilities face notable challenges in accessibility to education, employment, and health services. This research, therefore, focuses on evaluating the level of compliance with universal accessibility standards in a selected medical facility by examining eight (8) design elements: parking spaces, ramps, doorways, pathways, handrails, ground and floor surfaces, toilets, and signage. The research aims to assess the physical condition of these elements and their adherence to the American Disability Act (ADA) standards. Using a structured observation approach with an observation checklist, the study found varying levels of compliance among the design elements. Parking spaces and handrails had the lowest compliance scores, while toilets and signage scored second lowest. Doorways and ramps had an average score, though better than the former group. Conversely, ground and floor surfaces and pathways showed the highest level of compliance. These findings suggest that the medical facility does not fully meet ADA standards for universal accessibility. The study concludes that there is a significant need for modifications to improve accessibility in the facility as the facility does not fully meet ADA standards. It recommends that both government and disability advocacy organisations prioritise universal accessibility in the design of medical facilities. Incorporating accessible features from the outset is more cost-effective than retrofitting existing structures, highlighting the importance of planning for accessibility for all categories of user from the beginning.

Key Words: *Universal Accessibility, Economic Conditions, Public Health, Accessible Features, Irrua, Nigeria*

Introduction

Universal accessibility involves creating environments, marketing, and information that everyone can use and understand, regardless of age, disability, or other attributes (Student, 2024; Yakob *et al*., 2022). This concept has emerged from early research on design for disability and ageing, emphasising the shared basic needs of people (Ned *et al*.,

2024). Surroundings, products, and communication systems directly affect our abilities, which can be impacted by impairments or challenging conditions in public spaces (Lagrelius & Bravo, 2022). Universal access ensures that people can coexist and participate in society without discrimination (Corcuff *et al*., 2022; Heron, 2024).

In healthcare, universal accessibility involves designing environments that accommodate diverse demographics and ensure barrier-free access for all (Prince-Oparaku and Chuma-Umeh, 2022; Lieberman and Grenier, 2020; Raban and Włodarczyk, 2024). The complexity of hospital operations requires that accessibility be integrated into the core design, promoting efficiency, adaptability, and patient friendliness (Ademiluyi and Aluko-Arowolo, 2009; Ajuwon, 2023; World Bank Group, 2020). Accessible hospitals not only comply with legal standards but also provide safe, equitable, and dignified care, fostering patient trust and improving outcomes (Talib *et al*., 2016; Vecchio and Martens, 2021).

Achieving an accessible and barrier-free environment is a legal and ethical obligation. Laws such as the Americans with Disabilities Act (ADA), the National Disabilities Act, and the Convention on the Rights of Persons with Disabilities (UNCRPD) mandate that healthcare facilities be accessible (Andrews *et al*., 2019). Compliance with these regulations reflects a commitment to inclusivity and respect for human dignity, with the ADA offering guidelines to ensure equal access for all (Hickox, 2010).

The research aims to assess the physical condition of the accessibility features in Irrua Specialist Teaching Hospital (ISTH), Irrua, Edo State, Nigeria and their adherence to the American Disability Act (ADA) standards with the following objectives: to compare the hospital's accessibility provisions against established standards and guidelines for healthcare facilities, evaluate the strengths of universal accessibility features at Irrua Specialist Teaching Hospital, and provide practical recommendations for enhancing universal accessibility to ensure equitable access to healthcare services for all users, including individuals with disabilities.

Development of Hospitals and Their Roles in Public Health

Hospitals play a vital and indispensable role in our lives. For thousands of years, man has engaged in a variety of activities and rituals to keep himself well and healthy, realising an intrinsic value in maintaining the purity of his person (Chen *et al*., 2020). To date, the scope of activities available to man to cure himself of illness and disease is greater than ever and continues to grow. The development of hospital buildings has responded to needs and purpose, progress and aspiration, belief and philosophy. This transformation reflects the growing need to address a wide range of health issues and the increasing complexity of modern medical practice (Brusamolin *et al*., 2022). The evolution of hospital buildings is contained in the development of the hospital itself. The word hospital is derived from the Latin noun 'hospes,' signifying 'host' or 'guest.' During mediaeval times, it was mainly a shelter for persons, a place of hospitality, offering food and lodging to the wayfarer, hosting both the most affluent and the most unfortunate (Bulakh *et al*., 2020).

Today, hospital development focuses on creating facilities that are not only capable of treating acute illnesses and emergencies but also providing preventive

care, chronic disease management, and rehabilitation services. Modern hospitals are designed to accommodate various specialities, ranging from surgery, paediatrics, and obstetrics to oncology, cardiology, and neurology (Dabhilkar and Svarts, 2019). This diversity in services ensures that patients can receive specialised care within a single facility, enhancing the overall effectiveness of the healthcare system. Another critical aspect of hospital development is accessibility (Raban and Włodarczyk, 2024). Hospitals are designed to be accessible to everyone, including people with disabilities, the elderly, and those who may face temporary mobility challenges. Features like ramps, elevators, accessible restrooms, and clear signage ensure that all individuals can navigate the facility without difficulty (Cupido, 2024).

Review of Existing Standards and Guidelines for Accessibility

Universal accessibility is guided by both legal frameworks and ethical principles across the world. Laws such as the United States' Americans with Disabilities Act (ADA), the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), the United Kingdom's Equality Act 2010, Canada's Accessibility for Ontarians with Disabilities Act (AODA), Australia's Disability Discrimination Act (DDA), (Parmenter, 2011) and (Kumar, 2024), and Nigeria's National Disability Act all mandate inclusive design. Ethically, principles of equity, fairness, human dignity, social responsibility, inclusion, and participation reinforce (Amucheazi and Nwankwo, 2020) the need for environments that are accessible to everyone, regardless of physical, sensory, or cognitive abilities.

In Nigeria, older hospitals, including Irrua Specialist Teaching Hospital (ISTH), were constructed before the movement against disability discrimination gained momentum. Consequently, many of these buildings are not accessible to individuals with physical challenges. However, efforts are now being made to modify and renovate older structures to eliminate barriers, ensuring accessibility in both urban and rural areas. Increased advocacy by persons with disabilities has brought greater awareness to their needs and potential, sparking a movement toward inclusivity. Globally, the adoption of the UNCRPD in 2006 marked a shift towards human rights and social inclusion (Giegerich, 2019), and Nigeria followed suit, ratifying the Convention in 2010. This led to the enactment of the Discrimination against Persons with Disabilities (Prohibition) Act in 2018, known as the National Disability Act (Ibekwe and Aduma, 2019). This law strengthened the protections for persons with disabilities and set a five-year period for public buildings constructed before the Act to be retrofitted for accessibility.

Despite Nigeria's progress with the National Disability Act and adherence to the UNCRPD, the country often relies on the ADA standards because they offer a comprehensive, well-established framework that has been refined over decades (Deekue, 2016; Eaton *et al*., 2021). The ADA's detailed guidelines help architects and builders implement effective accessibility features, which are also preferred by international investors for consistency across projects. Until local regulations in Nigeria develop more specific, context-based guidelines, the ADA remains a reliable standard for

ensuring accessibility and quality in public spaces and facilities.

Challenges of PWD in Accessing Healthcare Services and Their Legal Rights

Persons with disabilities (PWDs) face numerous challenges in accessing healthcare services, often rooted in architectural and design barriers that hinder their ability to navigate healthcare facilities independently and with dignity (Raban and Włodarczyk, 2024). These barriers persist despite the existence of legal frameworks aimed at promoting universal accessibility, revealing a gap between legislative intent and practical implementation (Vecchio and Martens, 2021). Common obstacles include inaccessible entrances, lack of ramps, automated doors, elevators, narrow corridors, and inadequate restrooms, which make it difficult for PWDs to navigate healthcare facilities independently. Waiting areas and consultation rooms also often lack accommodation for wheelchair users. Additionally, the absence of accessible parking, grab bars, and poorly implemented signage complicates navigation for those with visual or hearing impairments (Cupido, 2024).

Despite legal frameworks like the UNCRPD and Nigeria's National Disability Act, which emphasize the right of PWDs to accessible healthcare, implementation remains inconsistent. Many facilities continue to fall short of the standards outlined in these acts, perpetuating the challenges faced by PWDs. The reliance on outdated infrastructure and the lack of enforcement mechanisms highlight the need for stronger commitment to retrofitting older buildings and incorporating universal design principles into all future healthcare projects (Deekue, 2016).

To address these challenges, it requires a multifaceted approach that combines stronger legal enforcement, public awareness, and proactive incorporation of universal design principles to create inclusive and equitable healthcare environments that uphold the rights and dignity of PWDs. By aligning the rights of PWDs with practical measures to eliminate barriers, healthcare systems can become more inclusive and equitable. This alignment not only upholds the dignity and independence of PWDs but also fosters a healthcare environment that respects and accommodates the diverse needs of all individuals (Heron, 2024; Lieberman and Grenier, 2020).

Methodology

The study focuses on Irrua Specialist Teaching Hospital (ISTH), formerly known as Otibhor Okhae Teaching Hospital, located in Irrua, Esan Central Local Government Area of Edo State, Nigeria. Established by Decree 92 of 1993, ISTH serves as a pioneering tertiary healthcare institution dedicated to the prevention, treatment, and research of Lassa fever and other hemorrhagic fevers. The hospital was designed to bridge health inequity gaps between the northern and southern parts of Edo State and the country, acting as a catalyst for better health and human development (Izevbekhai *et al*., 2024). Strategically situated on the Esan plateau, approximately 87 km north of Benin City, ISTH serves as a referral centre for a wide range of medical specialties, including surgery, general medicine, obstetrics, gynaecology, paediatrics, and orthopaedics. Its semi-urban location makes it accessible to surrounding

communities and neighbouring states, enhancing its role in providing tertiary healthcare within its catchment area under the Ministry of Health (Irrua *et al*., 2023).

The hospital complex includes a variety of facilities, such as administrative buildings, hotels, specialized wards, laboratories, a Lassa fever research unit, and outpatient departments. This study specifically focuses on the general outpatient department (GOPD) and the orthopaedic departments, as these represent critical areas where accessibility issues are most evident. The GOPD, being the first point of contact for most patients, and the orthopaedic building, which handles mobility-related cases, highlight the challenges faced by persons with disabilities in accessing healthcare.

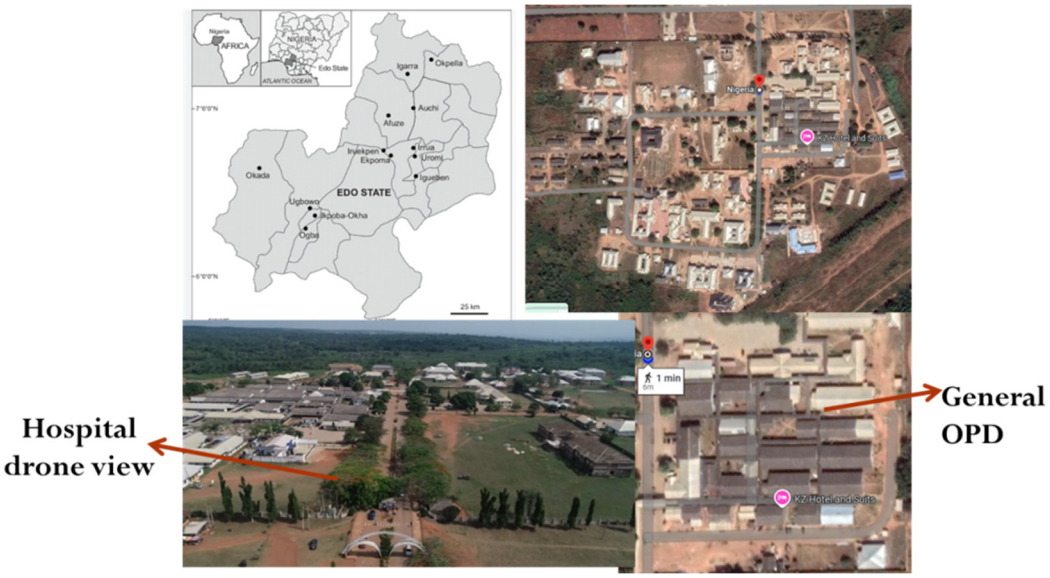

Fig. 1: Location Maps of the Study Area and the site layout ("Irrua". Google Maps)

This study utilized a qualitative research approach, focusing on observation and document content analysis to assess universal accessibility at Irrua Specialist Teaching Hospital (ISTH). Observation, measurement, photography, and document review were used to assess (8) key accessibility components: parking spaces, ramps, doors, passageways, handrails, surfaces, toilets, and signage, using a camera, steel tape, and a carpenter's level as tools. Structured observations were guided by a detailed outline, using clear forms to gather data, which helped in making practical recommendations for improving accessibility. Photographs supported observations during data collection from July 20th to 21st, 2024, with four-hour sessions each day. Content analysis was applied to evaluate ISTH's compliance with ADA standards, summarizing the strengths of accessibility features in a table format. Radar values, generated manually from Excel, highlighted key outcomes and practical recommendations were provided to enhance accessibility at the hospital.

Result and Discussion

The assessment focused on various design elements, including parking

spaces, ramps, doorways, pathways, handrails, flooring, toilets, and signage. Following that, table 1 below presents the study of the Selected Design Elements for Accessibility in comparison with the Americans with Disability Act (ADA).

Table 1: Assessment of accessibility features in compliance with ADA standard

Features	ADA standard (in mm)	Rank		
		A	B	C
Parking Spaces	- Minimum 1 accessible space per 25 public spaces.			★
	- Right-angle: 3600 mm wide x 4800 mm long; Parallel: 3600 mm wide x 6600 mm long.			★
	- Spaces should be near main entrances, on flat, level surfaces.			★
	- Step ramp with dropped curb (1200 mm width) to pedestrian walkway.			★
	- Clear symbols of accessibility at parking entrances and marked on surfaces.			★
Ramp	- Must have curbs at least 100 mm high on both sides.			★
	- Tactile blocks at ramp ends to aid the visually impaired.			★
	- Minimum width of 1500 mm, maximum slope 1:12.			★
	- Non-slip surface required.	★		
	- Ramps are mandatory in public buildings, parking areas, and transport hubs.	★		
Handrail	- Installed on ramps, stairs, hallways, and sidewalks.			★
	- Mounted between 840 mm - 900 mm from the floor.			★
	- Distance from wall: minimum 50 mm, maximum 100 mm.			★
	- Non-slip, safe to grasp, with circumference/width of 40 mm - 60 mm.			★
Pathways	- Minimum passage width: 2400 mm; clear, unobstructed width: 900 mm.		★	
★	- Must be free of protruding/hanging objects.	★		
	- Pathways through waiting areas should be 900 mm wide, enough for wheelchair turning radius.	★		
Doorways	- Accessible entryways must be at least 900 mm wide; sports complexes and hospitals: 1000 mm.	★		
	- Tactile blocks at entrances, contrasting materials for visual alerts.			★
	- Turning space diameter: 1500 mm.			★
Toilet	- Door clearance: 900 mm minimum.	★		
	- Turning space: 1500 mm for wheelchairs.			★
	- Knee clearance: up to 635 mm within 1200 mm of clear floor space.			★
	- Grab bars (900 mm minimum length) on back wall.			★
	- Signage with tactile characters positioned between 1200 mm - 1500 mm.			★
Floor surfaces	- Stable, firm, smooth, slip-resistant with slopes ≤ 5% (1:20).	★		
	- Surface level changes ≤ 6 mm; 6-13 mm beveled; >13 mm ramped.			★
	- Walkways: 900 mm minimum clear width.	★		
	- Cross slopes ≤ 1:48, turning areas (1500 mm x 1500 mm) at intervals ≤ 61 meters.			★
	- Routes with slopes > 5% must follow ramp guidelines.			★
Signage	- Raised characters and Braille; mounted 1200 mm - 1500 mm from the floor.			★
	- Non-glare finish, with contrasting characters for readability.		★	
	- Directional signs at non-accessible entrances and pathways.		★	
	- Exterior signs to direct to accessible routes, restrooms, and elevators.		★	

Note: *A- Up to standard, B- Partially up to standard, and C- Not up to standard*

In the meantime, each feature's strength was assessed and summarised using the radar system in Figure 2 in accordance with the necessary standards examined in

Table 1 above. Findings regarding Figure 3's accessibility level revealed that parking spaces and handrails, two accessibility features, got the lowest strength ratings (level 1). Toile rooms and signage, among other characteristics, earned the second-lowest compliance score (level 2). Once more, level 3 features two ramps, and doorways had average strength measured. Based on accessibility, ground floor surfaces and paths were found to be the most compliant part of the research area, though not excellent (level 4).

Table 2: Evaluation of the Strength of accessibility features in ISTH

Level	Degree	Remarks
Poor	0% of all requirements are met	
Satisfactory	25% of all requirements are met	
Fair	50% of all requirements are met	
Good	75% of all requirements are met	
Excellent	100% of all requirements are met	

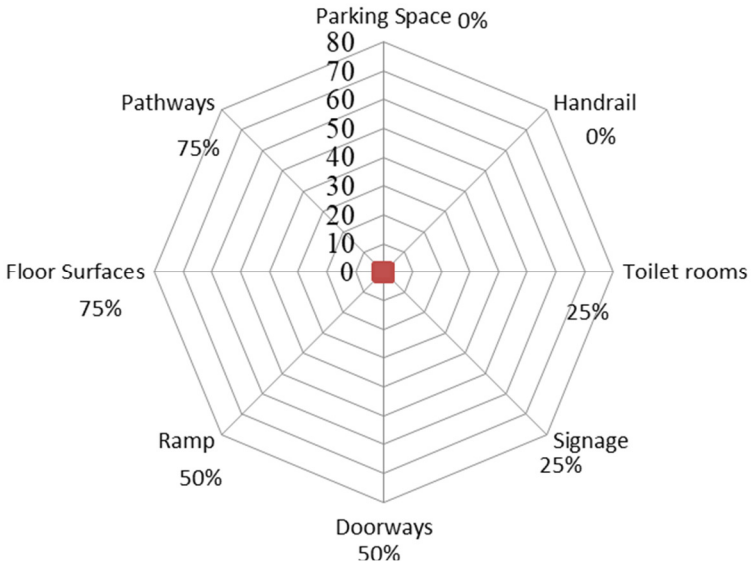

Fig. 2: Radar System for Evaluation of the Strength of universal Accessibility features at ISTH

The accessibility evaluation of Irrua Specialist Teaching Hospital (ISTH) in Table 3 below shows critical deficiencies, particularly in the absence of reserved parking for persons with disabilities, lack of handrails, and insufficient accessible toilets. While some ramps and pathways are available, they often do not meet the required standards, and not all door handles are positioned at accessible heights. The floor surfaces are slip-resistant, but the inconsistent and non-standard signage further complicates navigation, highlighting a need for significant improvements to ensure universal accessibility throughout the facility.

Table 3: Summary of the Observation checklist for Evaluation of Accessibility Features In ISTH

Features	Evaluation Criteria	Rank	Comment
Parking space	Are 10% of the total parking spaces reserved for persons with disabilities?	N	No accessible parking in ISTH
Ramp	Is the maximum running slope of all ramps 1:12?	Some	Some are 1:2unequal
Handrail	Are handrails mounted on walkways and ramps edges to prevent PWD from falling?	N	No handrails provided
Pathways	Do pathways have minimum width of 2400mm?	Some	Not all
Doorways	Do doors have min. opening 0f 900mm width?	Y	Yes
	Are doors handles mounted at no higher than 900mm from floor surface?	Some	Not all
Toilet	Are there accessible toilets in ISTH?	N	Not provided
Floor surface	Are ground, floor and walking surfaces along accessible paths stable, firm, smooth, and slip-resistant?	Y	Yes, the floors are finished with terrazzo floor finish
Signage	Is adequate signage placed in standardized, appropriate locations throughout the hospital?	Some	No standard signage

The third objective is to provide practical recommendations for enhancing universal accessibility. Based on the analysis of accessibility features, the following practical recommendations are drawn:

i. Designate at least 10% of parking spaces as accessible, following ADA guidelines for easy access. Enhance signage with raised characters, Braille, and contrasting colours for clarity.
ii. Upgrade ramps to meet required slopes and safety standards.
iii. Install handrails on both sides of ramps, stairs, and pathways.
iv. Widen pathways to a minimum clear width of 2400 mm, ensuring unobstructed access.
v. Ensure doorways have a minimum width of 900 mm; install handles at accessible heights and tactile alerts.
vi. Increase accessible toilets, ensuring full compliance with ADA standards.
vii. Upgrade floor surfaces to be stable, smooth, and slip-resistant, with appropriate slopes.

Conclusion

In conclusion, the evaluation of the medical facility against American Disability Act (ADA) standards highlights significant gaps in accessibility. Parking spaces and handrails showed the lowest levels of compliance, followed by toilets and signage, which also scored poorly. Doorways and ramps demonstrated average compliance, but still fell short of the required standards. In contrast, ground and floor surfaces, along with pathways, exhibited the highest levels of adherence to ADA standards leaving areas for improvement. Overall, the facility falls short of full compliance, underscoring the need for improvements to ensure universal accessibility for all users. Hence, the government of Nigeria should conduct routine audits to monitor hospital accessibility, ensuring compliance with ADA standards and promptly addressing any deficiencies.

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