WHEELCHAIR ACCESSIBILITY OF PUBLIC BUILDINGS IN IBADAN, NIGERIA

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ABSTRACT

Integration of wheelchair bound individuals into the society requires accessibility to any building, especially public buildings in any part of the world. This study assessed the wheelchair accessibility of selected public buildings in Ibadan, Nigeria. Thirty-eight public buildings housing hospital, education, social and recreation centers and government ministry/agencies were surveyed. The doorway width, height of thresholds and steps, width of routes and grade of ramps were measured and computed. Accessibility was determined using an abridged form of the Americans with Disabilities Act Accessibility Guidelines (ADAAG). Only 7(18.4%) of the 38 buildings, 45.1% of the entrances and 19.4% of the routes were wheelchair accessible. The most accessible buildings were the hospitals (66.7%), while none of the social/ recreation buildings was accessible. This study revealed low level of wheelchair accessibility of public buildings in Ibadan, Nigeria, a factor that could limit opportunities for community integration of the wheelchair users.

INTRODUCTION

The primary goal of rehabilitation is for the clients to be able to return to a former environment and lifestyle (1, 2). It also aims to empower the individual to achieve satisfaction in productive activity and personal fulfillment, by engaging in social and functional interaction with other people and his/her environment.

Restriction of mobility is likely to be the most common handicap amongst people with disabilities (3). In order to enhance ambulation in individuals with a disability involving the lower limbs, wheelchairs may be essential on a temporary or permanent basis. Wheelchairs provide the users with many benefits which include mobility, continuing or broadening community and social activities, conserving energy and enhancing quality of life (4).

However, even when the person with a disability has a suitable and well-fitted wheelchair, its value is diminished when there is lack of wheelchair accessibility to buildings. It may even be more frustrating when these are public buildings which serve as shelter for the employment, education, social and recreation needs of the wheelchair users. In order for the wheelchair users to fit in and function independently in any community, there must be a concerted effort to incorporate wheelchair accessibility in the interior and exterior of public buildings and the transportation and road systems.

Ibadan is the largest city in the most populous country in Africa, Nigeria. Although Nigeria has no clearly defined disability act, the country's 1999 constitution mandates that all groups of people should be treated with equity and justice [5]. Public buildings are thus expected to be built to accommodate the accessibility needs of all persons in the society. This will ensure that all persons have the opportunity to secure suitable employment, participate in social activities, have access to healthcare services and acquire formal education. The question answered in this study is: Are the public buildings located within the Ibadan metropolis accessible to wheelchair users?

METHOD

The study was a descriptive survey research involving one-time observation of the building with no attempt to manipulate any variable. The public buildings were selected using a simple random sampling technique, except for the categories where the numbers of buildings were few. These included the banks and the social/ recreational buildings, and in such cases, a purposive non-probability method was used to select the buildings. The buildings which were owned by the 3 levels of government, were considered under health, educational, employment and social/recreational functions.

Ethical approval was obtained from the University of Ibadan/University College Hospital Joint Institutional Review Board. Permission to take the required measurements was also obtained from the appropriate authority in charge of the buildings. Physical observation of the study site was carried out by the researchers and necessary measurements were taken and recorded by one of the authors. All entrances and connecting routes were measured in buildings with multiple entry points.

The following measurements were taken and recorded to the nearest 0.1 centimetre.

i) **The doorway width:** the horizontal distance across the doorframe.

ii) **Height of threshold:** the vertical distance, from the floor to the top, of an elevated surface located at the doorway.

iii) **Height of steps:** the vertical distance from the bottom to the top of a step or any elevated surface located along the route of entry.

iv) **Width of route:** the horizontal distance between the edges of a corridor, passage, and passageway.

v) **Height of ramp:** the vertical distance from the bottom to the top of the ramp at the highest point.

vi) **Length of ramp:** the distance between the beginning and the end of the base of a ramp.

vii) **Length of slope of ramp:** The distance between the beginning and the end of the slope.

viii) **The grade of ramp** is deduced by finding the ratio of the height and the length of the ramp, that is:

$$\text{Grade of ramp} = \frac{\text{height of ramp}}{\text{Length of ramp}}$$

Accessibility or otherwise, of each building was determined by comparing the measurements taken with the required dimensions as highlighted by an abridged form of the American with Disabilities Act Accessibility Guidelines (6). A building was considered accessible when at least an entrance and its linking route(s) were found accessible.

Summary of Required Dimensions for Wheelchair Accessibility Using an Abridged Form of the Americans with Disabilities Act Accessibility Guidelines (6).

Parameters	Accessibility Requirements	Remarks
Height of steps/ threshold	Maximum of 1/2 inch (1.3cm)	Inaccessible if above 1/2 inch without threshold being beveled or provision of a ramp
Doorway width	Minimum of 32 inches (81.5cm)	Inaccessible if below 32 inches (81.5cm)
Grade of ramp i.e. height/ length	Maximum 1:12 with slope length less than 9m	Inaccessible if steeper than 1:12 or if slope of 1:12 is longer than 9m
Width of route	Minimum of 36 inches (90.0cm)	Inaccessible if below 36 inches (90.0cm)

DATA ANALYSIS

Descriptive statistics of frequency tables, percentages and bar chart are used to present the data.

RESULTS

A total of thirty-eight (38) public buildings were surveyed in this study. They were surveyed under the 3 cadres of government and 4 functions of categories as shown in Table 1. Twenty-two (58.9%) were bungalows, 12 (31.6%) were multi-storey-buildings and 4 (10.5%) others. The word "others" was used to describe facilities which were not enclosed structures. The distribution of the studied buildings under each government cadre and function category was presented in Tables 2 and 3 respectively.

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Table 1: Frequency distribution of the buildings by government cadre ownership and function

Category (N = 38)

	Function Categories				
Cadre of Government	**Hospital**	**Educational**	**Social/ Recreational**	**Govt. Parastatals/ Agency**	**Total**
Local Govt	0	0	1	5	(n=6)
State Govt.	1	4	5	7	(n=17)
Fed. Govt.	2	11	0	2	(n=15)
Total	3	15	6	14	(n=38)

Key: Govt. = Government

Table 2: Frequency distribution of buildings, entrances and routes by government cadre ownership

	Cadre of Government					
	Local Govt.		**State Govt.**		**Fed Govt.**	
	n	**%**	**n**	**%**	**n**	**%**
Buildings (N=38)						
Acc. (n=7)	2	33.3	2	11.8	3	20.0
Inacc. (n=31)	4	66.7	15	88.2	12	80.0
Total	**6**		**17**		**15**	
Entrances (N=173)						
Acc.(n=78)	24	75.0	27	45.0	27	33.3
Inacc.(n=95)	8	25.0	33	55.0	54	66.7
Total	**32**		**60**		**81**	
Routes (N=129)						
Acc. (n=25)	2	10.0	15	7.3	8	14.8
Inacc.(n=104)	18	90.0	40	72.7	46	85.2
Total	**20**		**55**		**54**	

Key:
Acc. = Accessible. Inacc. = Inaccessible. Gov = Government. Fed = Federal

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Table 3: Frequency distribution of buildings, entrances and routes by function ownership

	Hosp.		Edu.		Function Categories			
					Soc./Rec.		Govt. paras/agencies	
	n	%	n	%	n	%	n	%
Buildings (N=38)								
Acc (n=7)	2	66.7	1	6.7	0	0.0	4	28.6
Inacc(n=31)	1	33.3	14	93.3	6	100.0	10	71.4
Entrances (N=173)								
Acc.(n=78)	3	60.0	28	30.4	24	68.6	23	56.1
Inacc.(n=95)	2	40.0	64	69.6	11	31.4	18	43.9
Routes (N=129)								
Acc.(n=25)	2	40.0	13	22.0	4	18.2	6	14.0
Inacc.(n=104)	3	60.0	46	78.0	18	81.8	37	86.0
Total	**20**				**55**		**54**	

Key:
Acc. = Accessibility
Inacc. = Inaccessible
Gov = Government
Fed = Federal
Hosp= Hospital
Edu = Education
Soc/Rec = Social/recreational
Paras = Parastatals

In considering the 38 buildings irrespective of government cadre and function categories, it was discovered that a higher percentage of the buildings were inaccessible to wheelchair users. Although no emphasis was placed on interior accessibility of these buildings in this study, the ability of the wheelchair users to access different levels of the buildings was investigated. We found that only one of the twelve storey buildings studied, had an elevator to connect the different levels.

For the specific structural domains assessed, the entrances/doorways and the route of entry (path of travel), there were on an average 4.6 entrances to each building and an average of 3.4 routes per building assessed. The distributions of entrances and routes, both accessible and inaccessible, under each government cadre and function category are presented in Tables 2 and 3 respectively.

DISCUSSION

The purpose of this study was to determine the level of wheelchair accessibility of public buildings in Africa's second largest city, Ibadan, using an abridged form of the American with Disabilities Act Accessibility Guidelines (5), with emphasis only on the exterior accessibility. The structural domains assessed included the entrances/doorways and the routes of entry (paths of travel).

The results of the statistical analysis showed that only one in every five of the 38 buildings surveyed was accessible. This study showed that physically challenged persons who use wheelchairs to get around can only gain access to 20% of the public buildings which house facilities that provide basic services for health, recreation, social, financial, employment and educational needs. However, 2 out of the 3 hospital buildings surveyed, were found accessible. This compared with the results of the study by Rose (7) who reported high wheelchair accessibility for the wheelchair-bound into twenty clinics in Los Angeles and Orange counties in the United States. A comparison of the findings of this study and that of Rose (7) is however, limited by the fact that only 3 hospitals were surveyed in this study.

The low accessibility of buildings for educational purposes (6.7%) is suggestive of inappropriate architectural designs of such buildings. It appears that the major efforts of the owners were devoted to making these structures architectural masterpieces, with little or no consideration for individuals who are wheelchair-mobile. Inaccessibility of the three libraries measured under the education function category implies, that wheelchair-mobile students would not have access to the numerous services being provided in these libraries. The implication of the lack of wheelchair accessibility recorded for the social/recreational buildings (0%), is that wheelchair users would not be able to visit social/recreational centers which serve the purposes of relaxation, recreation and health promotion. Yet, every individual should have the opportunity to partake in health promotion activities. According to Durstine et al (8), regular involvement in physical activity is desirable and recommended health behaviour, for people with various types of disabilities.

The low level accessibility into government agencies/parastatals (14.3%) may hinder the wheelchair users from securing employment with such agencies/parastatals. It also implies that services provided by these agencies/parastatals would only probably reach the wheelchair users by indirect means, as these individuals would not be able to get to the location where these services are provided whilst on their wheelchairs. The alternative would be for such persons to be carried into these buildings; this act has a potentially negative psychological effect (9) on the individual. Among the twelve storey buildings surveyed, only one of the buildings had an elevator to connect the different levels. For the remaining buildings, the wheelchair users would be able to access the ground floors only and even in some instances, these too were inaccessible.

The high average number of entrances and routes noticed in both educational and social/ recreational buildings, could be due to the high number of lecture theatres and halls surveyed under this category. These facilities have several entrances vis-à-vis routes connecting them to the transportation stops or parking zone. This is because of the heavy traffic of people expected to make use of them, as many of the theaters and halls are capable of seating several people. The trend noticed for the distribution of entrances to the buildings was similar to that noticed for routes or paths of travel. The educational and social recreational function categories, which had many entrances, also had a correspondingly high number of routes to cope with the high human traffic.

The results of the structural domains evaluated revealed, that nearly 50% of the entrances and only 20% of the routes were accessible, this contrasted with the study by Useh et al (10), who reported 71% accessibility for entrances into public buildings in the central district of Harare, Zimbabwe. The main reasons for this low level of accessibility of the entrances and routes were due to the presence of high doorway thresholds and steps along the routes. These thresholds which should have been beveled or removed, constituted the major physical barrier to wheelchair-mobile individuals; they thus rendered the buildings inaccessible. Provision of ramps alongside the steps would have made the buildings accessible. The fact

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that most of the entrances/doorways and routes widths were within the required dimension for wheelchair accessibility might have been coincidental, and not really meant to meeting the needs of wheelchair users.

The entrances of the social/recreational structures however, had higher accessibility (68.6%) though their routes had low accessibility (18.2%), the trend observed in this study compared with studies that assessed structures of similar functions. Figoni et al (11) reported 70% accessibility for the entrances but low accessibility for the paths of travel (48%), although it is much higher than the level of accessibility of the paths of travel assessed in this study. Cardinal and Spaziani (12) also reported 90% accessibility for the entrances, but a lower accessibility (58%) for the path of travel.

An important observation made in this study, was that most of the accessible entrances were not linked by accessible routes (paths) and this shortcoming ultimately rendered the buildings inaccessible. This is especially evident for the social/recreational and government agencies/parastatals category where despite relatively high accessibility of entrances, the low level of route accessibility renders most of these buildings inaccessible.

There is need for the Nigerian government to lead the way in making accessibility of public buildings a priority and in enacting laws which mandate accessibility. This they can achieve by liaisoning with wheelchair users and various professionals (the occupational therapists, physiotherapists, engineers and architects). It is important to increase the level of wheelchair accessibility of public buildings, in order to allow wheelchair users access them. This will facilitate independence; integration and/or reintegration of wheelchair users into the society and equity for all, at least by enabling everyone to have access to the point of service provision.

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