

Accessibility of Public Buildings in Khulna, Bangladesh, for Wheelchair Users

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ABSTRACT

Purpose: *Physical accessibility is one of the fundamental rights of wheelchair users in order to ensure their integration into society. After Bangladesh ratified the UN Convention on the Rights of Persons with Disabilities (CRPD) on November 30, 2007, there has been a paradigm shift in the government's approach to ensure the welfare and rights of persons with disabilities through legislative and policy actions. This study assesses how accommodative the public buildings are for wheelchair users in Khulna, Bangladesh.*

Method: *All the public buildings in Khulna city - including government offices, public schools, colleges and universities, hospitals, libraries, post offices and court buildings - were visited to assess the presence and suitability of facilities for wheelchair users, such as accessible parking, ramps, elevators, doors, and essential interior facilities like water closets and drinking-water fountains. Bangladesh has no specific accessibility guidelines document, but accessibility requirements have been included in the Bangladesh National Building Code (BNBC) 2008. The study made its assessment using an abridged form of the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and BNBC 2008.*

Results: *Only 6.7% (5) of the 75 public buildings were found suitable for wheelchair users. There is scope for modifications to be made in 28% (21) of the buildings which are currently unsuitable for wheelchair users.*

Conclusion: *The study revealed that public buildings are, in general, not very accommodative of wheelchair users. There is a need for modifications in infrastructure to ensure inclusive development of these individuals.*

Key words: *Wheelchair users, public buildings, accessible parking.*

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INTRODUCTION

The complex process of disablement has gradually evolved into a major socio/political issue, with implications for society as a whole, rather than remaining as an individual medical problem. Led by disability rights activists in the 1960s, this transformation has resulted in a general recognition at the local, national and international levels, that people with impairments - whether physical, sensory or cognitive - experience a range of environmental and social barriers that inhibit their active participation in the economic, political and cultural development of their communities. It is also widely acknowledged that this exclusion is manifest in the design and construction of physical and cultural infrastructure (Colin, 2011).

In Bangladesh, to an increasing extent, disability is being addressed and included in mainstream development rather than as a separate programme and charity. This follows the recognition that people with disabilities are citizens with equal rights who are able to contribute socially and economically to their households and communities, if given the opportunity. However, people with disabilities are still often discriminated against, socially marginalised and do not have access to basic social services in Bangladesh (National Grassroots and Disabilities Organisation -NGDO, National Council for Women with Disabilities –NCDW, Bangladesh Legal Aid and Services Trust - BLAST, 2015).

Over the past few years there has been a paradigm shift in the government's approach to ensuring the welfare and rights of persons with disabilities, especially through legislative and policy actions enacted since Bangladesh ratified the UN Convention on the Rights of Persons with Disabilities (CRPD) on November 30, 2007, and its Optional Protocol on May 12, 2008.

In 2013, the Rights and Protection of Persons with Disabilities Act came into force, repealing and replacing the Disability Welfare Act of 2001. The new law has, to an extent, adopted the provisions of the CRPD and marks a transition to a more rights-focused approach than the welfare-based approach of the earlier 2001 Act.

Section 2 (13) of the 2013 Disability Rights Act (Government of Bangladesh - GoB, 2013) defines 'accessibility' in line with the CRPD, as including physical accessibility to all premises (public and private, including open spaces and buildings). The Bangladesh National Building Code 2008 also contains disability-friendly construction rules and guidelines (GoB, 2008). The definitions on 'accessibility' and 'adaptability' comprehensively cover facilities or any part of

them that can be approached, entered and used without assistance by persons with temporary or permanent physical limitations. They also provide for adaptable spaces/features designed for persons with physical limitations to have access to adaptable toilets, kitchens, lifts and so on.

In line with increasing awareness, since the 1980s accessibility issues of persons with disabilities also became the focus of scientific research in the fields of occupational therapy, architecture and urban planning. In 1987, a study by Martin objectively examined the degree of accessibility in public areas to determine whether the apparent improvements measure up after the enactment of the Architectural Barriers Act of 1968. Results of the study revealed a trend of improved accessibility in both privately and publicly supported facilities in Utica, New York (Martin, 1987). Subsequently a number of research works assessed the wheelchair-accessibility to shopping centres, restaurants, food stores, fitness facilities, and public spaces in different states of America (McClain and Todd, 1990; McClain et al, 1993; McClain, 2000; Cardinal and Spazini, 2003). All the studies were intensive in nature and a wide range of parameters were considered in measuring accessibility. None of the studies found 100% compliance in any category of buildings. However, the findings revealed an increasing trend of compliance after the enactment of Americans with Disabilities Act.

In the UK, wheelchair-accessibility studies largely cover the public transport and housing sectors. Transport accessibility of wheelchair-users and the effects of accessible public transport on their social inclusion have been examined when several state initiatives have already been implemented to make public transport acceptable and accessible for all (Velho et al, 2016; Velho, 2018). In respect of housing, the success of private developers in providing wheelchair-accessible housing and the shortage of accessible housing in the social housing sector have been revealed in the reports of Department of Communities and Local Government (2003) and Housing Executive (2005). The social implications of increased wheelchair use due to disability by birth and also by ageing are drawing the attention of policy-makers in Great Britain to take appropriate measures to increase social and economic inclusion of persons with disabilities (Sapey et al, 2004).

In the absence of national accessibility guidelines for building design and construction, a number of studies have assessed the wheelchair accessibility of public buildings in different cities of Africa and Asia by using the Americans with Disability Act Accessibility Guidelines (ADAAG) as the benchmark. Although

these studies revealed varying levels of accessibility in different cities, they could not provide a comparative picture of wheelchair accessibility because of lack of consistency of included accessibility facilities and parameters (Useh et al, 2001; Fischer, 2004; Hamzat and Dada, 2005; Evlic, 2009; Cosmos et al, 2017).

In Bangladesh, disability issues have been researched largely from the socio-economic and medical perspectives. Some research studies tried to examine the socio-economic status of persons with disabilities as well as the inequalities in disabilities according to socio-economic and gender perspectives (Tareque et al, 2014; Moniruzzaman et al, 2016), while social accessibility and economic costs of disability were the focus of other research and reports (National Forum of Organisations Working with the Disabled -NFOWD, HI and GoB, 2007; Ali, 2014). Physical accessibility of persons with disabilities to transport, infrastructure, public or private buildings or public spaces, have not yet been assessed by any study before or after the inclusion of accessibility requirements in the National Building Code 2008 and the enactment of Disability Rights Act 2013 in Bangladesh.

According to the existing Act and Building Codes, public buildings of Khulna are expected to accommodate the accessibility needs of all persons in the society. This will ensure that everybody has the opportunity to secure suitable employment, participate in social activities, have access to healthcare services and acquire formal education.

The present study focused on the accommodative features of public buildings of Khulna, which included both access facilities and other essential interior spaces and facilities for wheelchair-bound persons with physical disabilities.

METHOD

Setting

Khulna is the third largest city of Bangladesh. A census survey was conducted in Khulna, to include buildings constructed with public funds and those that are accessible to the public for different purposes. A total of 75 public buildings were surveyed, of which there were 42 educational institutions, 18 public banks, 7 government offices, 3 public hospitals, 1 court building, 1 public library and 3 post offices. An authorisation letter from Khulna University enabled the researcher to access the public buildings and obtain permission to take measurements of the provided access and other interior facilities.

The Bangladesh National Building Code (BNBC) 2008 and the Americans with Disabilities Act Accessibility Guidelines (ADAAG) were considered when assessing the access facilities and interior facilities like the toilets and water fountains of the surveyed buildings. Table 1 sets out the facilities that were assessed to find how accommodative the public buildings were, and the different parameters that would be required to make the facilities suitable for wheelchair users.

Table 1: Facilities with Required Dimensions to assess Wheelchair Accessibility in Public Buildings

Facilities	Parameters	Min/Max requirements to be adaptive to Wheelchair	Remarks
Parking	Parking lot width	16" min	Considered as Accessible if at least one parking lot satisfied wheelchair accessibility requirements
	Signage for access parking	Presence	
	Access route to the entrance of the building	Minimum and avoid vehicular movement	
Ramp at accessible route	Slope	1:12 max	Considered as Inaccessible if a step higher than ½" is not provided with a ramp
	Width	36" min	
	Landing area	60"X 60" min	
	Hand Rail	Presence	
	Water accumulation condition for outdoor ramps	No water accumulation	
Elevator	Entrance width	36" min	Considered as Accessible if at least one elevator touching each floor was wheelchair accessible
	Height of hall call-buttons	48" max for front reach/ 54" max for side reach	
	Area of elevator car	60" min diameter circle or T-turn for wheelchair turning wholly within the car	

Doors	Width (54" with closer, 48" without closer),	54" min when open/ 48" min when closed	Considered as Accessible if 80% of building doors satisfy the accessibility requirement
	Door manoeuvring clearance	Presence	
Toilet stall/ Water closet	Floor area	56" X 60" min	Considered as Accommodative if at least one closet or stall in each floor satisfies accessibility requirements
	Water closet centreline to side wall	18" absolute	
	Door	36" min (never swing into the required floor space)	
	Seat height	17"-19"	
	Grab bar	Behind the closet: 36" min Side wall: 54" min	
	Flush height	44" max	
Lavatories	Height	19" min	Considered as Accessible if at least one lavatory on each floor satisfies the accessibility requirements
	Depth	17" min	
	Knee clearance under lavatory	27" X 8" min	
	Clearance beyond knee space for legs and feet	Presence	
	Clear floor space	30" X 48" min	
Drinking water outlets	Clear floor space	30" X 48" min	Considered as Accommodative if at least one accessible water outlet on each floor
	Height of outlet	48" front reach/ 54" side reach	
	Disposable glasses should be reachable too	Presence	

Source: Adapted from ADAAG and BNBC 2008

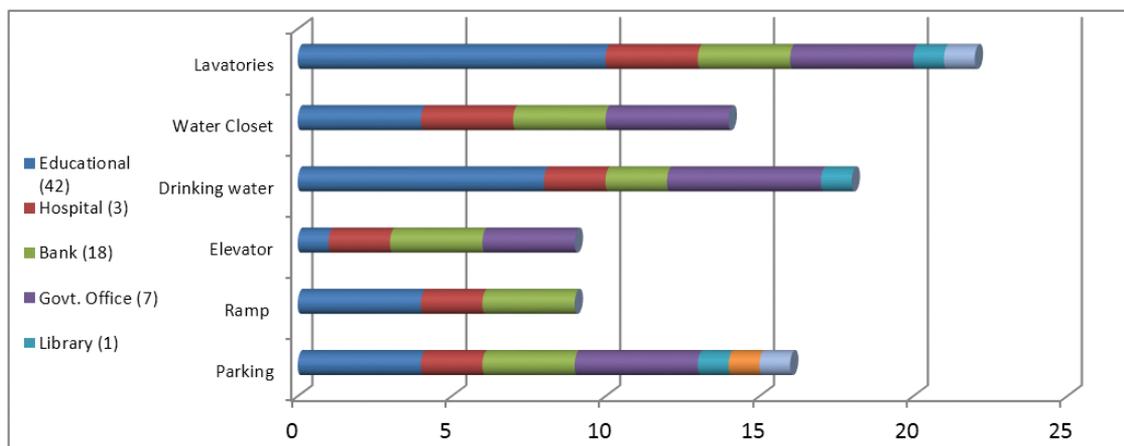
Data Collection

Data was collected by observation survey. Measurements were taken of the dimensions of each and every required facility that was provided in the surveyed buildings. Descriptive statistics of simple percentages and means are used to explain compliance to the guidelines of the instrument and wheelchair accessibility.

RESULTS

The observation survey began with the identification of considered facilities in the public buildings of Khulna city. Surprisingly, essential facilities like drinking water outlets, lavatories and toilets were not present in all the public buildings. The number of buildings with access facilities like ramps and elevators were very insignificant. Other than a few single-storeyed schools, all the surveyed buildings were multi-storeyed; yet, only 12% of public buildings were provided with elevators. Most of the public universities in Bangladesh did not have any access facilities, even though there is an admission quota for persons with disabilities. The availability of access and other essential facilities in different functional buildings are displayed in Figure 1.

Figure 1: Public Buildings with Considered Facilities



Source: Field survey 2017

The accessibility and usability of available facilities have been assessed based on abridged parameters adapted from ADAAG and BNBC (see Table 1). While the percentage of buildings with required access and other supporting facilities is low, the percentage of buildings with suitable facilities is even lower. The accessibility and usability of facilities are assessed in respect of their different parameters. For example, 16% of public buildings have parking facilities. However, only 50% (10.7% of total buildings) of them comply with two of the three parameters of parking to be serviceable for wheelchair users. Not a single public building has an accessible parking lot with appropriate signage. Only one of the premises with ramps has hand rails which are essential to make ramps useable for wheelchair

users. The highest level of compliance was found in respect of drinking water outlets (18.7%) while the lowest was in the case of doors (6.7%), excluding the access signage which was not present in any of the buildings. A building was considered accessible in respect of doors if 80% of the doors were found to comply with two selected parameters of door width and clearance to manoeuvre. Only 2 educational buildings, 2 hospitals and 1 public bank had 80% accessible doors.

Table 2: Compliance of the Available Access and Supporting Facilities

Facilities	Building with Considered Facility		Parameters	Building with Suitable Facilities as per remarks of Table 1.1	
	No.	%		No.	%
Parking	16	21.3	Parking lot width	8	10.7
			Signage for access parking	0	0.0
			Access route to the entrance of the building	8	10.7
Ramp at accessible route (9)	9	12	Slope	7	9.3
			Width	9	12.0
			Landing area (if present)	9	12.0
			Water accumulation condition for outdoor ramps	9	12.0
			Hand rail	1	1.3
Elevator	9	12	Entrance width	7	9.3
			Height of hall call- buttons	7	9.3
			Area of elevator car	7	9.3
Doors	-	-	Width (54" when closed, 48" when open)	5	6.7
			Door manoeuvring clearance	5	6.7
Toilet stall/ Water closet (high commode)	14	18.7	Floor area	9	12.0
			Water closet centreline to side wall	11	14.7
			Door	9	12.0
			Seat height	14	18.7
			Grab bar	1	1.3
			Flush height	10	13.3

Lavatories	22	29.3	Height	21	28.0
			Depth	19	25.3
			Knee clearance under lavatory	7	9.3
			Clearance beyond knee space for legs and feet	5	6.7
			Clear floor space	14	18.7
Drinking water outlets (18)	18	24	Clear floor space	14	18.7
			Height of outlet	18	24.0
			Disposable glasses	18	24.0
Signage	13	17	Signage for access facilities	0	0

Source: Field survey, 2017

As the percentage of public buildings that have signage for access facilities including for the access parking lot is nil, no public buildings of Khulna should be considered as wheelchair-accessible (see Table 2). If the parameter of signage is relaxed, there is only one hospital that complies with all the other access and suitable facilities for wheelchair users. Another hospital, among three public hospitals, complies with all access parameters except for signage and the required handrails for ramps. If the parameter of grab bar for water closet is excluded, it is possible to count 5 more public buildings that have all other accessible and suitable facilities for wheelchair users. As per the parameters under consideration, some public buildings were identified which are currently not wheelchair accessible but a few easy modifications can make them accessible and suitable (see Table 3). Provision of signage, ramps with handrails, extension of door width, renovation of toilets and lavatories to make accessible water closets (WCs), and provision of accessible drinking water fountains are considered as easy alterations that can make the identified buildings more accessible. The total percentage of public buildings that would be accessible and suitable for wheelchair-users after such modifications are shown in the last row of Table 3, according to functional categories of public buildings.

Table 3: Wheelchair Accessible and Useable Public Buildings in Khulna

Access and suitable facilities	Accessible public buildings													
	Educational Institution		Hospitals		Govt. Office		Banks		Post Office		Library		Court	
	no	%	no	%	no	%	no	%	no	%	no	%	no	%
Comply with all parameters except signage	0	0	1	33	0	0	0	0	0	0	0	0	0	0
Except signage and hand rail for ramps	0	0	2	67	0	0	0	0	0	0	0	0	0	0
Except signage, ramp hand rail and grab bar in WC	2	4.8	2	67	0	0	1	5.5	0	0	0	0	0	0
Scope to make accessible with minor alteration	8	19	0	0	3	43	7	39	2	67	1	100	0	0
Total	10	24	2	67	3	43	8	44	2	67	1	100	0	0

Source: Field survey, 2017

DISCUSSION

Bangladesh ratified the UN Convention on the Rights of Persons with Disabilities (CRPD) on November 30, 2007, and the Optional Protocol on May 12, 2008. At the time of the present research work, it had been signed by 149 countries and ratified by 101 states (UN Enable, Undated). According to the UN Convention, 'to enable persons with disabilities to live independently and participate fully in all aspects of life, States Parties shall take appropriate measures to ensure persons with disabilities access on an equal basis with others, to the physical environment, to transportation, to information and communications, including information and communication technologies and systems, and to other facilities and services open or provided to the public both in urban and rural areas'. As a signatory nation, the Government of Bangladesh has shown willingness to acknowledge the rights of the persons with disabilities by the enactment of related laws and Acts. However the implications of these legal documents in respect of accessible building design is very limited.

In spite of the existence of required Acts and Building Codes, not a single public building of Khulna, the third largest city of Bangladesh, was found fully accessible and useable for wheelchair users. With the exclusion of a few access parameters - like signage, ramp handrails and WC grab bars - a few buildings could be

considered as accommodative (6.7%). An accessibility study in the USA (Martin, 1987) found only 23% of buildings which had above 90% compliance. According to Martin (1987), though the facilities showed a trend towards increased accessibility in recent years, 100% accessibility had not yet been achieved. Surprisingly, some studies on African cities have identified larger percentages of public buildings as wheelchair-accessible. Around 40% of public buildings in Kumasi, Ghana, and 20% of those in Ibadan, Nigeria, were tagged as accessible in the study by Cosmos (2017) and Hamzat and Dada (2005) respectively. Although both studies used ADAAG as the guideline, they worked on very limited parameters to measure accessibility. This might be one of the reasons for finding higher accessibility of public buildings in those cities compared to almost 0% in Khulna, Bangladesh.

Among the accessible public buildings, the functional category of hospitals scored highest. Two of the three hospitals or 67% complied with the parameters. The higher level of compliance by hospitals that was found in this study matches the findings of studies done in both developed and developing countries like the USA (Rimmer et al, 2005) and Kumasi in Ghana (Cosmos et al, 2017). In the USA, the accessible health institutes were 58.5% whereas in Kumasi the figure was 91.7%. The study area and considered parameters to assess accessibility of health institutes in the USA were more extensive than in the study on Kumasi, Ghana. This might be the reason for the higher accessibility level of medical institutes found in Kumasi. In the present study, the higher level of accessibility of hospitals in Khulna could be because the architects and construction engineers took into account the needs of clients with mobility challenges who use wheelchairs for ambulation and need accessible ramps and facilities to manoeuvre easily inside the buildings.

The poor accessibility of government offices (0%) implies that on the one hand the State is committed to ensuring the rights of persons with disabilities, but on the other hand it is not creating opportunities for them to be employed with government agencies. Khulna Development Authority (KDA) is responsible for monitoring the compliance of private buildings with building codes wherein accessibility and usability by persons with disabilities are among the clauses. However the KDA building itself is not accessible to wheelchair users. Physically restricted buildings also imply that wheelchair users would not be able to access the services being provided by these government functionaries.

Education is a must to be self-dependent and to contribute to the economy and to the society. The Government of Bangladesh has many programmes to make

primary education reach all people (GoB, 2010; Niels-Hugo and Maitrei, 2014). Significantly, there are some special programmes for the education of persons with eyesight disability or speech disability or autism. However, the access of persons with disabilities to the general education system is totally neglected. A child using a wheelchair is capable of benefiting from general education, but physically inaccessible educational institutions have made the education of such children the sole responsibility of their parents who have to carry them to the classrooms. This act has a potentially negative psychological effect on the individual (Pierce, 1998). Only 4.8% of educational institutions in Khulna are accessible and useable for persons in wheelchairs. The only public library of Khulna also does not accommodate wheelchair users. This result matches the study findings of Khan and Anisuzzaman (2011) which revealed very low level of school enrolment among children with disabilities (only 11%). Along with many other socio-economic reasons, inaccessible transport and infrastructure, and absence of accessible toilets in schools have also been identified as the reasons for such low enrolment.

The percentage of the public buildings with accessible doors is very low (6.7%). The buildings with 80% accessible doors were considered as accessible. Most of the doors (76%) at the entrances are accessible, however, to make a building accessible for wheelchair users other doors and routes need to be accessible too. There were many cases where doors complied with the accessible width but lacked proper door-manoeuvring clearance because of the arrangement of the furniture.

Among all the access and other facilities that were assessed, the compliance of drinking water outlets was highest. There were 18.7% buildings with at least one suitable drinking water outlet on each floor. However, the parameter of drinking water fountains mentioned in ADAAG has been substituted by accessible drinking water outlets such as water coolers or water dispensers, because there are no drinking water fountains in any of the buildings in Khulna.

CONCLUSION

The study survey found that 24% of buildings which are currently inaccessible and unusable by wheelchair-users can be made accessible and usable through some easy alterations. There are some one-storeyed educational institutions which can easily become accessible by the provision of appropriate ramps and the modification of WCs and doors. The only public library of Khulna has

enough space to be made accessible and usable with the provision of a suitable WC. However, for a library to be usable, there are many other parameters which have not been considered in this study.

Even if the buildings that require minor alterations to become accessible are included among the total accessible and usable public buildings of Khulna, the figure will amount to only 35% .This remains a barrier to the systematic inclusion of people with disability in the mainstream of economic and social activity. Clearly, a major component in the endeavour to ensure the rights of persons with disabilities is the development and production of barrier-free infrastructure, artefacts and culture at the local, national and international levels. It is a struggle that must involve everyone, especially those involved in the funding, planning, design, development and production of physical and cultural environments.

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