バリアフリーデザインと公共空間におけるアクセシビリティの導入—バングラディシュ、 ダッカ市を対象として BARRIER-FREE DESIGN AND INTRODUCING ACCESSIBILITY IN PUBLIC PLACES – THE CASE OF DHAKA CITY, BANGLADESH

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During recent years, the attention to accessibility for all people has increased and equal opportunities for all people to participate in society are being emphasized. With increasing attention to accessibility issues, empirical research focusing more accessible environments for deferent user groups as well as practical solutions in deferent sectors of society are being carried out and new solutions have been implemented. Today, accessibility for transport is an important issue to maintain the sustainability of our society. This research aims to investigate the barriers and deficiencies for disable people found in public places and transportation and then to provide valuable information on effective design techniques and principles for ensuring barrier free accessibility for disable people.

1. Introduction

Access is an issue that plays a vital part in the life of persons with disabilities, who are becoming increasingly scared of going outside and do whatever work he/she has to do and accessible transportation is the passport to independent living for everyone. Barrier-Free Design means giving users the ability to move around without restriction. The term barrier-free design is commonly interpreted as removing physical and attitudinal obstacles that prevent the free movement of persons with disabilities in a manner that is consistent with regulations, standards or codes of practice. Conversely access to transport without barrier-free, making the public places and pathways very difficult. Barrier free transportation accessible environment will formulate advantages for all. If persons with disabilities can get to a public places and pathways easily, it's means that other people also have easy to use public places and public transportation.

2. Background and statement of problems

Presently no comprehensive empirical study has been conducted at present to determine the incidence and prevalence of disabilities in Bangladesh. While no reliable national data exist, unreliable information and a number of micro studies generally suggest a disability prevalence rate of between 5 to 12 per cent. This is close to the WHO (World Health Organization) estimate, which states that 15 per cent of any given population can be considered to have some or other form of disability. Then recent survey explains that among all disable people - 41.5 % has physical disabilities, 19.7% has visual disabilities and 19.6% speech and hearing disability, intellectual disabilities 7.4%, cerebral palsy 7.0%, multiple disabilities 3.4% and mental illness 1.4% now exist in Bangladesh (Situation Analysis of Autism and Developmental Disabilities in Bangladesh, 2012).

Despite this, disabled people in Bangladesh face immense difficulties in accessing services, facilities and opportunities. There are a number of reasons behind the poor accessibility in Bangladesh; however, probably the root of the problem is lack of awareness of disability and the needs of disabled people.

In this state of affairs the government had declared about two decades back a 10 per cent employment quota for persons with disabilities. But this quota has never been properly implemented due to the lack of sensitivity of employers about the potentialities of persons with disabilities, contradictory employment policies and a lack of proper monitoring system.

However legislation with the title of "Protibandhi Kallayan Ayn-2001 (Disability Welfare Act-2001)" has been enacted in 2001 for the disabled. To fulfill the need and creation of opportunities for the people with disabilities Govt. of Bangladesh is currently considering the amendment of the law for the Persons with Disabilities. Following Table 1-1 illustrates the disability related policies and act undertaken in Bangladesh in different years.

Besides this Bangladesh has a building code that clearly demarcates accessibility options for all people including

Table 1-1:	Disable	associated	legislation	and	act	in
		Banglades	sh			

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1993	National Coordination Committee on Disability				
	established under the Ministry of Social Welfare				
1995	National Policy on Disability approved				
	outlining guidelines for prevention,				
	identification, education, rehabilitation, research				
	and management of the national program				
1996	Action Plan on Disability approved outlining				
	the plan for the implementation of the National				
	Policy - this plan has not yet been fully				
	implemented.				
2000	National Foundation for the Development of				
	Disabled Persons (NFDDP) established under				
	the Ministry of Social Welfare				
2001	Disability Welfare Act passed by Bangladesh				
	Parliament				

Source: Bangladesh Protibandhi Kallyan Somity persons with disabilities. Yet again ambiguity in the system, the lack of proper monitoring, and a lack of system to penalize violators prevent accessibility for persons with disabilities. Now the government has decided to reserved seats for persons with disabilities in public transports. But this decision has not been implemented since the public transports themselves have lack of general accessibility facilities.

3. Research Objective and Methodology

The main purpose of this research work is to provide valuable information on effective design techniques and standards for ensuring barrier free accessibility for disabled people. To fulfill this purpose intensive concentration will give throughout the study to achieve the following specific objectives:

- To identify problem of movement and access deficiencies for handicapped people
- To observe facilities and deficiencies of available accessibility for disabled people in public places
- To design barrier-free accessible Public Places for disabled people
- To design barrier-free accessible Rickshaw for disabled people

To counter these objectives the research questions are set up as follows:

- What groups of handicapped people move out often

and what kind of barrier free facilities should be provided for their daily movement?

- What should be the standard and implementation process for proposing barrier free design in the proposed area?

However this study has been designed as a survey research where qualitative and quantitative data are combined. Qualitative data have been obtained from written documents, interviews with concerned people institutions and observations intended and for accessibility for the disabled people to the public places. Quantitative data have been compiled by means of questionnaires intended for wheel chair users and visually impaired people. Hence, 93 disable persons living in Dhaka city have been surveyed using random sampling technique where 34 visually impaired persons and 59 wheelchair dependents have been evaluated under the study. The questions have been prepared in 7 interrelated categories: personal information about the disabled person, help requirements, frequency of travel and modal behavior of disable people, Opinions of disable people using the public places and public transportation. Then the survey has been made using paper based face-to-face question and answer method regarding barriers in rickshaw travelling, Kamlapur



Railway Station and pedestrian environment in Motijheel area, Dhaka; for two months in two deferent times - first one in September 2012 and second one in March 2013. Lastly in evaluation

Figure 2-1: Survey area; Motijheel & kamlapur Railway Station

of the survey data SPSS software package has been used. Figure 2-1 shows the two survey location in Motijheel area.

4. Opinions of accessible environment and identify barriers

Regarding opinions of accessible environment and identify barriers of this area, this study gives details of relationship between kind of disability and frequency of travel, modal behavior, opinions of accessible situation of public places, public transport and barriers in rickshaw when travelling. Yet again this study also shows barriers of Kamlapur Railway Station and pedestrian environment regarding accessibility, identified by the assistance of two kinds of disable persons.

In Figure 3-1 explains most of them goes out every day, where 84.7% were wheel chair user and 79.4% were



visual impairments persons. Figure 3-2 explains both of respondents preferred rickshaw for their daily travelling. Comparing to other two kinds of mode nearly every wheel chair user considered rickshaw for traveling. However for travelling rickshaw, respondents go and get barrier concerning its height, store, sitting and assistance facilities. Figure 3-3 illustrates that height is the major barrier while rickshaw travelling. Then Figure 3-4 and





that wheel chair users identified very inaccessible (cannot move without assistance) situation in railway station and visual impairment respondents recognized as



Figure 3-5: Opinion of visual impairment person about public places

public places has very inaccessible (cannot move without assistance) position for moving. Then roads are decided as most inaccessible (can be move without assistance) for both respondents. Then Figure 3-6 and Figure 3-7 shows opinions of accessible environment about public transport in Dhaka city. It shows that both auto rickshaw and rickshaw identified as very inaccessible (cannot move without assistance) situation for all respondents



Figure 3-7: Opinion of visual impairment person about public transport

while travelling. Subsequently the majority of the respondents considered about pedestrian in this location has most inaccessible (can be move without assistance) environment for transporting.

Yet again for identifying barriers of pedestrian in this location, first the study area was divided into eight locations like P1, P2, P3, P4, P5, P6, P7, P8 and then with the help of respondents six types of barriers were selected as lack of pedestrian signals, street vendors,

open manhole, illegal car parking, pedestrian obstruction and other problems (slum, construction material, dust bin, tree, and lamp post). Figure 3-8 to Figure 3-11 shows





Figure 3-9: Percentage of barrier in P1

barriers in pedestrian 1 and 2. Both of these locations, street vendors were the major barrier for access and it was 38% and 27%. Figure 3-12 to Figure 3-15 shows barriers in pedestrian 3 and 4. Both of these areas, lacks of pedestrian

Figure 3-8: Barriers in D1



Figure 3-10: Barriers in P2

Illegal Car Parking Open Manhole Pedestrian Obstructions Lack of pedestrain Signals Street Vendors Other Problems

Figure 3-11: Percentage of barrier in P2



Figure 3-13: Percentage of barrier in P3



Illegal Car Parking Pedestrian Obstructions Lack of pedestrain Signals Street Vendors Other Problems

Figure 3-15: Percentage of barrier in P4

vendors were the key barrier in this location. Figure 3-20 and Figure 3-21 shows again 4 types of barriers in pedestrian 7. In this

signal were the major barrier for access. Then Figure 3-16 and Figure 3-17 shows only 3 types of barriers in pedestrian 5. Again lacks of pedestrian signal were the major barrier for accessible environment of this location. Figure 3-18 and Figure 3-19 shows 4 types of barriers in pedestrian 6. Once more street



Figure 3-12: Barriers in P3 and Figure 3-14: Barriers in P4



Figure 3-16: Barriers in P5



Figure 3-18: Barriers in P6 and Figure 3-20: Barriers in P7

location barrier for accessible environment was due to

slum and construction material on the pedestrian. Finally Figure 3-22 and Figure 3-23 shows 6 types of barriers in pedestrian 8. This location also has access problem largely due to lacks of pedestrian signals. Figure 3-24 explains barriers total



Figure 3-22: Barriers in P8

identified in the study area. About 29% barriers were due to lack of pedestrian signals which generates more problems for accessible environment in this location. Then due to pedestrian obstructions, street vendors and other problems creates 23%, 19% and 15% barriers respectively for accessible environment in this location.



Figure 3-25: Existing barriers in Kamlapur Railway Station

Figure 3-25 shows barriers in Kamlapur railway station which is identified once more by the help of disable persons. In fact from entry to exit every place has inaccessible situation for handicapped people. This figure also shows the rickshaw driving and dropping area in front of the railway station.

5. Proposed design for accessible environment

This research considers the 2010 ADA (Americans with Disabilities Act) Standards and present situation of survey area for proposed barrier free design. Again for implementations of barrier free design, this research proposed following three proposals -

I. Proposed Barrier free accessible design for Kamlapur Railway Station





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Proposed Barrier free accessible design for

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Figure 4-8: Pedestrian width for local neighborhood collectoral road





Figure 4-10: Proposed pedestrian width for Principal arterial road



Figure 4-11: Pedestrian width for street vendors through principal and minor arterial road



Figure 4-12: Proposed plan for manhole cover



Figure 4-13: Proposed design for covering manhole

III. Proposed Barrier free Rickshaw design



Figure 4-16: Proposed Barrier free Rickshaw (option 03)

6. Conclusion and Recommendation

Nearly every respondents travel everyday and the majority of them choice Rickshaw for their travel although height is the major barrier for travelling Rickshaw. Then both wheel chair users and visual impairment persons decided Railway station is very inaccessible situation as public places and Rickshaw, Auto Rickshaw; Pedestrian area has very inaccessible condition as public transport for traveling. From the study it is found that disabled people are less cared population in our country. It is also found that the practice of accessibility issues in Dhaka city is very inconsequential. Thus proper planning for disable people must be increased with provided awareness about accessible environment. Then believe should be grow among disable people that accessibility is their right.

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