



World Conference on Transport Research - WCTR 2019 Mumbai 26-31 May 2019

## Travel pattern and mobility constraints of disabled people: a case study on Dhaka city, Bangladesh

M. Shafiq-Ur Rahman

*Professor, Department of Urban & Regional Planning, Jahangirnagar University, Dhaka 1342, Bangladesh*

---

### Abstract

Travel pattern and mobility constraints of disabled people are often different than the physically fit people. Disabled people may require specially designed transport infrastructure and services so that they have access to those services. However, often travel pattern of the disabled people is not well comprehended and their mobility constraints are not considered while providing transport infrastructure and services in many developing countries. For instance, most of the public places including the public transportation facilities in Bangladesh, particularly in Dhaka city, are inaccessible for the disabled people.

This research aims to explore the travel pattern of disabled people in Bangladesh and their major constraints or challenges they usually face whilst travelling. For this, a case study was done in Greater Metropolitan Dhaka. A total 32 samples (disabled people who is blind or who uses a wheelchair/crutch) were selected from different institutions through convenience and snowball sampling technique. A pre-determined questionnaire was prepared to explore their trip and mobility related information. Face-to-face interviews were done for collecting detailed information from the sample respondents.

It was found that the majority of disabled people usually do not travel to go outside of home. For travelling on public transport they always need a helping hand or support, particularly during boarding and alighting. Travel cost of a disabled person is much higher than the overall household travel cost of his/her family. Moreover, inaccessibility to other public facilities such as public toilet, particularly for women, often discourages them to go out. This study may help to understand the overall travel pattern of disabled people and their mobility related constraints and issues. Results would be helpful in formulating policy guidelines to improve the overall mobility of disabled people and thus ensure equity in society through accessible transport for all.

©2018 The Authors. Published by Elsevier B.V.

Peer-review under responsibility of WORLD CONFERENCE ON TRANSPORT RESEARCH SOCIETY.

*Keywords:* Travel; Mobility; Disabled; Access; Pattern.

---

### 1. Introduction

Bangladesh is one of the very over-populated countries in the world. Dhaka city is one of the fastest growing megacities in the world. United Nations forecasted that, Dhaka will be the 6th largest megacity of the world with a population of 27.37 million in 2030 (Dhaka Structure Plan). Such a huge population does increase the travel demand which eventually increases the traffic volume. Similar to other cities in developing countries, people in Dhaka city is experiencing a very chaotic traffic situation and congestion problems. This is mainly due to rapid growth rate in

2352-1465© 2018The Authors. Published by Elsevier B.V.

Peer-review under responsibility of WORLD CONFERENCE ON TRANSPORT RESEARCH SOCIETY

ownership of private cars (Rahman, 2007), but disorganized public transport systems and poor services. An efficient, safe and reliable public transport system and services is very crucial for the city to meet the increasing travel demand of people.

Bus service is the main mode of public transport in Dhaka. Current bus network of the city serves a total of about 5.5 million passengers every day. Travel pattern and modal share of Dhaka city is different from other cities in Bangladesh. A large portion of the trips in Dhaka city is walking and rickshaw trips. According to the Household Survey data of STP the modal share of buses is 44% and for rickshaws it is 34% as a primary travel mode of all person trips in Dhaka (STP, 2005). However, the DHUTS (JICA, 2010) shows that on an average day among the total trips that take place in metropolitan Dhaka; of which rickshaws serve 38.8%, buses 30%, walking 19.7%, car 4.9% and the rest other modes contribute a very insignificant share of trips. It clearly indicates that, rickshaws and buses are the primary travel mode for Dhaka city, but the question is how user friendly these services are, especially for the disabled people.

Public bus service is very important for many people, particularly for disabled people, at any major city. The number of disabled people in Bangladesh is not insignificant, in some literature, it is said that the number of disabled people is more than 10% of the total population. According to BBS 2015, the total number of disabled people in Bangladesh is 7204,659 of which the number is 2375,225 only in Dhaka division. HI & NFOWD (2005) published a comprehensive study on 'Ability through Accessibility' mentioned that among other social barriers one of the most common problems usually disabled people face is the accessibility to the built environment. Accessibility means the convenience of every aspects of public domain where a disabled people can feel comfortable both physically and mentally. However, in Dhaka city the buses and rickshaws - the most widely used transport modes - are not disabled friendly.

Disabled people often face problems for accessibility in transport modes is the most common in Dhaka city. Both physical and psychological inaccessibility exclude a significant portion of people of that group from their regular activities. Inaccessibility in transportation detains education, employment, health etc. thus keeps disabled people in constant poverty. Moreover, transport professionals and the city authority often focus on mass transport for planning and management but do not give any concentration on its inclusiveness, especially for the disabled people. Exploring travel pattern of disabled people will help to understand the present condition of the transportation system and its inconsistency for disabled people. This study may help to rectify the public transport services for better and inclusive transportation in Bangladesh. Therefore, it is worthwhile to investigate the disabled peoples' travel pattern and their preferences or expectations regarding mobility.

## **2. Objectives and scope**

The main purpose of this research is to explore travel pattern of the disabled people in Dhaka city as well as their associated problems and expectations regarding mobility. The main questions to be answered in this research are following:

- What is the existing travel pattern of disabled people?
- What are the major travel problems for disabled people?
- What are the disabled passengers' expectations (suggestions to improve) about the mobility or transport system services?

As already mentioned, this research also explores what are the major constraints and challenges the disabled people usually face during their travel. However, the social barriers and specific design of infrastructure facilities (e.g. bus stops, road and highway design) or vehicle are beyond the scope of this study. The scope of this study is limited to only disabled people's travel pattern and their travel constraints or challenges. This study focused only physically challenged people; in particular, the wheelchair users or crutch users and visually impaired people.

### 3. Methodology

Convenient sampling and snowball techniques were applied for data collection. Three study locations were selected based on concerning the availability of the respondents. Three selected study locations are: University of Dhaka, Jahangirnagar University, and the Centre for the Rehabilitation of the Paralyzed (CRP, Savar). Volunteers of the Physically-challenged Development Foundation (PDF) at Jahangirnagar University and Dhaka University were asked to help in identifying the disabled people in respective campus for the purpose of interviews. Researcher did visit CRP-Savar and both Dhaka university and Jahangirnagar university campus to conduct interviews.

A total 32 interviews (15 from CRP, 10 from DU and 7 from JU) were conducted. Of the respondents, 25 are using either a crutch or wheelchair and 7 are visually impaired (respondents from CRP none with visually impaired, in DU 8 respondents are visually impaired, in JU 5 are visually impaired).

A structured questionnaire was prepared for collecting information from the respondents, focusing their travel pattern along with their background profile. The questionnaire was centered on trip related information emphasized on their usual and occasional travel for different purposes, their frequency of travelling, origin and destination, trip distance, travel mode, time and cost for the trip and their household information. Collected data were analyzed using Microsoft Excel as well as exploratory/qualitative data analysis technique for fulfilling the objectives.

### 4. Disability and Bangladesh

The proportion of people with disability in Bangladesh is significant, possibly up to 10%. Bangladesh Bureau of Statistics (BBS) estimated in 2011 that persons with disabilities constituted about 9.07% of the population, while the World Bank's estimate in 2011 was 31.9% (CRPD, 2015). However, the difference seems to suggest an underestimation by the government. This underestimation often prevents prioritization of resources for disability issues and including disabled people in the mainstream development approaches. The total estimated population of Bangladesh at present is 152.52 million. Considering the World Bank's global estimated 10% disabled people, Bangladesh have 13.83 million people with disabilities (CRPD, 2015).

UNICEF (2014) report on 'Situation Analysis on Children with Disabilities in Bangladesh' described that Bangladesh has achieved significant gains in Millennium Development Goals (MDGs) and heading towards development. However, such development often suppressed the less discussed issues like disabilities. This situation analysis report basically focused on the existing conditions of disabled children in Bangladesh, their challenges and social barriers, policies and their implications and provides some policy and guidelines to make this issue more visible towards a greater extent. Moreover, this report mentioned the causes behind disabilities in Bangladesh. It reported that the foremost immediate causes of disability among children are associated to inadequate and/or inaccessible health care, poor nutrition, inadequate water and sanitation, and accidents. All the above mentioned causes are the results of poverty, faulty system and discriminatory attitude and behaviors (UNICEF, 2014).

BBS (2015) and Titumir (2005) stated about the attitude towards disabilities. Disabled people are deprived from education facilities; consequently, they remain incompetent for the job market which often led them to poverty. Many people in Bangladesh considered disabilities as a curse and embarrassment of the family. Though, some studies found positive attitudes towards disabled. In Titumir's study it was found that, 55% of respondents accept disabled well, 63% did not think disabled people were a burden for the family and 20% suggested giving extra privilege to the disabled people (Titumir, 2005 Cited from BBS, 2015).

Abir and Hoque (2011) stated that, disability and poverty have a close relation in developing countries. Moreover, Government and the society have little concern about this group of people. In Bangladesh, disabled people have very limited access to public places though there is an attempt for ensuring accessibility for disabled people through integrating universal design concept. This study also found that the practice of the accessibility in

Dhaka city is insignificant and the public transportation sector had failed completely to provide proper access facility to the disabled people.

HI and NFOWD (2005) conducted a comprehensive study on the situation and prospects for accessibility in Bangladesh stated that, people with disabilities face many barriers with respect to access. In Bangladesh, people with disabilities face this problem more acutely because of lack of infrastructure, services and opportunities. This study focuses on the overall existing physical accessibility and social inclusion of the disabled people. The accessibility requirements have been categorized into five different focal areas:

- built environment;
- basic education;
- basic information;
- basic needs services; and
- employment environment.

From the above mentioned literatures, it is clear that disabilities and disabled people are no longer insignificant in the society. Disabled people are deprived from many years and considered as curse to family. However, over the time, particularly in recent years, this thinking has changed. Families are more concern about their disabled children. Inaccessibility is a big issue for them. Inaccessibility in transportation, educational institutions, healthcare, employment opportunities, recreational facilities etc. made their life miserable. Moreover, poverty is closely related to accessibility or disability. For their economic and phycological development it is necessary to think about their independent mobility and find out the problems that prevent their needs.

## 5. Results from the case study

This section reports the major findings derived from the collected data through questionnaire survey. Results presented under following headings: profile of the respondents, travel pattern of disabled people, main mode for travel, and travel cost.

### 5.1 Profile of the respondents

Table 1 shows the brief about demographic profile of the respondents. Among the respondents (total 32), 56.25% are male and 43.75% are female. Almost half of the respondents (46.88%) are in age group 16-25 years whilst 3.13% are 10 to 15 years, 25% are 25- 40 years, and 25% are 40-60 years. In terms of education, 56.25% respondents are studying undergraduate or higher, 15.63% are higher secondary passed, 9.38% are secondary school passed, 12.5% respondents not continuing after their primary school and 6.25% respondents are illiterate. The occupational status of the respondents is dominated by students (56.25%) because of the study area and their frequent movement. Only 9.38% respondents are service holders and 3.13% respondents are housewife.

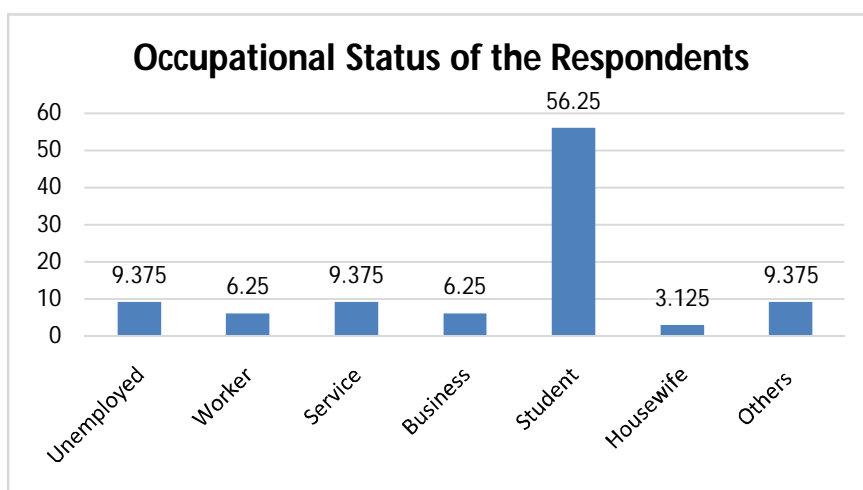


Figure 1. Respondent's occupational status.

Source: Field survey, 2018.

Table 1. Demographic information of the respondents

Demographic Category	Variables	Male		Female	
		Frequency	Percentage	Frequency	Percentage
Gender		18	56.25	14	43.75
Disability Type	Physically Challenged	13	40.63	6	18.75
	Visually Impaired	5	15.63	8	25.00
Age	10 to 15	1	3.13	0	00
	16 to 25	7	21.88	8	25.00
	26 to 40	4	12.50	4	12.50
	41 to 60	6	18.75	2	6.25
Education	Illiterate	1	3.13	1	3.13
	Primary	3	9.38	1	3.13
	SSC	1	3.13	2	6.25
	HSC	4	12.50	1	3.13
	Graduate or Higher	9	28.13	9	28.13
Occupation	Unemployed	3	9.38	0	00
	Worker	1	3.13	1	3.13
	Service	1	3.13	2	6.25
	Business	2	6.25	0	00
	Student	9	28.13	9	28.13
	Housewife	0	00	1	3.13
	Others	2	6.25	1	3.13

Source: Field Survey, 2018.

Figure 1 shows the detail occupational status of the respondents. Among the respondents, household monthly income of 31.25% is between Tk 20,001 to 35,000, 25% is more than Tk 50,000 and 9.38% is less than Tk 10,000. Almost 93.75% respondents do not have any vehicular ownership and only 6.25% have household vehicle.

## 5.2 Travel pattern

This section of the study represents the travel pattern of the surveyed respondents through analyzing their frequency of traveling, travel distance, travelling purpose, transport mode, time and cost. Respondents were also asked about their usual travel pattern.

### Frequency of Travel

From the field data it was found that 28.13% respondents traveled once in a month whilst 21.88% traveled once in a week. Only 9.38 % respondents traveled more than 10 times in a week, 18.76% traveled up to 6 times in a week and 3.13% respondents said they had no travel frequency. A relation was found between the frequency of travel and the age. Figure 2 shows about 46.89% respondents who travelled most belong to age group 16 to 25 years; means the frequency of travelling of this group is higher than the other age groups. However, this is because of their occupational status (mostly students).

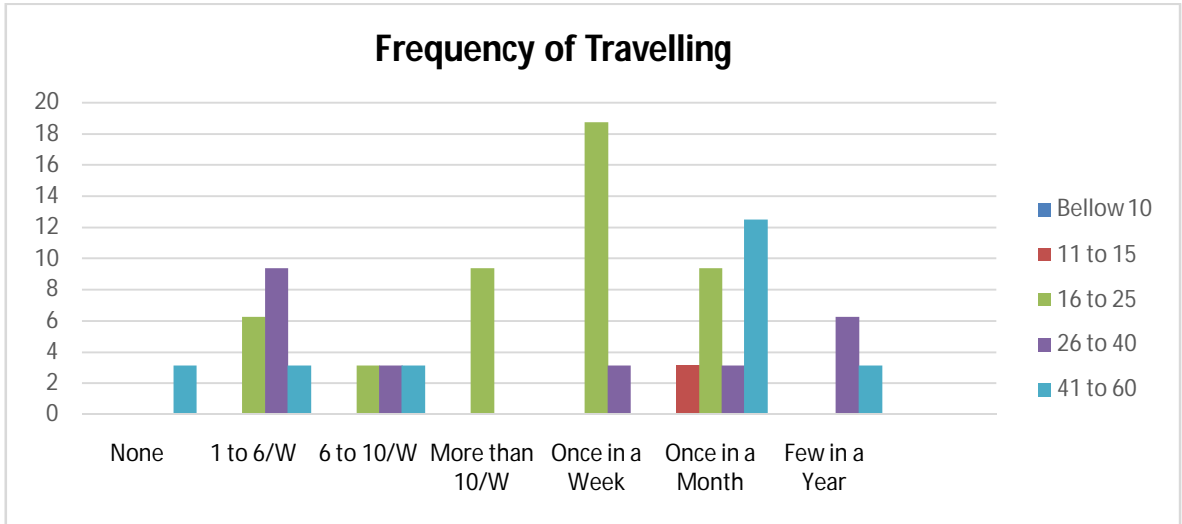


Figure 2. Frequency of travelling and age group.

Source: Field survey, 2018.

*Purpose of Travel*

Among the respondents, 33.34% mentioned that their last travel purpose was for recreation or social meetings. Only 27.77% reported that their purpose of travelling was for treatment, and 22.23% for education. Figure 3 shows that 2.78% respondents’ purpose of travel was for shopping and 11.1% for other purposes.

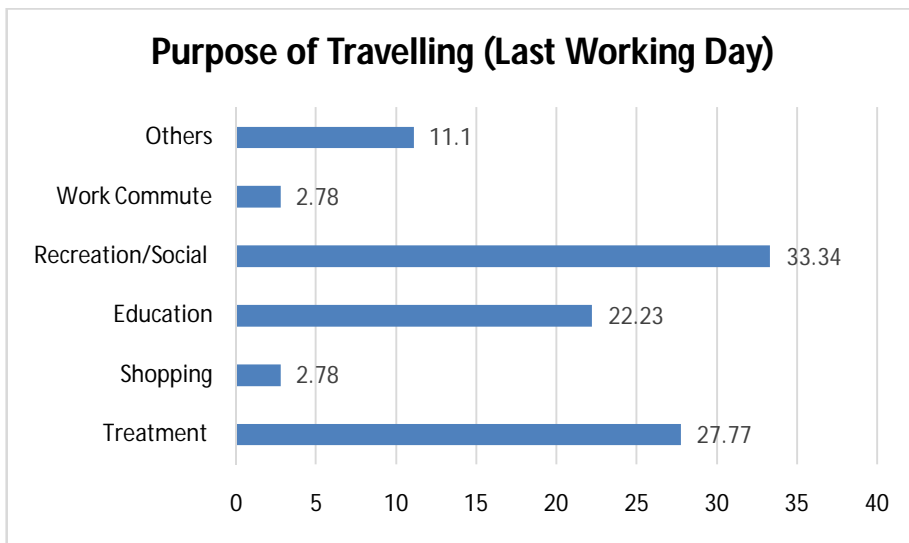


Figure 3. Purpose of travelling (last working day).

Source: Field survey, 2018.

*Mode of Travel*

From the collected data it was found that 23 respondents (71.88%) used more than one transport mode to reach their destination. For long distance journey, respondents usually depend on bus services. However, rickshaws are the most commonly used vehicle for both physically challenged and visually impaired respondents. Modal share of the respondents' shows (as seen in Figure 4) rickshaw was 31%, bus was 29%. About 19% respondents' walked and 12% used private car. The students mostly walk or use wheelchair inside their university campus because the trips are for short distance and inside campus traffic volume is lower.

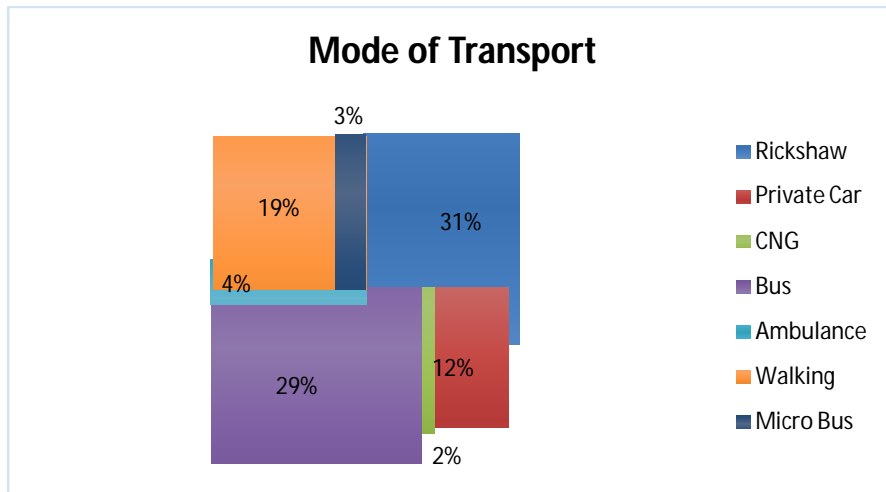


Figure 4. Mode of transport

Source: Field survey, 2018.

### Usual Travel

For usual travel, the respondents could be categorized into three categories based on their movement pattern. These three broad categories are: students (56.25%), employed (worker 6.25%, service holder 9.38% and businessman 6.25%), and unemployed (unemployed 9.38%, housewife 3.13% and other 9.38%).

Usual travel pattern of student and employed was found almost similar. The students' usual travel circulated within academic building and hall. Most of them used rickshaw, wheelchair and walked along with their friends. Apart from academic purpose they go out for shopping or recreational purposes. Service holder, worker and businessman's travel pattern was also similar, home to work place. They live very close to their working place and mostly walked for job or took rickshaw or using wheelchair. Unemployed and others had very few movements. On an average, they traveled twice throughout the year – mainly for religious festivals or any emergencies.

### 5.3 Travel dependence

It is very difficult for people with disabilities to move alone. A total 18 respondents (56%) said they need assistance during travel. However, it is not possible to have assistance whenever they need, especially for regular traveler like students and employers. From the field survey it was found that, people who are using wheelchair need assistance for boarding and alighting on bus, rickshaw or private vehicles. 56.25% respondents said they need assistance during travel and 43.75% said they don't need any sort of assistance while they travel.

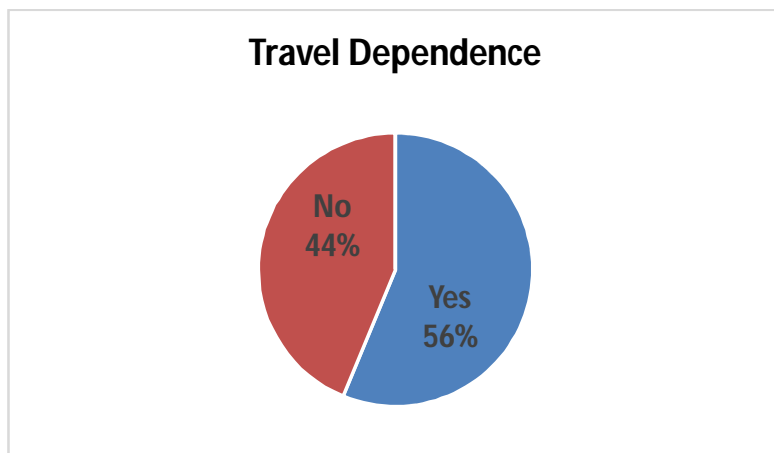


Figure 5. Travel dependence of the respondents

Source: Field survey, 2018.

#### 5.4 Travel Cost

The travel cost of the respondents ranges from below Tk 500 to above Tk 4,000. Table 2 shows the monthly travel cost of the respondents and households. It was found that only 6 respondents' monthly travel cost is below Tk 500 for their irregular travel behavior. Almost 65.64% respondents' travel cost is in between Tk 501 and Tk 2,000.

Table 2. Monthly travel cost of the respondents and their households

Monthly Travel Cost (Tk)	Respondents		Households	
	Frequency	Percentage	Frequency	Percentage
Bellow 500	6	18.75	0	0.00
501 to 1,000	9	28.13	2	6.25
1,001 to 1,500	7	21.88	10	31.25
1,501 to 2,000	5	15.63	10	31.25
2,001 to 2,500	0	0.00	5	15.63
2,501 to 3,000	2	6.25	0	0.00
3,001 to 3,500	0	0.00	1	3.13
3,501 to 4,000	2	6.25	3	9.38
Above 4,000	1	3.13	1	3.13

Source: Field Survey, 2018.

On the other hand, 62.5% respondents mentioned that their household travel cost is Tk 1,001 to 2,000 (excluding respondents travel cost). Only 15.63% mentioned Tk 2,001 to 2,500 and 9.38% mentioned Tk 3,501 to 4,000. Respondents' household average travel cost per month is Tk 2,103. Therefore, considering 5 as the average family member of the household, the monthly travel cost per person is about Tk 420. In contrast, average travel cost for the respondents - disabled people - is much higher, about Tk 1,494 per month.

#### 6. Travel constraints and problems of disabled people

This section reports on major problems and constraints of disabled people in Dhaka city they usually face during their travelling.



### *6.1 Inaccessibility of public transport*

Public transportation system in Bangladesh is not disabled friendly. Buses and trains are not made with features for easy access for wheelchair and it is closely impossible to use them. Almost 75% respondents mentioned that Dhaka's public transport is not accessible for disabled people. Though in some public transport in Dhaka has earmarked or reserved few seats for physically challenged people, women and children; these seats are mostly occupied and used by women and children. Bus staffs are also not cordial enough with disabled passengers that often limiting their movement, especially for female users.

### *6.2 Management system*

Public buses in Dhaka city hardly follow the rules. About 65.63% respondents mentioned this may happen because of poor management. The buses do not stop at specific places, which is the most common problem that disabled people face regularly. Visually impaired people face this problem more acutely. Buses do not stop properly during alighting passengers. It often creates accidents and makes it impossible for disabled people to onboard, particularly in rush hour.

### *6.3 Road surface and footpath*

Dhaka is mostly developed in organic manner. Most of its areas are unplanned and as well as its road network. Road surfaces are not smooth. Broken road surface and containing puddles is a common scenario in Dhaka city. Among the respondents, 50% of them had complained about road surface and footpaths of Dhaka city. Only 11 respondents (34.38%) of the wheelchair users said the road surface is not suitable for using wheelchair. Moreover, visually impaired people are facing problems while they walk because of unavailability of footpaths. Visually impaired people need a dedicated walkways for their independent movement means, travel without taking any assistance. However, very few areas in Dhaka city serve footpaths for its inhabitants.

### *6.4 Inaccessible public places*

Most of the public places in Dhaka city are not disabled friendly. High fenced parks without having ramps made it inaccessible for the disabled people. Many shopping malls have entrance with a long staircase but no ramps. Bus stops, kitchen market, shops, educational institutions etc. did not consider the special needs for disabled people during designing and implementation. Almost 56.25% respondents mentioned public places in Dhaka city are not accessible for disabled people. Such inaccessibility clearly indicates the social exclusion of the people with disability.

### *6.5 Access to public toilets during travel*

The number of public toilets in Dhaka city is very insignificant considering the huge population. Moreover, the condition and environment of existing public toilets are very poor. Usually women and girls are facing this problem extensively during travel. For long way journey public toilet makes the situation worst for female passengers. Only 37.5% respondents mentioned about public toilet and its unavailable services. One of the female respondent said, it usually takes 12-14 hours to reach her village but most of the time traffic congestion lengthening the travel time from 22-24 hours. During this whole time, she has to prevent herself instead of going toilet because of there is no toilet facilities for wheelchair users. Most of the time she travels alone and seeking help from others is humiliating for her.

### *6.6 Road Crossing Facilities*

Crossing road is a big challenge for both wheelchair users and visually impaired person. Almost 56.25% respondents said using foot over bridge is very difficult for them and wheelchair users cannot use that facility.

Moreover, there is no well operated traffic management and signaling system and it becomes very difficult and time consuming for road crossing.

## 7. Summary of the findings and suggestions

This section provides a brief summary of the results derived from the case study and based on the results some suggestions to improve mobility experience of disabled people in Dhaka city.

### 7.1 Summary of the findings

People with disability go out when it is really needed and very important. Students are the most frequent traveler among the other occupations. Visiting friends and family or shopping after classes made their travel pattern more varied than other. Respondents involved with employment are also confined home to work place movement. Unemployed respondents do not have any travel pattern rather their travel depends on necessity mostly, treatment or social visit few times in a year.

Of the 32 respondents, 23 of them use rickshaws for short or medium distance. For long distance journey like visiting village during festivals they prefer buses instead of hiring private vehicles due to high expenses. Not only outside Dhaka but also within the city most of the respondents use bus services. People with disabilities require help for riding rickshaw, bus or other vehicles. Usually they take help from friend and family but when they travel alone seeks help from other people. Sometimes it feels embarrassing for them especially for female seeking help from complete strangers. Moreover, bus staffs are not always behaving well. Designated seats for disabled people are often used by other passengers. It is very difficult for wheelchair users to take bus and many bus services refuse to take them.

Almost 75% respondents mentioned inaccessibility to transport modes as the number one problem, 65% respondent said about mismanagement. 56.25% respondent said inaccessible public places and road crossing equally and 50% said about the poor condition of the road surface and footpaths. 37.5% respondents, especially female respondents said problems about public toilet facilities.

Road surfaces in Dhaka city is not wheelchair friendly. Broken and rough road surfaces made it very difficult to use wheelchair and crutch. Few footpaths without guidelines also made it difficult for visually impaired person. Road crossing is another challenge for them. Moreover, buses do not stop in a specific location. People with disabilities find it very hard and thus it takes more time than others. Travel cost of disabled people is much higher than their household travel cost.

### 7.2 Suggestions and guidelines

Inaccessible public transport, poor management system and road crossing was identified as major problems by the respondents. Based on the identified problems and their expectations, following are some suggestions.

#### *Public transport for all*

Provision public transport services in such way (newly designed) that are accessible for disabled people. Government should fix some standard criteria for universal design for disabled people and private organization or bus owner association should meet the standards before getting route permit and license.

### *Provision for bus stops*

There should be bus stops at specific locations where buses must stop for boarding and alighting passengers. Bus stop should facilitate with passenger shade and ramp for easy access. Proper guidance and voice command for buses according to direction for visually impaired persons.

### *Footpath and zebra crossing*

Provision of wide footpaths so that useable for wheelchair users, and with tactile for blinds. Guidelines should be introduced on footpaths. Such guideline is a special textured tile putting on footpaths indicates the direction and turns of the footpaths. Visually impaired persons can feel the direction by stepping on the surface. For road crossing instead of foot over bridge zebra crossing should be introduced.

### *Accessible public places*

Provision of proper ramps and lifting system in public places for easy and universal access for all. Shopping malls, parks and play grounds, kitchen markets, educational institutions should follow the universal design for establishing disabled friendly infrastructure. Such public places should be monitored in a regular interval to maintain its standards throughout the time.

### *Public toilet facility*

There should be public toilet facilities for disabled people. Existing public toilets should incorporate necessary arrangement for making it disabled friendly. For long-distance journeys, disabled friendly public toilet is necessary especially in ferry and hotels where bus services take break. Female assistance is essential for both bus services and restrooms.

### *Social awareness program*

Social awareness is very important for achieving disabled friendly transportation in Dhaka city. Different communities, NGOs and mass people should come forward for disabled people and should bring their societal rights for an inclusive transportation system in Bangladesh. Government's help is very important for implementing inclusive transport system. Strict governmental monitoring and legislative actions should be introduced on transportation to facilitate disabled people in term of accessibility.

## **8. Conclusion**

Frequency of traveling for disabled people is lower than others. Not all the disabled people in Bangladesh are working or studying. Whatever, a significant number of disabled people lives in Dhaka city. Their mobility constraints and inaccessibility in public transport service are often limiting their movement and make them unwilling to go out. Inaccessibility results poverty for disabled people due to lack of education and employment opportunities and health care especially in rural areas.

This study found that among the 32 respondents, 23 of them (71.88%) regularly go out from their home for various purposes and using public services. This indicates that people with disabilities are coming forward for their self-independence. Now-a-days, people are generally more concerned about disabled people, their rights and mobility. New technology widened many ideas and open-up human mind. Parents are concerned about education for their disabled children. Educated disabled people are interested in working. However, the existing transportation system (which is not accessible for disabled) not supporting them anyway. Therefore, it is important to think about needs and concerns of disabled people and provide relevant facilities to support them.

This study identified some major problems the disabled people usually face during their travel. Considering the mobility constraints and their expectations, some possible suggestions are given to mitigate those problems. The findings may help urban planners, and policy makers to understand the travel pattern of disabled people and conditions for making inclusive transportation for all. Further, the results may help for decision-makers and city authority in rationale budget distribution for transport projects.

## Acknowledgements

Jahangirnagar University Social Science Research Grant (2017-18) for funding. Research Assistant of Urban Research & Practice Group (URP Group)- Bangladesh for helping in data collection and analysis.

## References

- Abir, A. K. M., Hoque, M. S., 2011. A study on mobility problem of disabled people in Dhaka city. In: 4th Annual Paper Meet and 1st Civil Engineering Congress, December 22-24, Dhaka, Bangladesh.
- BBS, 2015. Disability in Bangladesh: Prevalence and Pattern. Population Monograph: Volume 5. Bangladesh Bureau of Statistics, Statistics and Informatics Division, Ministry of Planning, Government of the People's Republic of Bangladesh, 2015.
- CRPD, 2015. Current Status of Rights of Persons with Disabilities in Bangladesh: Legal and Grassroots Perspective. Retrieved from <https://www.blast.org.bd/content/publications/crpd-report.pdf>
- Dhaka Structure Plan
- Frye, A., 2013. Disabled and older persons and sustainable urban mobility. Thematic study prepared for Global Report on Human Settlement. Retrieved from [http://unhabitorg/wp-content/uploads/2013/06/GRHS.2013.Thematic.Disabled.and\\_.Older\\_Persons.pdf](http://unhabitorg/wp-content/uploads/2013/06/GRHS.2013.Thematic.Disabled.and_.Older_Persons.pdf)
- HI & NFOWD, 2005. Ability Through Accessibility: Towards a Barrier Free Environment for Persons with Disability. Handicap International (HI), National Forum of Organizations Working with Disabled (NFOWD) and DFID-UK, September 2005.
- JICA, 2010.
- MOSW & UNICEF, 2014. Situation Analysis on Children with Disabilities in Bangladesh. Department of Social service, Ministry of Social Welfare and UNICEF Bangladesh, June 2014, Dhaka, Bangladesh.
- STP, 2005
- Rahman, M. S. U., 2007. Can BRT solve the transport crisis in Dhaka city? Proceedings of the European council for an energy efficient economy (ecee) Summer Study 'Saving Energy- Just Do It', pp. 1635-1646.