

Condition of Inclusivity in Public University of Bangladesh Specifically for the Disabled Student: A Case Study on Jahangirnagar University



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ABSTRACT: Education is a challenge for Physically Challenged Students (PCS). Accessibility in the buildup environments of university campus for PCS is a worldwide concern. A country can't uplift its socio-economic conditions unless and until people from all level of the society get the equal access in every facilities and services provided by government. Every student with disability has the right to equal enjoyment and access in a residential university. In Bangladesh, increased numbers of students with disabilities have been accessed to higher educational opportunities. However, also the government has imposed some legal legislation for the education and the inclusive design for the PCS. So, this study concerns about the accessibility in higher educational institutions for PCS. This research has highlighted the accessibility condition of the buildup areas of the Jahangirnagar University campus in Bangladesh and the problems faced by the PCS which created because of the existing structural design. It also explores the relation between types of barriers and different structures in university for the PCS's. At the end this study tries to provide some guidelines for ensuring better accessibility of the physically challenged students.

KEYWORDS: Inclusive design, accessibility, physically challenged students, university campus, planning standard

1. INTRODUCTION

The provision of universal education is to be found not only in the developed countries, but in the developing world as well. Bangladesh is one of those developing countries where universal education is developing gradually (Ahsan & Burnip, 2007). In recent times the Government of Bangladesh has drawn up plans and schemes for educating more students with disabilities (Kibria, 2005). Actually, universal and inclusive education is the practice of teaching Physically Challenged Students (PCS) along with normal students in the same regular classrooms rather than isolating them in special classrooms (Westwood, 2013). The UNESCO also emphasizes on universal education in university (Barnes, 2007). In recent years, the Government of Bangladesh (GOB) has wanted to ensure education for all and promised to reach the goal (Islam, 2010). The accessibility of Physically Challenged People to various facilities in university is extremely poor compared to physically able people. Educational institutions have lack of accessible building structure for physically challenged people (Dulal, 2003). The built environment should be designed so subtly to ensure comfortable learning process. It will give incredible feelings in the educational institutions for PCS (Hazreena, 2006). Actually, building facilities and design influenced students' learning efficiency in the higher education institution (Natasha et al., 2012). In Bangladesh, disabled people are being marginalized from mainstream society and rarely considered in infrastructural planning. According to the 2011 census, the number of disabled persons in Bangladesh is 101585, which accounts for 1.41% of the total population. Currently, there are 40.29% disabled students in Bangladesh in various level of education; and only 2.72% disabled students completed or are in HSC level or higher education (BBS, 2015). Inclusive design became a fundamental matter in the 'Dhaka Metropolitan Building Construction Rules (DBCR), 2008. It gave assurance that universal accessible design must exist in all public buildings which have greater than 100 sq. meter floor area. Around the world, international treaties and conventions, like the UN Convention on the Rights of Persons with Disabilities have largely given incentive to involve all people of the society. The frameworks of universal design offer unique ways to make accessible environment especially within the educational institutions (Dalton et al., 2019). Globally, the practice of the universal building design in university has been tried to form, but, in real, it isn't always suitable for physically challenged students. Jahangirnagar university is set as the study area for this research. Persons with Disabilities Rights and Protection Act, 2013 of Bangladesh provided right to education and accessibility for disabled people. On the

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other hand, the Jahangirnagar University Act, 1973 provided that any kind of students should be eligible for admission and every year 15 physically challenged students get admitted in quota system. This research has tried to highlight the situation of accessibility of physically challenged students in the campus. As the government of Bangladesh legally allows the physically challenged students in education in all sectors and also most of the public universities allow them to admit in their campus, so, it's necessary to provide inclusive design in university campus. There is a research question set for the study or research and that is- 'What is the condition of accessibility for physically challenged students in Jahangirnagar University?' The general objectives of the study are-

- a) Identify the current status of the build-up structures in Jahangirnagar University,
- b) Assess the barriers affiliated to the build-up structures in Jahangirnagar University
and
- c) Provide general guidelines to improve the status of accessibility.

2. LITERATURE REVIEW

Inclusive Design is mostly used in the United Kingdom where the planning standard is strictly followed in providing accessibility. One of the definitions of inclusive design is- 'The design of built environments which are accessible to as many people as rationally possible on a universal basis, in a wide distinction of circumstances and to the maximum scope possible without the requirement for special adaptation' (Keates, 2005). Inclusive or universal design is a concept which removes obstacles in a space or product accommodating people with different disabilities (Deardorff & Birdsong, 2003). A public university is a place of higher educational institution that can be owned or financed by a national or provincial government (Monem, 2010). PCS face barriers in accessing the universities' built-environment and services. Barriers in the university limit functioning and create disability (Panagiotis, 2012). When considering accessibility of the buildings in higher educational institutions, attention should be given to the various environmental and cultural barriers that can be obstructed (Equality Challenge Unit, 2009). The concept of 'Disability' is widely and variedly argued by different disciplines. In medical science, to psychologists, to sociologists, to planners and architect's disability is diversely defined. Earlier, disabled children were called 'moron' or 'imbecile' or 'idiot'. But later, people addressed them as 'special child' and it is relatively and friendlier notion at present day (Begum, 2003). But disability is not something one has; it is something that happens when one group of people create barriers in designing the world only for their style of living (Sharma et.al. 2003). Physically challenged students are the persons with some physical or mental disorder that actually limits some of the major life activities (US Legal, 2019). The number of students enrolled in institutions of higher education has increased (Hill, 1992). But, enrolling more disabled students in higher education does not provide equality to them. Besides the importance of quantitative increases, accessibility should also be needed to be accompanied by support to address this sector (Matshedisho, 2007). Higher education is a predictor of gainful employment in meaningful occupations, opening opportunities for career development, hence for quality of life (Dutta, Scguri-Geist, & Kundu, 2009). There are sufficient laws and regulations for protecting the rights of physically challenged people. Laws of America, England, India and Bangladesh relating to disabilities have been assessed. Americans with Disabilities Act, 1990 (Amended in 2014) prohibits disparity against persons with disabilities in all public areas. Equality Act, 2010 (England) has provided the requirements to make reasonable adjustments for disabled people. Rights of Persons with Disabilities Act, 2016 (India) has imposed to ensure that disabled persons get the right to equality, life with dignity and esteem for his or her own morality as same as others. Persons with Disabilities Rights and Protection Act, 2013 (Bangladesh) has provided equivalent rights for persons with disabilities like other persons get including inclusive education. It is important to look into, what is happening all around the world mostly relating to inclusive design in recent days. So, planning standard of America, England, India and Bangladesh relating to disabilities have been assessed. These are respectively- 'ADA (Americans with Disabilities Act) Standards for Accessible Design, 2010', 'The Building Regulations: Access to and use of Buildings, 2010', 'Guidelines and Space Standards for Barrier Free Built Environment for Disabled and Elderly Person, 1998' and 'Dhaka Metropolitan Building Construction Rules (DBCR), 2008'.

Table 1: Comparison among Various Planning Standards

Structure	Detail Structure	America	England	India	Bangladesh
	Width of Gate	Min. 32 inches	Min. 32 inches	Min. 36 inches	Min. 48 inches
	Ramp Size	Max. 1:12	Max. 1:20	Max. 1:12	Max. 1:12
	Ramp Width	Min. 36 inches	Min. 60 inches	Min. 36 inches	Min. 48 inches

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Entrance	Height of Handrails from floor	34-38 inches (need when ramp rise is > 6 inches)	36-40 inches	32-36 inches	32-36 inches (need when ramp rise is > 6 inches)
	Diameter of Turning Space	n. 60 inches diameter	n. 60 inches diameter	Min. 60-80 inches diameter	n. 60 inches diameter
Ground Surface	Floor Materials	slip resistant	slip resistant	slip resistant	slip resistant
	Size of Opening	Max. 0.5 inch	Max. 1.2 inches	Max. 0.5 inches	-
	Height of Change in Levels from floor	Max. 0.25 inch	Max. 0.25 inch	Max. 0.75 inches	Max. 0.25-0.5 inches
Doors and Windows	Width of Door	Min. 32 inches	Min. 32 inches	Min. 36 inches	Min. 32 inches
	Door's Angle	90 degree	90 degree	-	-
	Height of handles, latches, locks from floor	34-48 inches	30-40 inches	Max. 55 inches	34-36 inches
	Maneuvering Clearance Size	Min. 60 x 50 inches	Min. 60 x 50 inches	Min. 56 x 48 inches	Min. 60 x 48 inches
	Window's Height from Ground	27-80 inches	32-40 inches	24-56 inches	-
Walking Corridor	Width of Corridor	Min. 72 inches	Min. 70 inches	Min. 70 inches	Min. 48 inches
	Diameter of Turning Space	Min. 60 inches diameter	Min. 60 inches diameter	Min. 60-80 inches diameter	Min. 60 inches diameter
Protruding Objects from Walls	Height from Floor	27-80 inches	-	24-80 inches	27-80 inches
	Width from Walls	Max. 4 inches	-	Max. 4 inches	Max. 4 inches
Reaching Range	Height from Floor	15-48 inches	16-40 inches	15-50 inches	-
	Width from Walls	0-25 inches	-	0-24 inches	-
Table, Chair, Bench, Bed	Height from Floor of Table	Max. 24-34 inches	-	Max. 30-34 inches	-
	Height from Floor of Chair, Bench & Bed	17-19 inches	Max. 19 inches	14-18 inches	-
Toilet and Bathing System	Mirror Height from Floor	40-74 inches	24-64 inches	28-56 inches	Max. 34 inches
	Shelves Height from Floor	40-48 inches	32-40 inches	54-68 inches	Max. 34 inches
	Basin Height from Floor	Max. 34 inches	Max. 30 inches	Max. 38 inches	Max. 34 inches
	Toilet Seat Height from floor	Max. 17-19 inches	Max. 19 inches	Max. 19 inches	-

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	Flush Control Height from floor	Max. 36 inches	Max. 30 inches	Max. 28 inches	-
	Grab-bars	Needed	Max. 32 inches from floor	Max. 28 inches from floor	Max. 32-36 inches
	Height from Floor of Bathing Seat	Max. 17-19 inches	Max. 19 inches	Max. 19 inches	-
Alarm and Signage	Fire Alarm, Braille Signage & Audio Signage	Should be provided	Should be provided	Should be provided	-
Elevator and Stairways	Height of Call Button from floor	15-48 inches	36-44 inches	Max. 36 inches	35-48 inches
	Signal Types	visible and audible	visible and audible	visible and audible	-
	Lift Car size	-	Min. 44 x 56 inches	Min. 44 x 78 inches	Min. 48 x 60 inches
	Size of Risers	4-7 inches	6-7 inches	Max. 6 inches	5-7 inches
	Size of Treads	Min. 11 inches	11-17 inches	Min. 12 inches	Min. 11 inches
	Angle of Risers	30-90 degree	60-90 degree	-	-
	Height of Handrails from floor	34-38 inches (need when ramp rise is > 6 inches)	36-40 inches	32-36 inches	32-36 inches (need when ramp rise is > 6 inches)
*Footpath	Running slope	Max. 1:20	Max. 1:40	-	-

*Footpath also includes floor materials, size of opening, height of change in levels from floor, width of walking surface, ramp size

Source: Prepared by Authors, 2020

Data Source: ADA (2010), The Building Regulations (2010), Guidelines and Space Standards (1998) and DBCR (2008)



Figure 1: Legal Perspective of Inclusive Design for Disabled Students in University

Actually, the inclusive design and accessibility in built environment in educational institution is the vital need and rights of physically challenged students.

3. METHODOLOGY

To fulfill the objectives of the research, an effective and useful research always requires a series of systematic steps to be followed. After conceptualize the research, setting objectives, literature review etc. have been done. Jahangirnagar University has been set as study area. Some of the selection criteria are- public university, fully residential university, dedicated quota for PCS (15 students) and specific jurisdiction campus area.

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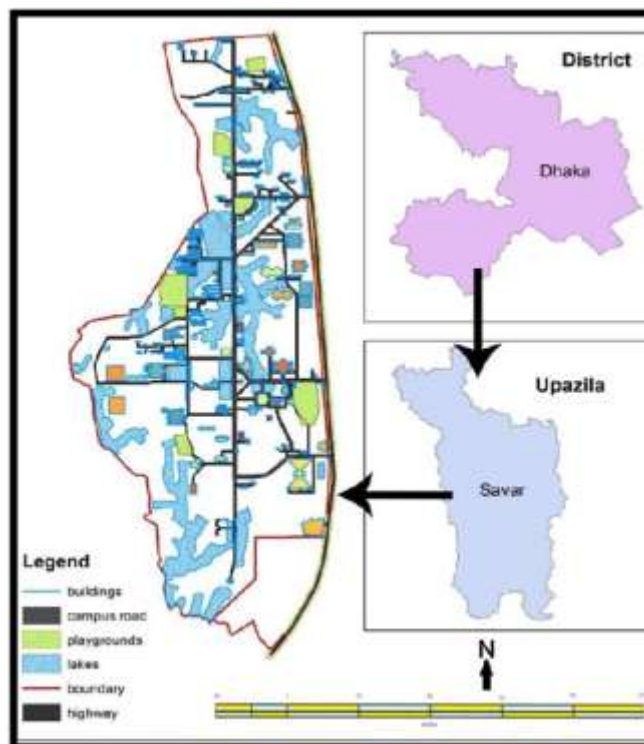


Figure 2: Location Map of Jahangirnagar University

Source: Prepared by Author, 2020

A ‘Mixed Method’ research approach has been taken to conduct this research. Both ‘Qualitative’ and ‘Quantitative’ techniques have been applied in the study. A well-structured questionnaire for the assessment of problems and satisfaction level with built environment in public university of the respondents has been done. On the other hand, the structures of the university have been measured and examined to evaluate the accessibility for disabled students. As primary data collection, both physical survey and questionnaire interview have been done. The equipment uses for the physical survey are checklist, camera and measuring tape. Physical survey has been done in 10 areas including walking area, educational buildings, halls, offices, library, auditorium, central cafeteria, TSC, bank and medical center.

There are 86 physically challenged students in the campus who are in different academic year. It’s tough to reach to them as to collect data. So, an exponential non-discriminative snowball sampling method has been applied to conduct the survey. For this reason, an online survey has been operated with ‘Google Form’ where social media groups of the campus have been used; and finally, 33 physically challenged students have been reached and surveyed. Demography, activities & satisfaction level of the respondents, problems in street and buildings, quality of street and buildings etc. data have been collected with questionnaire. All the numerical data have been analyzed with the SPSS software, Microsoft Excel and ARCGIS 10.5 software has been used for map preparation. Demographic information has been analyzed with frequency and the relation with level of problems has been analyzed with crosstab and chi-square analysis. Measurement analysis of the structures has been evaluated with compared to national and international planning standard. From the measurement analysis, the variables of structures which are in accessible condition these are valued as ‘1’ and which are not in accessible condition or absent in the structures that are valued as ‘0’. Then, scoring of structures have been calculated. Problems in every structure have been assessed in frequency analysis. In quality assessment, satisfaction level with building structures, furniture and other structures and washroom equipment/counter has been calculated. All these variables were assessed on a 5-point scale. Mean value less than ‘3’ indicates inaccessible quality of the structures. The procedures are given in below-

- Total point per variable = Σ (Frequency \times Weightage of acceptance level)
- Each variable mean= Total point/Total frequency (respondents)
- Indicator (physical structures) mean= All variable mean/ Total no. of variables

The relation between demographic and activities data with rate of problems and satisfaction level with structures have been analyzed with multiple regression model analysis where rate of problems valued from 0 to 1 and satisfaction level valued from 1 to 5.

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4. RESULT AND DISCUSSION

Demography of Respondents

From this demographic table 2, it is found that most of the respondents are male. Most of the respondents are physical impaired. Students from the session 2014-15 are higher in number of the respondents. Number of respondents is higher from Social science faculty. Major portion of the respondents is from Al Beruni and Bangabondhu Sheikh Majibur Rahman Hall.

Table 2: Summary of respondents' background

Demography	Finding (highest and lowest)	Frequency (%)
Gender	Male	23 (69.7)
	Female	10 (30.3)
Types of Disabilities	Mobility (Physical) impairment	18 (54.5)
	Wheelchair user	3 (9.1)
Session	2014-15	9 (27.3)
	2018-19	3 (9.1)
Faculty	Social science faculty	12 (36.4)
	Mathematics and physics faculty	2 (6.1)
Hall	Al Beruni Hall and Bangabondhu Sheikh Majibur Rahman Hall	5 (15.2)
	Bishwakabi Rabindranath Tagore Hall, Shaheed Rafiq-Jabbar Hall, Nawab Faizunnesa Hall, Sheikh Hasina Hall	1 (3.0)

Source: Prepared by Authors, 2020

Crosstab and Chi-square Analysis

Crosstab analysis has been done with level of problems in terms of duration in campus, hall, faculty and types of disabilities. Except duration in campus, there are no relation between level of problems and rest of the demographic indicators. That means, whatever the hall, faculty and types of disabilities the respondents have, level of problems has not depended on these.

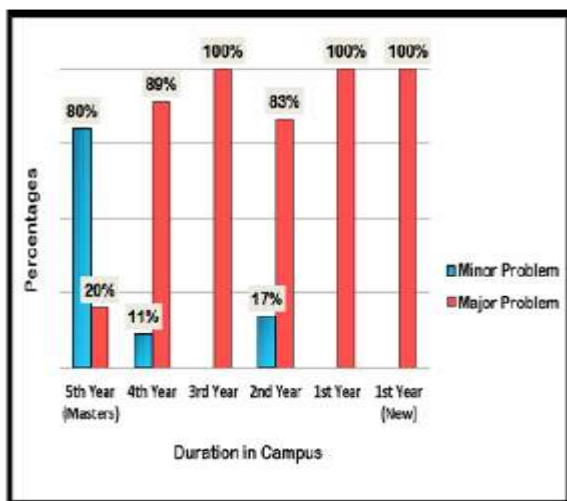


Figure 3: Level of Problems vs Duration in Campus
Source: Prepared by Author, 2020

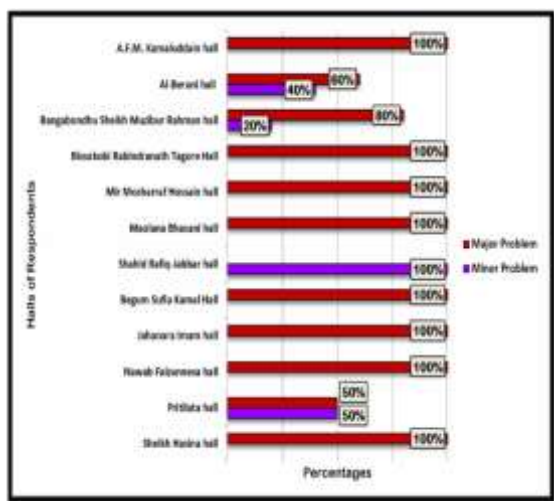


Figure 4: Level of Problems vs Hall S
Source: Prepared by Author, 2020

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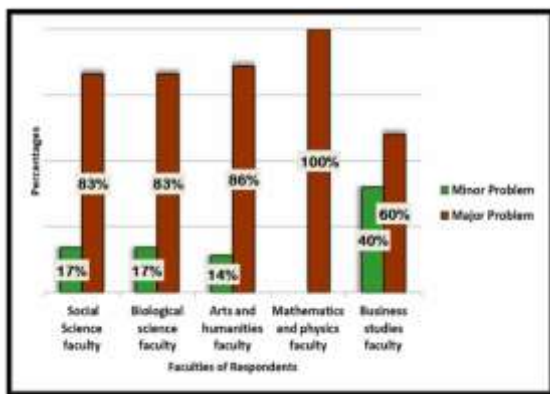


Figure 5: Level of Problems vs Faculty
Source: Prepared by Author, 2020

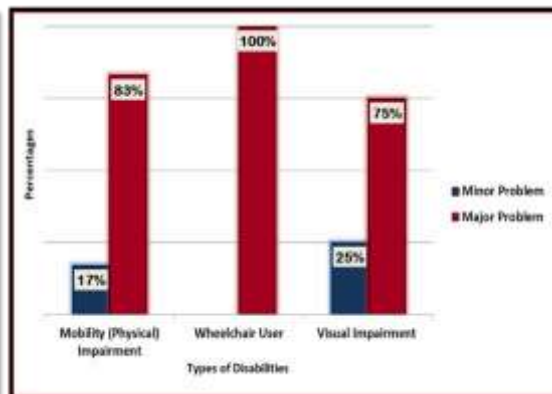


Figure 6: Level of Problems vs Disabilities
Source: Prepared by Author, 2020

The relations have been clearly understood from the following chi-square analysis table. If asymptotic significance value is less-equal than 0.05, then, there is relation between two variables. From here, the relation that has been found, is new comer or younger students faced more major problems than elder students.

Table 3: Relationship of Demography conditions with Level of Problems

Characteristics	Level of Problems		Result
	Pearson Square Value	Chi-Asymptotic Significance (2-sided)	
Duration in Campus	16.045a	.007	New comer students faced more major problems
Hall	12.833a	.304	-
Faculty	2.246a	.691	-
Types of Disabilities	1.069a	.586	-

*p ≤ .05 (Significant)

Source: Prepared by Authors, 2020

Measurement analysis and Scoring

With comparative analysis of planning standards and current structures of the study area the accessible structures, inaccessible structures and structures that are missing but needed have been sort out.

Table 4: Structures that are missing or in inaccessible condition

Structures	Structures needed	Inaccessible structures
walking Area	Footpath, ramp	Floor materials, opening on floor, walking surface, signage
Halls	Bathing seat, high commode and grab-bars in washroom, elevator, alarm & signage	Mirror, basin, shelves and flush control in washroom, main gate, ramp, floor materials, change in levels, notice board, handrails, table
Faculty	Handrails, high commode and grab-bars in washroom, alarm & signage	mirror, shelves and flush control in washroom, ramp, change in levels, notice board
Office	Ramp, alarm & signage	Floor materials, signal of elevator, treads and handrails
Central Cafeteria	Handrails, high commode and grab-bars in washroom, alarm & signage	Mirror and flush in washroom, floor materials
TSC	Handrails, grab-bars in washroom, alarm & signage	Mirror and flush control in washroom, ramp, change in levels, notice board

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Auditorium	High commode and grab- bars in washroom, ramp, alarm & signage	Mirror, shelves and flush control in washroom, handrails
Library	Handrails, high commode and grab- bars in washroom, alarm & signage	Mirror and flush control in washroom, main gate, ramp
Bank	Ramp and alarm & signage	Floor materials, door handles
Medical Centre	Handrails, high commode and grab- bars in washroom, alarm & signage	mirror, basin, shelves and flush control in washroom, ramp, bench, bed

Source: Prepared by Authors, 2020

It is found that mostly in every building, washroom equipments and signage are needed. Walking area should be redesigned for the physically challenged students. From this measurement analysis, scoring has been done for all the buildings or areas. Library is in the better quality compared to other buildings. Walking area, TSC, bank etc. buildings are in bad quality.

Table 5: Scoring of Structures (0 ≤ value ≤ 1)

Structures	Score
Library	0.69
Medical Centre	0.67
Auditorium	0.66
Faculty	0.64
Office	0.64
Halls	0.60
Central Cafeteria	0.58
Bank	0.56
TSC	0.55
Walking Area	0.29

Source: Prepared by Authors, 2020

Problems in Structures

Problems in walking area and all the buildings have been evaluated and according to higher percentages, major problem has been sort out here. Most of the case, 'inaccessible toilet' and 'no signage' are the major problems.

Table 6: Major Problems in Structures

Structures	Major Problems
Walking Area	'No accessible footpath' (87.90%)
Hall	'Inaccessible toilet and bathing place' (90.90%)
Faculty	'Inaccessible toilet' and 'No signage' (66.70%)
Office	'No signage' (63.60%)
Library	'Inaccessible toilet' (81.80%)
Cafeteria	'Inaccessible entrance', 'Inaccessible toilet' and 'No signage' (66.70%)
TSC	'Table, chair is tough to reach' and 'No signage' (69.70%)

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Auditorium	'Inaccessible toilet' and 'No signage' (69.70%)
Bank	'Inaccessible entrance' (66.70%)
Medical	Table, chair is tough to reach' (72.70%)

Source: Prepared by Authors, 2020

Quality Assessment

Table 7: Mean Value of Structures ($1 \leq \text{value} \leq 5$)

Structures	Building Structures	Furniture	Washroom	Average Mean Value
Walking Area	2.18 (Walking Surface)	2.64 (Slope)	1.82 (Signage)	2.21
Hall	2.55	2.61	1.85	2.33
Faculty	2.45	2.61	2.00	2.35
Office	2.42	2.48	2.48	2.47
Library	2.42	2.61	2.12	2.38
Cafeteria	2.27	2.61	2.18	2.35
TSC	2.33	2.21	2.12	2.22
Auditorium	2.76	2.48	2.15	2.47
Bank	2.39	2.61	2.73	2.58
Medical	2.82	2.61	2.15	2.53

Source: Prepared by Authors, 2020

From this quality analysis table, it is found that all the structures have the value less than 3. It indicates that all the structures are in inaccessible quality or condition. TSC, walking area etc. are in worst condition.

Multiple Regression Model

Multiple regression model analysis has been done with rate of problems and satisfaction level. Here, β is Beta and P is Significant value. If P value is less-equal 0.05, then, there is significant correlation between two variables. The final results are given in below-

Table 8: Multiple Regression Model of Rate of Problems

Model-1: Rate of Problems of Structures	Structures	Value	Independent Variables						
			Gender	Duration of residency	Residence of hall	ience of residing in building	Getting assistance	Regularly go	Need to go upstairs
Walking Area	β		-.148	.020	.103	-	-.020	-	-
	P		.014	.259	.077	-	.732	-	-
Hall	β		.064	-.076	.009	.079	.028	-.021	.039

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Faculty	P	.300	.006	.906	.224	.680	.831	.588
	β	.136	-.009	-.081	-.348	-.109	-.036	.063
Office	P	.162	.781	.415	.002	.265	.779	.566
	β	.154	-.046	.066	-.019	.135	.183	.097
Library	P	.135	.172	.531	.864	.226	.072	.364
	β	.137	-.040	.057	.080	-.012	-.153	-.047
Central Cafeteria	P	.158	.208	.590	.479	.912	.131	.687
	β	.124	-.049	.027	.113	-.019	-.028	-.026
TSC	P	.529	.162	.793	.267	.444	.453	.717
	β	-.131	-.037	.061	.057	.113	.005	.147
Auditorium	P	.175	.217	.498	.549	.227	.961	.096
	β	.110	-.099	-.198	.052	-.062	-.045	-.252
Bank	P	.211	.002	.033	.580	.493	.648	.025
	β	.218	-.022	-.067	-.058	.056	-.095	-
Medical Centre	P	.075	.578	.573	.637	.642	.480	-
	β	.188	.023	.017	.009	.043	.215	-
	P	.061	.472	.861	.925	.664	.024	-

* $p \leq .05$ (Significant)

Source: Prepared by Authors, 2020

Table 9: Multiple Regression Model of Satisfaction Level

Model-2: Satisfaction Level with Structures	Structures	Value	Independent Variables					
			Gender	Duration of residency	Residence of hall	Experience of residing in building	Getting assistance	Regularly go
Walking Area	β	.181	.209	.178	-	.365	-	-
	P	.245	.000	.256	-	.028	-	-
Hall	β	-.005	.128	.004	.008	.030	-.003	-.485
	P	.973	.047	.983	.957	.854	.989	.009
Faculty	β	-.461	.181	.283	.564	.223	-.198	-.245
	P	.017	.007	.139	.006	.232	.415	.244
Office	β	-.477	.119	.068	.150	-.040	-.474	-.001

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	P	.025	.080	.746	.494	.854	.022	.995
Library	β	-.224	.042	.182	-.197	.649	.412	-.235
	P	.103	.342	.224	.223	.000	.006	.161
Central Cafeteria	β	.121	.084	-.163	.311	.106	-.101	.022
	P	.583	.282	.463	.219	.635	.637	.940
TSC	β	.204	-.004	.105	.110	.027	.430	-.634
	P	.075	.899	.320	.320	.801	.002	.000
Auditorium	β	-.034	.115	.303	-.030	.323	-.250	.289
	P	.843	.059	.095	.873	.081	.210	.183
Bank	β	-.710	.103	.373	.072	.031	.116	-
	P	.000	.092	.041	.692	.862	.560	-
Medical Centre	β	-.464	-.001	.146	.001	-.050	-.923	-
	P	.015	.991	.406	.994	.784	.000	-

* $p \leq .05$ (Significant)

Source: Prepared by Authors, 2020

Some important correlation and key findings from this regression analysis are given below-

1. In walking area, girls face more problems than boys. Higher rate of duration of residency and getting assistance provide higher satisfaction level.
2. In hall, those who resided in the campus more years, face fewer problems and have higher rate of satisfaction level than fresher. Those who need not to go upstairs have higher rate of satisfaction level.
3. In faculty, those who have more experience of residing in high rise building, face lower rate of problems. Boys are more dissatisfied than girls. Those who have higher rate of duration of residency and experience of residing in building have higher rate of satisfaction level.
4. In office, boys and who need to go regularly in office have less satisfaction level.
5. In library, who get assistance and need to go regularly, have higher satisfaction level.
6. In TSC, those who need to go regularly and need not to go upstairs, have higher satisfaction level.
7. In auditorium, those who resided in the campus more years and resided in hall and also need not to go upstairs, face lower rate of problems.
8. In bank, boys are more dissatisfied than girls. Those who resided in hall have more satisfaction level.
9. In medical, those, who don't need to go medical regularly, face lower rate of problems. Boys and who regularly go to medical have less satisfaction level.

5. RECOMMENDATION

Now, as there are some findings of the research, some relative recommendations have been provided in below-

5.1 Structural Scheme

1. **Provision of accessible footpath:** The university campus needs to be provided with accessible footpath to make it more walkable.
2. **Provision of accessible Washroom:** Accessible washroom has to be provided in buildings. In Dhaka Metropolitan Building Construction Rules (DBCR), 2008, it suggested that 5% of total number of washrooms must be in an inclusive and accessible design.
3. **Provision of fire alarm and braille signage & audio signage:** There are no fire alarm or braille and audio signage. So, it's

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necessary to provide inclusive signage in every required buildup area.

- 4. Provision of accessible ramps:** Almost every ramp in entrance of the buildings is made for motorcycles or cycles' entry. So, that should be reconstructed with maintaining proper planning standard of ramp.
- 5. Accessible halls:** Among all the halls, four halls should be designed in inclusive and accessible way. Two of them will be boy's hall and two of them will be girl's hall.
- 6. Reconstruction:** Reconstruction in some of the selected features or structures (IF POSSIBLE) like ramps, toilet, protruding objects, structures that are in inaccessible condition etc. are needed to be reconstructed.

5.2 Non-structural Scheme

- 1. Accommodation and classroom in ground floor:** The room in hall and also the classroom should be organized in the ground floor for physically challenged students.
- 2. Provision of special doctor in halls:** There should be special doctors in accessible designed halls especially constructed for physically challenged students.
- 3. Optional or assistance in official work:** Official work like form fill-up, banking, examination work etc. should be optional or there should be someone who will do this work on behalf of them. All the official work of physically challenged students should be done in their respective hall office.
- 4. Seat in hall:** It should be ensured that every physically challenged student have to get seat/room in the hall and of course in the ground floor.
- 5. Access in all the places:** All the buildings and places should be accessible and designed inclusively that will make the physically challenged students more comfortable to access. It will ensure a psychological satisfaction to them that they will feel no restriction and prohibition only for the design of buildup area.
- 6. Collaboration of university Authority with Physically-challenged Development Foundation (PDF):** It is necessary to enrich the foundation (PDF) for ensuring especial care for the physically challenged students. Funding, planning, developing of the foundation will establish a well-organized wing that can help the physically challenged students in every sphere of campus life. For that reason, sufficient assistance is needed from the university authority also.

6. CONCLUSION

This research has explored the overall condition of structures includes walkways and buildings whether those are accessible or not. For physically challenged students in public university the campus should have an inclusive design. This study has provided useful baseline data for future studies in the inclusiveness of the university buildings and in other universities in Bangladesh in general which need to be accessible. It is a matter of fact that Disability Rights haven't have established in all over the world as expected. The developed countries could manage to do something good for physically challenged persons. But in developing countries, disability rights still are a major concern, still it is perceived as a charity function. In developing countries, socio-economic condition is poor; their accessibility to education is at minimal level; nearly zero percent built-structures are accessible or the required structures are missing for physically challenged students. But there is a specific amount of physically challenged students every year in every public university in Bangladesh. A monitoring board under the UGC can be established to assess the quality of the buildup environment and buildings of the campus may improve the standard of higher education in Bangladesh. Throughout the World, universities are being changed with well- designed and universal design. The provision of accessible university campus for the physically challenged students helps to feel inclusion of them into the social mainstream and provides better standard of life.

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