

A study on barrier free environment for differently abled in railway stations

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Abstract:

Introduction:

Differently abled is a term applied to all persons with disabilities including those having long term physical, intellectual impairment, mental impairments etc. Person with disability often struggle with the complexity of built environment. There are many areas where person with disability face many difficulties of which, railway station is one of the main places. This research paper focuses on infrastructural facilities available for differently abled in railway stations.

Objective

The present study was taken up to explore the availability of infrastructural facilities for the differently abled in railway stations.

Material and methods

This study adopted a check list method, collected information through observation and questionnaire method from the visitors of the railway stations. A total of ninety respondents were selected from the Lucknow city irrespective of gender.

Result

The results of this study showed that many railway stations are not physically accessible. There is a general lack of infrastructure and awareness that permits persons with disability to use railway stations. Accessible feature and technologies in railway stations are low. There are problems for the persons with disability like- lack of ramp and elevators, uncomfortable height counters etc.

Conclusion

Accessibility for persons with disabilities in railway station is very important. Railway station should focus on easily available information, bold text explanations; clear announcement guiding blocks etc. to ensure railway station barrier free for differently abled.

Keywords: - Accessibility, Differently abled, Infrastructure, Impairment, Railway station.

Introduction

The word 'barrier free environment' means an environment which is designed to be free of obstacles. It is very friendly towards to all categories of people even who are differently abled (Masood 2014). Environment barriers to these include street curbs, narrow side walk, platform, step and stairs, as well as lack of access to elevators, rest rooms etc. Barriers become major obstacles for differently abled like-wheelchair users, people with visual impairment, and people with hearing impairment (Mishra & Kiran, 2016). Unsafe road, buildings, transportation these barriers make an environment which is unsafe and cause of high level of difficulty to the users.

Persons with disabilities often struggle with the complexity of built environment (Handy et al., 2002). There are many areas where people with disability face many difficulties. Railway Station is one of them. Railway Station is a public place. Some of the barriers at railway station for person with disabilities include- no minimum gap between train and platform, lack of grab bars, handrails, narrow side walk, heavy entrance doors, lack of guiding blocks, poor indoor lighting etc. Poor planning has played a major role in contributing to the obstacles faced by person with disabilities. Low lighting on railway station and steps, small number of steps, slippery surface, poor design of sign board, absence of separate compartment for physically disabled people etc., are the major problems which the disabled often face. Due to these reasons disabled cannot travel easily (Banerji 2007).

Wheelchair users cannot travel easily. They have problem with level changes where no ramps are provided. Visually impaired person may have difficulty with identifying changes in direction, level and hazards such as platform edge. They may have problem with sudden direction changes on pathway, the size, colour, contrast and illumination of signs etc. hearing impaired person have many problems such as hearing announcement of the train or emergency alarms, buying tickets, making phone enquiries etc. Barrier free environment makes the differently abled independent and enhance the accessibility to the facilities and services as for a normal person. Hence the present study was taken up to explore the availability of infrastructural facilities for the differently abled in railway stations and suggest measures to adopt to enhance their accessibility.

Review of literature

Masood and Shahla (2014) in their study on "Barrier free environment: An analysis of Aligarh city, India", found that barriers make the environment unsafe and cause a high level of difficulty to the user. But more importantly, barriers cause space to be out of reach, denying people the opportunity of participation in various spheres of life.

Banerji (2007) conducted a study on "Barrier faced by people with impaired mobility on railway stations." The survey included a structured questionnaire. The setting of the interview was three railway stations. The study population was the users of railway stations. The sample consisted of 200 people with impaired mobility selected

randomly. The result shows that there were many barriers in the railway stations, like slippery surface, poor designing of display board etc. The barriers which show a heavy loading against this factor often remain unnoticed to temporary abled bodied people.

Currie (2007) conducted a study on “Australians with disabilities: Transport disadvantages and disability” and found that people with disabilities face difficulties in travelling. There are many types of barriers affordability, acceptability, availability and accessibility. But there are many social and psychological barriers resulting in transport disadvantage for people with disabilities.

Hasanzada (2012) in his research “Physical accessibility of persons with disabilities to public places” monitored and observed 1725 public buildings including schools, universities, teacher training institutes governmental organizations, hospitals, clinics, mosques and non- governmental buildings in 24 provinces across Afghanistan. The result shows that physical accessibility of public places was very difficult. One of the major problem was the non- implementation of the guideline for the use of the facilities in and outside of the buildings.

Materials and methods-

The present study focused on infrastructural facilities available for differently abled in railway stations.

In this study, different railway stations in Lucknow city were selected. Ninety

differently abled respondents were selected from Lucknow city, irrespective of gender. In this study a self structured check list was used for exploring the railway station facilities. Simple random sampling and exploratory research design were adopted in the present study. The data was coded, tabulated and analyzed using the PAS software (version 20).

Results:-

General facilities available for persons with disabilities in railway stations

General facilities available for persons with disabilities in railway stations are elaborated in the table 1. The facilities studied include door width, stairs, entrance landing adjacent to ramp, entrance and exit counter, platform etc. The dimensions are compared using the standards given by (Harmonised guidelines and space standards for barrier free built environment for persons with disabilities and elderly persons. Government of India ministry of urban development February 2016) accordingly, the standard width of the entrance door should be 900mm. all the three railway stations have door width more than the standards and hence movement through for the differently abled is convenient (railway station A- 1000mm, railway station B-1000mm, railway station C-1200mm.).

The Entrance landing adjacent to ramp is required, so that the differently abled can reach the entrance easily, but none of the railway stations has entrance landing. The standard ramp width, maximum length of ramp, height of double handrail, guiding block away from starting and ending of

ramp should be 1800 mm, 9 mm, 760 mm * 900 mm, and 300 mm respectively according to the standard. Surveyed in railway stations, it was found in Railway station A and C had no ramp facility. Without ramp and guiding blocks in the railway stations differently abled especially wheelchair users and visually impaired people cannot reach the railway station easily. Wheelchair users cannot enter in the railway station without ramp. Ramp facility was found in railway station B. Width of the ramp, length of the ramp and height of the handrail was found 1220 mm, 4m, and 800 mm. respectively. The ramp's size was lesser than the standard. Hence differently abled face problem in climb the ramp. Height of handrail was according to the standard.

The width of the stairs is also one of the prominent factor and in selected railway stations, the stairs width was found to be in railway station 'A'-2000mm, 'B'-3000mm and 'C'-6000mm were bigger than the standard width. Where the standard stair width should be 1500mm.

The standard height of riser should be 150 mm and surveyed in surveyed railway stations, it was found that in railway station 'A'-153 mm, in railway station 'C'- 170 mm. the height of the riser is more than the standard height. Hence differently abled face problem in climb the stairs. But in railway station 'B' it is 150mm. according to the standard.

The standard width of the tread should be 300 mm. and in railway station A, tread width is lesser than the standard, so differently abled cannot put their feet

properly and railway station B it is 310mm, tread width is more than the standard, so differently abled can put their feet properly. Where as in railway station 'C'-300mm, it was according to the standard and hence comfortable.

The standard extension of handrail should be 300 mm, but was found to be missing in all the surveyed railway stations and without extension of handrail climbing the stairs is very difficult for differently abled and is quiet accident prone.

The standard height of handrail should be 760 mm & 900 mm, in railway station. But it was missing in all surveyed railway stations. Without handrail differently abled cannot climb the stairs easily. It is quiet accident prone.

The standard of toilet door width should be 900mm. the door width was found to be in railway station 'B' and 'C' (850mm), (800mm) were lesser than the standard. As doors are not wide enough to enter with the wheelchair. So differently abled especially wheelchair users cannot enter the toilet. But in railway station A there was toilet facility for staff members but not for the public. So there are many problems arise due to unavailability of public toilet.

W.C. seat is required for differently abled especially wheelchair users. So that the differently abled can use it comfortably. The standard of W.C. seat from the floor should be 500mm. but it was found to be missing in railway station B and C. so differently abled face problems in using toilet.

The standard of Vertical/horizontal handrail with clearance from wall should be 50mm.

but it was found to be missing in all three railway stations. So differently abled cannot use the toilet easily.

The standard of toilet size should be 2200 mm * 2000 mm. it was found in surveyed railway station 'C'-1800 mm * 1800 mm which is lesser than the standard. Railway station 'B'-1500 mm* 1500 mm. It was also lesser than the standard. So there was less space in the toilet. Wheelchair users cannot move properly.

The standard of Guiding blocks away from the door should be 300mm. but was found to be missing in all the surveyed railway stations. Without guiding blocks differently abled especially visually impaired people find difficulty in recognizing of toilet ahead.

The standard Counter height in railway station should be 750mm. In all the railway stations, the counter height was not found according to standards (railway station-A 1250mm, railway station-B 1066mm, railway station-C 1200mm.) The counter height was not convenient for differently abled because of the excessive height of the counter.

The standard depth under the counter should be 480 mm. In railway station 'A', B and 'C' it was found that the depth of counter is 380 mm, 300mm & 380mm. and it was lesser than the standard, and hence differently abled cannot use the counter properly.

The standard of Reservation counter height should not be in excess 850mm. In all the railway stations, the counter height was not found according to standards (railway station-A 1250mm, railway station-B

1066mm, railway station-C 1200mm.) The counter height was not convenient for differently abled because of the excessive height of the counter.

The standard of Platform guiding block for impaired vision from the edge and guiding block for person with impaired vision away from the ticket vending machine should be (800mm), (300mm). It was found to be missing in selected railway stations. Therefore visually impaired people cannot find out the railway track ahead, which results quite accidental. They would not be able to board on the train. They have problem in recognizing the door of the train without guiding blocks.

The height of placement of switches from the finished floor should be 600-1100mm. but no railway station has followed the standards and the switches are placed at a height, where the wheelchair users cannot use them at all.

The opening controls of windows and doors were should not be more than 1100mm from the finished floor according to the standard. It was found in railway station A-1100mm which was according to the standard. Railway station B and C it was found more than the standard (1200mm and 1220mm) so the wheelchair users can not comfortably control the openings.

(Table 1)

Discussion-

The study is imperative to identifying the current situation regarding infrastructural facilities provided for differently abled and finding their problems inside the railway

stations. Physical accessibility is found to be the major problem in railway station, if the railway station building is not provided with enough guiding blocks and handrails. Visually impaired often face lot of problems in railway station, because there was no guiding blocks. These barriers create difficulties for differently abled. Accessible features and technologies in railway stations are very low. Wheelchair users cannot access the railway station easily. They cannot access the counter, because counters very high. So the railway station should improve their physical accessibility for differently abled. Though the railway stations are mandated to ensure there is accessibility in railway stations, but there is still a lot that needs to be done. There are several measures that can be taken up by railway station, which will not be costly and which will be especially rewarding for differently abled. For the mobility they have to profoundly rely on the other people. Offices be made more accessible and prepared with assistive aids such as wheelchairs, handrails and facilities such as ramps, stairs with double handrail, sufficient space at entry gate, separate counter for differently abled, guiding blocks etc. Special measures should be adopted for providing specific provisions for wheelchair users, such as a selected queue, so that they do not have to wait in queue for a long period of time.

Acknowledgement-

Authors acknowledge the immense help received from the scholars whose articles are cited and included in references of this manuscript. The authors are also grateful to authors / editors / publishers of all those articles, journals and books from where the literature for this article has been reviewed and discussed.

Source of Funding-

I have been receiving University fellowship for this program.

Conclusion-

This study has clearly demonstrated that there are many problems for persons with disabilities in railway stations. The respondents reported many problems in railway stations like- no sufficient space for wheelchair users, no separate reservation counter for persons with disability. No availability of guiding blocks and horizontal and vertical handrail etc. On the other hand, result indicates that lack of infrastructural facilities of railway station as per the standard is found to be the major problem for persons with disabilities. Physical access in railway stations faces major problem for the users and hence the availability of ramp, wider lift, guiding blocks, wider doors, handrails etc. in railway stations should be concentrated to enhance the infrastructural facilities for differently abled users. Government should take necessary steps and modifications in designing and revamping the facilities according to the requirement of disabled people. Travelling can be made more congenial and independent for the differently abled by providing requisite facilities at railway stations.

Abbreviations-

OH	Orthopedical ly handicapped
VI	Visually impaired
HI	Hearing impaired
PAS	Power Analysis Software
W.C.	Water Closet

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Table no.1 General facilities available for persons with disabilities in railway stations

S.No.		*Standard (Measurement of public places)	Existing Railway station		
			A	B	C
A	Exit/Entrance				
1	Door width	900 mm (3 feet)	1000 mm (3.3 feet)	1000 mm (3.3 feet)	1200 mm (4 feet)
2	Entrance landing adjacent to ramp	1800 mm * 2000 mm (6 feet & 6.5 feet)			
B	Ramp				
1	Ramp width [minimum]	1800 mm (6 feet)		1220mm (4 feet)	
2	Maximum length of ramp	9 m		4 m	
3	Height of double handrail	760 mm & 900 mm (2.5 feet & 3 feet)		800mm (2.6 feet)	
4	Minimum gap from adjacent wall to handrail	50 mm			
5	Guiding block away from starting and ending of ramp	300 mm (1 feet)			
C	Stair				
1	Minimum width	1500 mm (5 feet)	2000 mm (6.5 feet)	3000 mm (9.9 feet)	6000 mm (19.5 feet)
2	Height of riser	150 mm (.50 feet)	153 mm (.50 feet)	150 mm (.50 feet)	170 mm (.56 feet)
3	Width of the tread	300 mm (1 feet)	250 mm (.83 feet)	310 mm (1.18 feet)	300 mm (1 feet)
4	Extension of handrail	300 mm (1 feet)			
5	Height of handrail	760 mm & 900 mm(2.5 feet & 3 feet)			
D	Toilet				
1	Door width	900 mm (3 feet)		850 mm (2.8 feet)	800 mm (2.6 feet)
2	W.C seat from the floor	500 mm (1.65 feet)			
3	Vertical/horizontal handrail with clearance from wall	50 mm			
4	Toilet size	2200 mm * 2000 mm (7.22 feet & 6.57 feet)		1500 mm* 1500 mm (5 feet & 5	1800 mm * 1800 mm (5.9 feet &

				feet)	5.9 feet)
5	Guiding blocks away from the door	300 mm (1 feet)			
E	Counter				
1	Counter height	750 mm (2.5 feet)	1250 mm (4.12 feet)	1066 mm (3.5 feet)	1200 mm (4 feet)
2	Depth under the counter	480 mm (1.6 feet)	380 mm (1.25 feet)	300 mm (1 feet)	380 mm (1.25 feet)
3	Reservation counter height should not be in excess	850 mm (2.8 feet)	1250 mm (4.12 feet)	1066 mm (3.5 feet)	1200 mm (4 feet)
F	Platform				
1	Platform guiding block for impaired vision from the edge	800 mm (2.6 feet)			
2	Guiding block for person with impaired vision away from the ticket vending machine	300 mm (1 feet)			
G	Controls				
1	Switches from the finished floor	600 mm - 1100 mm (2 feet & 3.6 feet)	1300 mm (4.3 feet)	1500 mm (4.9 feet)	1350 mm (4.3 feet)
2	Opening controls of window and doors from the finish floor	1100 mm (3.6 feet)	1100 mm (3.60 feet)	1200 mm (4 feet)	1220 mm (4 feet)

* Harmonised guidelines and space standards for barrier free built environment for persons with disabilities and elderly persons-2016.



Figure-1 Perspective view of the Railway station where there is no ramp facility