



EVALUATION OF DISABLE FRIENDLINESS OF ROAD TRANSPORT FACILITY IN LUDHIANA CITY OF PUNJAB (INDIA)

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ABSTRACT

People with disabilities have the same fundamental right to access mainstream services in the community (education, health-care, employment, social services and social protection) as any other citizen. Inclusive transport is a critical element in a comprehensive strategy of mainstreaming people with disabilities in developing countries. A freely accessible society without any physical obstacles is a first and foremost requirement to mainstream people with disabilities. The present study was done with objective to ascertain the extent to which the road transport facility in Ludhiana city is barrier free for the disabled. A pre-tested questionnaire (Access survey and audit checklist) was used, designed by Samarthyia and Rehabilitation Council of India (RCI) and modified according to our study environment. As found in the study disable friendliness of road transport facilities remains a largely unrealized goal in Ludhiana city till date. The total score for the disable friendliness of the road transport facility in Ludhiana city was 61.15 (30.53%) which was graded as being poor. Transport facility was far from being satisfactory than to be called barrier free.

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Keywords: Barrier, Access, Disable friendly, Road transport, People with disabilities.

1. INTRODUCTION

Disability is a complex phenomenon, reflecting an interaction between features of a person's body and features of the society in which he or she lives. People with disabilities (PWDs) report fewer healthy days than the general population. They have lower rates of health promoting behaviors. Inaccessibility of the natural and built environments often limits opportunities to participate in various types of recreation, sport, and leisure physical activity in both indoor and outdoor settings. For example, in outdoor some streets do not have curb cuts, damaged sidewalks

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may create a higher risk of falling, walkways or walking paths are too narrow for a wheelchair user and partner to walk side by side, many communities do not have sidewalks or slope is too steep.

A freely accessible society without any physical obstacles is a first and foremost requirement to mainstream people with disabilities. Living with a disability poses unique challenges and can influence participation in many activities. Travelling is one activity that many people with disabilities feel must be sacrificed as it requires an orchestrated cooperation of physical, mental, and social capabilities, which are often adversely affected or compromised by a disability.

People with diverse disabilities (sensory or physical) and reduced mobility (people with health problems for example respiratory, cardio-vascular, joint problems or temporary ailments); senior citizens; pregnant women; families with young children and people with heavy luggage, etc., constitute sizeable number of the population. Since majority of this segment belong to lower and middle-income group, it is beyond their economic capacity to use private taxis/three-wheeled auto rickshaws or purchase their own vehicle and are, therefore, dependent on public transport. Existing transportation system, i.e., vehicles, terminals, and operations are either full of obstacles or impossible to use. It induces fatigue, restricts educational and employment opportunities, causing frustration. It hinders right to freedom of movement, equal participation and access to health. These days there is lot of emphasis on making our society disabled friendly. However, efforts of city planners often fall short of expectations. There is dearth of data on disabled friendliness of various spheres of our lives. Hence present study was done with following objective-

1.1. Objective

To ascertain the extent to which the road transport facility in Ludhiana city is barrier free for the disabled.

2. METHODOLOGY

Area of our study was Ludhiana city in State of Punjab. It is the largest city in the state, with an estimated population of 1,613,878 in 2011. Ludhiana is located 100 km west from state capital Chandigarh. It is a major industrial centre of northern India. Ludhiana is well connected with other cities of Punjab and also with other states by Bus service. The transportation services are provided by state owned Punjab Roadways and private bus operators. Radio taxis are also available quite easily. It is also quite used means of transport by the people of Ludhiana. Auto Rickshaw is a three-wheeler drive, which is way to travel in city. These Auto Rickshaws has capacity of three to six passengers. It can be hired individually or on sharing basis.

The study was a cross-sectional study done during the months of March – April 2012. A pre-tested questionnaire (Access survey and audit checklist) was used, designed by Samarthyia and Rehabilitation Council of India (RCI) which was modified according to our study environment. Road transport facilities evaluated included ISBT, buses of both long and local routes, roads, bus stops and other modes of transport like auto-rickshaws and taxis. Distribution of roads included four major roundabouts at the starting point and roads leading in all the directions 5 Km each were assessed. Figure 1 shows distribution of roads Included in Study.

Various study domains were the external and the internal environment, accountability and modes of transport. Various aspects of these domains were scored according to their importance of usage as described by disabled people interviewed before the commencement of the study. Tool and scoring system was circulated among experts in public health for validation. Purposive sampling of target areas and roundabout was carried out and a field survey was done involving observation/measurement of study variables as information sources. The scoring criteria for various domains are described in Table 1.

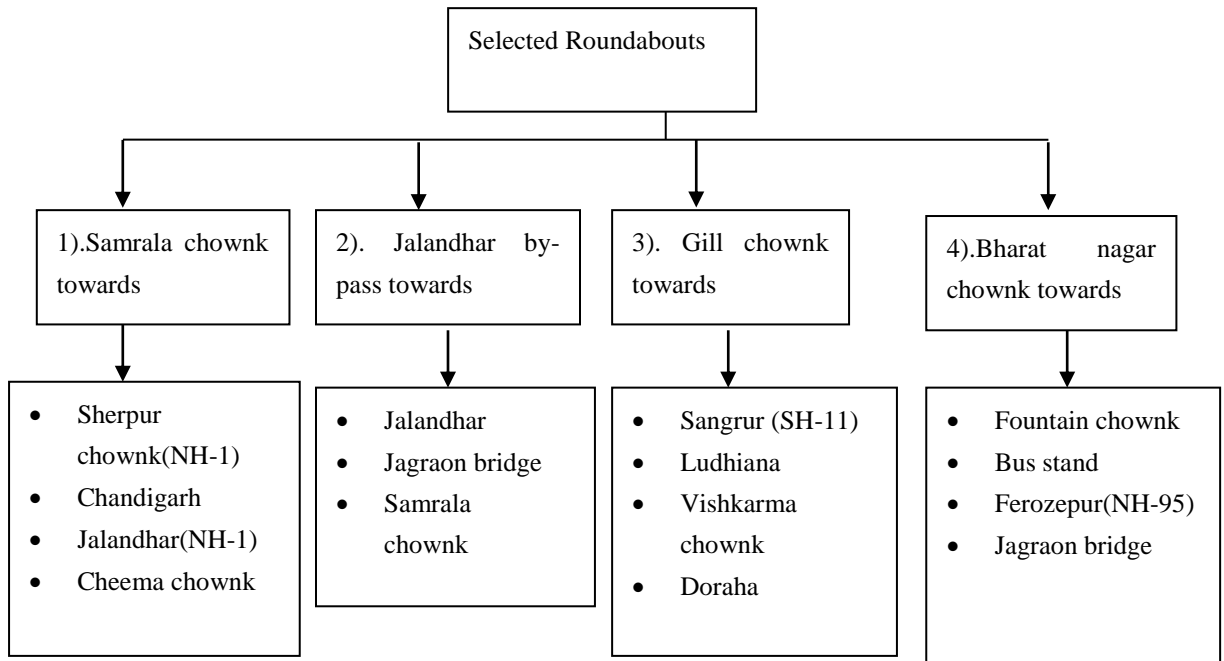


Figure-1. Distribution of Roads Included in Study, Four Major Roundabouts were Selected

3. RESULTS

Table-1. Scoring criteria and distribution of scores for study domains

S.No.	Domains	No. of Items	Maximum Attainable Score	Score obtained
1	External Environment of ISBT		17	6.75
	• Parking	10	2.5	1.25
	• Taxi stand	2	0.5	0.5
	• Path ways	10	5	2.5
	• Curb cuts	4	2	0.5
	• Pedestrian crossing	4	4	1
	• General obstructions	3	3	1
2	Internal Environment of ISBT		45.75	24.5
	• Main entrance	13	3.25	0.75
	• Doors	12	3	0
				<i>Continue</i>

	• Corridors	6	3	2.5
	• Elevators	15	3.75	2
	• Steps	12	3	2
	• Ramps	10	5	0
	• Handrail	8	2	0
	• Toilets	23	5.75	3.25
	• Eating outlet	5	5	5
	• Public telephones	6	1.5	1.5
	• Resting facility	5	2.5	2.5
	• Reception/information counter	6	3	2
	• Signage	5	5	3
3	Modes of Transport		28.25	6.4
	• Long Route Buses	9	13.25	4.8
	• Local Buses	9	5	1.6
	• Auto rickshaw	9	5	0
	• Taxi	9	5	0
4	Bus Stops	4	5	1.25
5	Accountability / Policy Making	12	24	14
6	Roundabouts		20*4=80	8.25
	• Parking	10	2.5*4=10	2
	• Taxi stand	2	0.5*4=2	0.25
	• Path ways	10	5*4=20	1
	• Curb cuts	4	2*4=8	0
	• Pedestrian crossing	4	4*4=16	5
	• General obstructions	4	3*4=12	0
	• Signage	3	3*4=12	0
7	Total Score of Assessment		200	61.15

Table 2 According to the scores described above, the road transport facility in Ludhiana was graded as per following criteria

Grading	Score range	Score obtained
• Very Poor	0-40	
• Poor	41-80	61.15
• Average	81-120	
• Good	121-160	
• Excellent	161-200	

Criteria for assessment of disable friendliness of road transport included Availability, Accessibility, Affordability, Acceptability, Accountability and Quality of Services.

Out of total score of 17 for external environment, ISBT Ludhiana had score of 6.75 (39.71%). In parking there were no symbols of access imprinted on the parking ground nor were any warning signs for visually impaired (*Score=1.25*). Pedestrian crossing had no traffic lights installed and no pathways cut across zebra crossing for the PWDs (*Score=1*). Manholes placed along path of travel and surface was uneven with obstructions on the path (*Score=1*).

In the study it was observed that internal environment scored 24.50 (53.85%). There were no automatic doors leading to entrance (*Score=0*) and there were no steps and ramp was uneven without handrails at the entrance of the bus stand (*Score=0.75*). Elevators were not provided with handrails and emergency intercom. The step edges of stairs were not of a different color or texture to be easily identifiable by people with low vision or who are visually impaired. Also, there was no ramp next to stairs (*Score=0*). Toilets for PWDs had no accessible showers, grab bars and emergency alarm (*Score=3.25*). Exclusive counter for the disabled people did not have personnel at the duty and wheel chair was not easily available.

Though there was transport advisory committee that recommends policies based on needs of disabled but structure was not satisfactory for disabled users. Also there was no awareness training for the drivers within the system (*Score=14*).

For long route buses, inconsistencies were observed in vehicle design and facilities such as retractable ramps and 'kneeling suspension' were not there. There were particular problems in getting on and off e.g. in using different doors at either end of a vehicle. Wheelchair users continue to have difficulties in entering and exiting buses. Buses regularly fail to stop at or near the kerb. Drivers only have a limited awareness of disability issues and are not always particularly helpful. Visually impaired passengers have problems in finding seats because of inconsistencies in their layout and often have to ask other passengers to identify stops. Priority seating is often taken up by other passengers and the disabled/elderly priority seating policy is not always enforced by the driver (*Score=4.80*).

Similarly, disable friendliness of 15 roads moving from four selected roundabouts were assessed and scored which yielded poor results with a score of 8.25 (10.31%). Pathways were being used for personal use by shopkeepers leaving no place for PWDs and wheel chair users to walk. Path of travel was full of obstructions with manholes and over hanging electric wires, boards and banners. Most of roads were without parking and vehicles parked on roadside. There was no provision of pathways, curb cuts, and pedestrian crossing. Signages were inadequate and difficult to read with no audible announcement.

There were no adequate bus stops for the local buses. There were no guiding blocks to bus stop nor there any information indicated (*Score=1.25*). Local buses (*Score=1.60*), auto rickshaws (*Score=0*) and taxis (*Score=0*) were not disable friendly at all. Priority seating was often taken up by other passengers and the disabled/elderly priority seating policy was not enforced by the driver.

Therefore, the total score for the disable friendliness of the road transport facility in Ludhiana city was 61.15 (30.53%) which was graded as poor. Thus, the road transport facility was far from being satisfactory than to be called barrier free.

4. DISCUSSION

Transport is essential for disabled people to access education, employment, health services, social events and leisure pursuits. A lack of accessible means of independent creates social exclusion for many disabled people (Alsnih and Hensher, 2003). Accessibility should encompass the needs of disabled people who have learning difficulties, mental health problems and other impairments (Lavery *et al.*, 1996).

Designing accessible transport systems should also be about 'universal design' or 'access for all'. In the study by Hultgren, it was reported that 20 to 25 per cent of public transport passengers at any time have mobility limitations due to impairment, luggage, accompanying children or unfamiliarity with the local area.

To illustrate/understand the accessibility problem of disabled we need to visualize the steps involved when a person needs to access a public transport.

To be able to go from home to a working place, a person has

- To go from home to sidewalk or pathway
- To enter in a vehicle
- To go out of the vehicle to sidewalks or pathways near the working place
- To reach the entrance of the building
- To enter the building
- To move around in the building
- To enter the office or other kind of place for work
- To reach the working station

If only one link is missing from above list, then the journey becomes impossible. Each link must be independently considered and improved as necessary. Lack of accessible transport creates social exclusion for PWDs. People are disabled by society not just their bodies. Existing transportation system, i.e., vehicles, terminals, and operations are either full of obstacles or impossible to use.

Road transport in Ludhiana was given poor grade in our study. Physically challenged and blind reported major difficulties in accessing the transport system, which often made them delay and arrive late for their commitments. Inaccessible transport made it especially difficult for disabled people to find employment and to gain an education, as well as limiting their social and recreational experiences. For a disabled person travel is compromised by barriers in the physical environment. If roads are not friendly they will prefer staying back at home. Even if they somehow manage to reach their transport arena they face barrier in external environment. In absence of ramp and stairs it is difficult for them to enter the building. Inside the building, enquiry counters are not accessible. After long struggle when they enter mode of transport to reach their destinations they find their seats are taken up by other passengers. Getting on and off the vehicles is major obstruction in their journey cycle. All these barriers create isolation for them.

Similar were the findings of survey by Disabled Persons Transport Advisory Committee (DPTAC) in 2002 in which 40% disabled in England and Wales said that they are fearful of travelling by public transport. 65% of those surveyed were dissatisfied with pavement maintenance and 48% said they would go out more if the condition of roads and pavements were better (DPTAC, 2002).

At ISBT Ludhiana, external environment could score only 39.71%. In parking there were neither symbols nor warning signs to help PWDs to enter the bus stand. No exclusive parking area for them means even if they have their own vehicle they will have no place to park them. They face difficulty in parking their vehicles creating barrier for them at first place, which demotivates them to venture out. Pedestrian crossing was given least score as there were no cuts, no signs and no

traffic lights installed. There were no sidewalks to help the disabled in crossing road making them dependent on others for this purpose. Manholes were located all along pathway causing difficulty in walking. They could also lead to fall and injury for them. External environment was not friendly even for the general public showing least concern for PWDs.

In the internal environment score being 53.85% it was observed that there were no automatic doors leading to entrance and ramps were not present next to stairs. Absence of ramps limits their movement. Elevators were not provided with handrails and emergency intercom to help disabled and others in case of emergency. Step edges of stairs were not of a different color or texture easily identifiable by low vision and vision impaired making them vulnerable to fall and injuries.

Signs are means of giving information about direction, location, safety or form of action. At ISBT Ludhiana, signagewere neither embossed in distinct relief nor were of universally recognised contrasting colour. It keeps PWDs poorly informed even if there are facilities available for them. In absence of signage they are unable to differentiate between the instructions for them and the general public. It means that they will always need a care taker and cannot think of travelling on their own.

For accountability ISBT scored 58.33% as structure of system was not satisfactory. Lack of concern for PWDs was clearly seen. Though policies are available there was failure of implementation at this level. Policies work only if enforced by the respective agencies. There was no awareness training for the drivers. They were not aware of rights for the disabled and failed to contribute in making journey barrier free for the disabled. It was felt that many public transport vehicles operators found it a waste of time to stop the additional time necessary for a person with a disability to board the vehicle.

Score of mode of transport in ISBT i.e. long route bus was 36.25% as there was no pull out ramp in the bus nor was provided any boarding priority or assistance for the disabled. Though change in vehicle design like low floors and pull out ramp can solve major problem it has been enforced neither by government nor manufacturing agencies. Even if disabled manage to get into vehicle, priority seating was often taken up by other passengers and the disabled/elderly priority seating policy was not always enforced by the driver. There were no audio announcements for vision impaired and others. Bus being major mode of transport in the city, its average score highlights difficulties faced by disabled in reaching their destinations.

As a result of Public Interest Litigation (PIL) and activism, a few 'disabled-friendly' buses have been introduced in the country in a few cities. However, even these few buses are not friendly to visually impaired commuters. Most disabled people travel in regular buses, which have better connectivity and frequency. It can be dangerous but there is little choice. The National Road Transport Policy does not take into account the concerns of disabled people. The Motor Vehicles Act has no mention of wheelchair accessibility as a condition for manufacturing of public transport vehicles.

Similar results were found in study done at the city of Bangalore, which has low floor buses (Volvo) but the disability concession is not valid in these buses and the fare/rate is higher, making them again inaccessible for majority of disabled people (DEOC).

A study by Griffin (2000) found that the simplest way of increasing the use of public transportation facilities is to establish an environment where pedestrian access is safe, convenient, and comfortable. Progress has been made to identify the factors affecting disabled accessibility to the public transportation terminals, because disabled are considered as a group of people who would face the difficulty of accessibility to the environment. Haber and B (1992) revealed that the present provisions are inadequate and not disabled friendly. They also highlighted that there is an increasing awareness, particularly in the industrialized countries, pertaining to the disabled. Kennedy (2008) supported that people with disabilities have not been treated as equals.

Buses, taxis and auto rickshaws should be designed as far as practicable to include facilities that can accommodate people with disabilities. New vehicle should comply with accessibility standards to enable all people, including wheelchair users, to use the service provided.

With the current lack of public transportation, the buses were overcrowded. In this situation, it was more difficult for a person with reduced mobility to pick a bus than for other users. That means that the people for whom pedestrian displacements are most difficult are also penalized for the access to public transport. Public buses are common man's transport but it was not fully used by people with reduced mobility and PWDs.

Similarly in a survey done in U.S.A, lack of transportation was seen as the second most frequent reason given by the persons having activity limitation due to health conditions for not having employment (Loprest and Maag, 2001).

For Ludhiana city, local bus scored 32% and had no hydraulic lift or pull out ramp to assist easy use by PWDs. Seats were reserved only for females and none for disabled. They were not given any priority or assistance in boarding the bus. Often they had to ask others about stoppage reached as there were no audio announcements in the bus. Taxi and Auto rickshaw had zero score because of poor vehicle design. Door width was not easy to be used by wheel chair user. There were no handrails, low level steps neither special seats for PWDs. Hence, Concerns of disabled were poorly addressed by Transport facility of Ludhiana city.

Bus stop provides rest area accessible to all users. For bus stop in Ludhiana score was only 1.25 (25%) as they were poorly managed with no guiding blocks to bus stop nor any information indicated. There are very few Bus stops as compared with requirement of the city.

An access audit done by Samarthyam, National Centre for Accessible Environments, a research and civil society organization, along with Central Road Research Institute (CRRRI), found that independent mobility of the children was hampered while negotiating sidewalks, crossings and bus shelters. Access audit findings and observations of the children with diverse disabilities using wheelchair, walkers and crutches found that traffic signals did not have 'green man' signs and time for pedestrian crossing was inadequate. Ample clearance from the carriageway for traffic signal poles was not provided. Bus stops were located in the centre of the sidewalks, forcing pedestrians to walk on the road along with moving traffic. Pedestrians with mobility aids and non-motorized vehicles shared the same road space as motorized traffic. Bus lane widths were not adequately marked. Other hazards included guardrails at sidewalks with sharp edges and protruding manhole covers in travel paths causing accidental hazards to pedestrians with low vision and vision impairment as well as unwary. Important signage including speed limit, school ahead and no

parking signage was missing. Further, unauthorized and illegal parking adjoining school wall hindered children using the pavement and affected the forward visibility of road users.

Also a recent research study in England for Leonard Cheshire found that 23% of respondents that were actively seeking employment have had to turn down a job offer and a further 23% a job interview, because of inaccessible transport. The study also found that 20% of respondents found it difficult or impossible to get health care they needed and 1 in 7 respondents were unable to collect prescription as a result of inaccessible transport (Campion *et al.*, 2003)

4.1. According to Ministry of Road Transport and Highways, Government of India

In India, There has been more than three-fold increase in the number of persons injured per lakh of population from 13 in 1970 to 42.3 in 2011, while persons killed per lakh of population jumped four-fold from 2.7 in 1970 to 11.8 in 2011 (Road Accidents in India, 2011).

Table-30. Persons killed per 100 accidents in Punjab

Year	Persons killed per 100 accidents
2007	64.6
2008	62.7
2009	65.9
2010	64.3
2011	75.7

In 2011, the highest accident severity was observed in Mizoram (83.5), followed by Punjab (75.7)

An important accident related parameter is the extent of accident severity (road accident related deaths per 100 accidents). It varied from a low of 2.2 in Mumbai to a high of about 66.2 in Ludhiana.

Table-2. Total road accidents and severity of accidents in Ludhiana city in 2011

Total accidents	Fatal	Person killed	Person injured	Severity of accident
444	260	294	189	66.2

In terms of severity of accidents, Ludhiana stands first in the nation followed by Asansol Durgapur (62.5) (Road Accidents in India, 2011). Poor condition of roads as seen in the study can be a possible reason to these accidents.

“Transport facility in Ludhiana is not people friendly; leaving no space for being disable friendly” . Transport facility in Ludhiana caters to population of more than 2 lakh citizens. Poor Large number of accidents in the city can be owed to poor condition of roads. A large proportion of people are disabled due to accidents. Traffic accidents alone account for 30 million disabilities world over.

Similar findings were seen in a study in Kolkata, a densely populated city, set in a metropolitan region of fifteen million people and the major urban centre for eastern India. The six major public modes of transportation, auto-rickshaws, buses, cycle-rickshaws, trams, metro-rail and suburban

train were examined for barriers to accessibility as were key public buildings and sidewalks. The findings provided a picture of total unavailability of accessible public transportation for the wheelchair bound and major obstacles for those who are visually, mentally or mobility impaired. Even the hearing impaired are faced with visual overload and a lack of comprehensible signage. Results show a need for major public investment in physical infrastructure, and the immediate implementation of accessible public transportation (Sen and Banerji, 2004).

Built physical environment is one of the significant barriers to the full participation of persons with disabilities in the society. Most public transport terminals still lack in terms of good design and facilities thus a serious concern for the matters is needed to ensure the convenient for all. Poor vehicle designs show loop holes in our government policies. Till today disabled are given treatment like minority and not part of society. Vehicle design is responsibility of industrial sector and surprisingly such poorly designed vehicles with no accessibility for PWDs are being licensed. A close look at the access related issues brings into light that in spite of international conventions and domestic legislations access is an issue of concern. There have been a few legislations passed to safeguard the interest of the disabled but they look more like 'patch work' and 'add on' rather than an integrated approach. Also, problem is the lack of political will to address the issue of the disabled. The society is also not in a state of preparedness to accept the disabled population as part of the mainstream. Most often the disabled are looked at as not normal. Given the situation of lack of political will as well as social unpreparedness there is a big challenge ahead in making the city barrier free for PWDs. Bus Rapid Transit (BRT) corridor in Delhi are among the best examples to provide safe and comfortable sidewalks for people to access public transport. Roadway design has retained the continuity of the sidewalks; these are wide, well surfaced, and disabled-friendly sidewalks. These sidewalks are easily negotiable by women, children and senior citizens. Crossings are easily accessible with mountable kerbs, and there are holding areas for people at the sides and at the pedestrian refuge islands. Pedestrian paths on the BRT corridor have the least permanent or temporary obstructions on the sidewalks. (Centre for Science and Environment Annual Report, 2008-2009).

Results of the study 'Affordability of the accessibility improvement of walking environments in residential area, from the view of comparison with individual transport services' showed that statistically significant effects of barriers are observed for those who cannot use private car. This can be understood that they don't have any alternatives other than to abandon shopping, when the barriers of walk environment exceed the extent of their allowance. In the case of a person with difficulty in shopping by walk, the effects of the barriers become much strong. In Japan, there are not enough discussions on the affordability to improve the accessibility of walking environments in extensive roads including residential areas, although the barrier-free guidelines of the road of city center are already established (Yamada, 2010).

Even though the Disability Act talks about making all places of importance accessible to the disabled the government is far from achieving it. The government should set a deadline and immediately work upon the physical accessibility part. In spite of several international and national pronouncements the rights of the disabled have remained on the paper. Given the magnitude of the problem it is important that disabled persons receive political attention. It is important to note that

all the targets and policies of achieving social and economy equality will not be possible to meet if the concerns of the disabled are not addressed. There is need for policy level changes backed by adequate budgetary allocation.

Similar results were seen in study by Agarwal in Delhi. Unauthorized and illegal parking adjoining school wall hindered children using the pavement and affected the forward visibility of road users. The study findings were shared with the Municipal Corporation Delhi, in charge of design and maintenance of the pedestrian infrastructure near the schools. (Agarwal, 2010)

Similar findings were seen in study in Japan which recommends that It was necessary to consider enhancing public awareness through education, mass media etc. which provides more powerful tools of proper understanding and natural human aid when in need, than leaving the barrier-free facilities themselves to take care of the individuals with disabilities (Date *et al.*, 1999)

An ideal model of the safe pedestrian road crossing is in a process of being developed all over the world. Advanced technologies & researches are now available to be used for the purpose. Traffic calmer, Traffic islands, pedestrian lights, audio announcements systems, Pelicans, Table top, curb cuts, overhead pedestrian bridges, subways, signage, zebra crossings, tactile are the key elements to ensure the safe & enjoyable crossing of the road. As per the day to day observations presently Delhi's existing road crossings are not user friendly for disabled & elderly persons. Most of them do not qualify for the safe & accessible one, because at the time of planning & designing of these roads, the designing is generally based on the vehicular movement and no. of vehicles on roads. Various studies have shown that the zebra crossings are designed for the pedestrian to cross the road are not accessible for elderly & disabled people because of difference in levels of the road & the footpath. The problem if look on a broader platform is due to planning of system in non-comprehensive manner. Most of the road designs are done in part as individuals not as part of Infrastructure system. Pedestrian movement on roads is still a part of design which is not taken up by the authorities as the main criteria while designing. At number of places on the roads traffic crossings are the most unsafe place for the pedestrians (Singh and Gupta, 2010).

5. CONCLUSION

Many studies have focused on the disabilities study. However, less research has been devoted to the specific area such as road transport facilities.

As found in the study disable friendliness of road transport facilities remains a largely unrealized goal in Ludhiana city till date. Transport facility was far from being satisfactory than to be called barrier free. Target areas had no symbols of access imprinted on the parking ground nor were any warning signs for visually impaired. There was no pathway for pedestrians and external environment had lot of obstructions not easily detectable by PWDs and vision impaired making it difficult for them to walk safely. There were no adequate bus stops for the local buses .Auto rickshaw, taxi were not disabled friendly at all. In all modes of transport Priority seating is often taken up by other passengers and the disabled/elderly priority seating policy was not always enforced by the driver.

In order for transport systems to be accessible to everyone, it is important to consider all the problems that disabled people experience along an entire route, not simply consider the physical

accessibility of public transport vehicles. Each element of the journey, including information on the service and how to use it, has to be accessible for the whole journey to be achievable.

6. RECOMMENDATIONS

- The built environment, vehicles and buildings should be made accessible.
- Staff employed by transport providers should be adequately trained.
- The voice of disabled needs to be recognized by government.
- Travel confidence could be improved through greater knowledge of accessible travel options, ideally by the direct involvement of transport providers.
- Accessible routes should be more clearly publicized by providers as the data indicate that disabled people are relatively unlikely to reach this information.

Recent improvements in reliability, accessibility and customer care should be promoted to increase knowledge and awareness of changes that have been made by providers.

7. LIMITATIONS

- The study was completed within the limited time frame. Given sufficient time, the study would have covered many unexplored areas
- The study had a limited area sample. A large area sample would have made the study still more interesting
- Scoring system needs to be validated
- Few such studies were available for India.

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