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"THE ENVIRONMENTAL AND ARCHITECTURAL BARRIER FOR SEMI AMBULATORY DISABLED PERSON"

Physiotherapy

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ABSTRACT

A disability is defined as a condition or function judged to be significantly impaired relative to the usual standard of an individual or group. The term is used to refer to individual functioning, including physical impairment, sensory impairment, cognitive impairment, intellectual impairment mental illness, and various types of chronic disease. Semi –Ambulatory Disabled means Persons withimpaired walking: - Persons who use walking aids such as crutches or canes. The persons include those who cannot walk without a cane and those who have some trouble in their upper or lower limbs although they can walk unassisted. Rehabilitation of the patient is according to the impairment of the individual & environmental factors are helpful to survive the person at the societal level. An environment with barriers, or without facilitators, will restrict the individuals performance, other environments that are more facilitating may increase that performance of the person.

AIM: To find out the environmental and architectural barrier in the community places for semi-ambulant (lower limb impairments) disabled persons.

Methodology: - A cross sectional Survey done on 57 semi-ambulant disabled persons with impairment in the one or both LL without UL impairment without any sensory deficit were selected by purposive sampling method from PT OPD centers.

Conclusion: - The above study, 93% of were dependent on the Walking aids when they were moving in the public places, 83% of the patients were inconvenient with the lack of facilities available at and around the bus stop, 63% of the patients avoids going out in shops, malls, public places because they do not find the environmental Situations comfortable, 8% participants left the job due to inconvenience in travelling with public transport. 16% people expressed that the work places are not accessible. Changes in the environmental architecture can improve the quality of life of many patients with disabilities.

KEYWORDS:

Disability, Impairment, Physical Impairment, Semi ambulatory, Environmental Factors, Environmental and Architectural Barrier.

INTRODUCTION:-

A disability is defined as a condition or function judged to be significantly impaired relative to the usual standard of an individual or group. The term is used to refer to individual functioning, including physical impairment, sensory impairment, cognitive impairment, intellectual impairment mental illness, and various types of chronic disease. [1]

Impairment is a problem in body function or structure; an activity limitation is a difficulty encountered by an individual in executing a task or action; while a participation restriction is a problem experienced by an individual in involvement in life situations.[2]

Physical Impairment /disability restrict the social life of the person. Survival in the community for the purpose of earning / job/ recreational activities bare minimum requirement.

Ambulation is the major concern of the patient to resume back to job and normal life style, mainly for the independency of the person. PT concerns about the community rehabilitation so that person able to manage independently in the community life.

Rehabilitation of the patient is according to the impairment of the individual & environmental factors are helpful to survive the person at the societal level.

Semi –Ambulatory Disabled means Persons with impaired walking: - Persons who use walking aids such as crutches or canes. The persons include those who cannot walk without a cane and those who have some trouble in their upper or lower limbs although they can walk unassisted.[3]

Environmental factors have an impact on all components of disability and are organized in a sequence from in individual's most immediate environmental to general environment. The basic construct of environment factors component is the facilitating or hindering impact of features of physical, social and attitudinal world. Environmental factors directly or indirectly related to activities and participation of individuals which is directly related to the environmental participation of the person. [4]

Non ambulatory people are depends on assistance. The person who are partially disabled/semi ambulatory able to move independently with assistive aids/devices and the availability of the environmental factors they can move outside the home.

Environmental factors are classified into two different levels-1) Individual - in the immediate environment of the individuals, including settings such as home, workplace and school. 2) Societal - formal and informal social structures, services and overreaching approaches or systems in the community or society that have an impact on individuals. This level includes organizations and services related to the work environment, community activities, government agencies, communication and transportation services, and informal social networks as well as laws, regulations, formal and informal rules, attitudes and ideologies. An environment with barriers, or without facilitators, will restrict the individuals performance, other environments that are more facilitating may increase that performance of the person. [4]

Barrier Free Environment is one which enables people with disabilities to move about safely and freely and to use the facilities within the built environment. The goal of barrier free design is to provide an environment that supports the independent functioning of individuals so that they can get to, and participate without assistance, in everyday activities such as procurement of goods and services, community living, employment, and leisure. The fundamental principles which have been followed in developing standards / norms for various facilities to meet disabled people's standards for safety, convenience and usability. Barrier free design standards should satisfy anyone who is hampered in his mobility or functioning (as compared with a non-disabled person) as a result of obstacles put in his way by the design of a building, the choice of hardware and equipment, and the arrangement of outside space.[3]

PURPOSE:-

To find out the environmental and architectural barrier in the community places for physically disabled person and plan solution for the same. How accessible is built environment? Most people take for granted the ease with which they move about the city, but for those with mobility impairments the built environment presents. How and what types of environmental or architectural barriers in using public transport? How and what types of environmental or architectural barriers are found in built environment in moving in the public places/work places? What types of environmental or architectural barriers are found in built environment? To what extent do these barriers limit access for mobility-impaired citizens? The primary objective of this report is to frame the accessibility for semi-ambulant disabled persons. The main purpose is to integrate disabled persons fully into the society.

Builders, designers, and architects and architects are ultimately the users of this standard to ensure the specific environment created by them are suitable for all categories of people.

The standard also indicates that barrier free design can be achieved without economic burden to the client, builder, designer, and the architect. It will help to provide framework for developing policies to ensure a barrier free environment and eliminate the lack of awareness in both the public and private sectors to the problem of accessibility.

AIM:

To find out the environmental and architectural barrier in the community places for semi-ambulant (lower limb impairments) disabled persons.

OBJECTIVES:-

- To find out the environmental or architectural barriers in using public transport for semi-ambulant (lower limb impairments) disabled persons.
- To observe the environmental or architectural barriers are found in built environment in moving in the public places/work places for semi-ambulant (lower limb impairments) disabled persons
- To learn problem faced by the semi-ambulant (lower limb impairments) disabled persons when moving in the built environment.

METHODOLOGY:

A cross sectional Survey done on 57 semi-ambulant disabled persons with impairment in the one or both LL without UL impairment without any sensory deficit were selected by purposive sampling method from PT OPD centers. Indoor patients and patients who need acute care, patients with UMN type of injuries were excluded from the studies. Ethical approval has taken from the ethical committee. Study explained and written consent taken from the patient. Pilot study done on 10 patients. Each patient was asked about the accessibilities around the home, bus stop, hospital area, and in social/public places, difficulties faced by them and review for Environmental or architectural barriers in using public transport, public places /work places when they were moving in the environment /social or public places were noted down and the questionnaire was formed. To ensure the validity of questionnaire, 10 experienced physiotherapists reviewed each item of questioner independently. There was a meeting to form and discuss specific questions if there was no consensus about the validity. Then the questionnaire was filled by the therapist for each patient. Thus the data was collected.

STATISTICALANALYSIS:-

Non-parametric type of statistic was used.

DATAANALYSISAND RESULTS:

57 for semi-ambulant disabled persons with impairment in the one or both LL without UL impairment with mean age 33.2 ± 5.2 yrs. were participated in the study including 26 female and 31 male. In this group, 31 participants including 16 male and 15 female with fracture in lower limb with post fractured impairment in the mobility of the limb with mean age 38 ± 12 yrs, 14 Participants with lower limb polio and some congenital deformities with 8 male and 6 female with mean age 33.5 ±12.4 yrs and 12 participants with only motor impairments like foot drop and muscle weakness including 7 male and 5 female with mean age 27.5 ± 9.8 yrs were included in the study.

TABLE NO. 1:- USES OF ASSISTIVE DEVICES

CRUTCH	6%
STICK	87%
NONE	7%

TABLE NO. 2 DEPENDENT AND INDEPENDENT WITH ASSISTIVE DEVICES OUTSIDE THE HOME

DEPENDENT AND INDEPENDENT WITH ASSISTIVE DEVICES OUTSIDE THEHOME	%
DEPENDENT	87%
INDEPENDENT	13%

TABLE NO. 3 AVAILABILITY OF THE BASIC FACILITY AROUND THE HOME

ACCESSIBILITY AROUND HOME	%
CONVENIENT	27%
INCONVENIENT	73%

TABLE NO. 4 AVAILABILITY OF THE BASIC FACILITY AROUND THE HOSPITAL

ACCESSIBILITY AROUND HOSPITAL	%
CONVENIENT	100%
INCONVENIENT	0%

TABLE NO. 5 AVAILABILITY OF THE BASIC FACILITY AROUND THE BUS STOP

ACCESSIBILITY AROUND BUS	%
CONVENIENT	17%
INCONVENIENT	83%

TABLE NO.6 ALIGHTING AND CLIMBING BUS

ALIGHTING AND CLIMBING BUS	%
YES	7%
NO	93%

TABLE NO. 7 USE OF OWN AND PUBLIC VEHICLE FOR TRANSPORTATION

TRANSPORTATION	%
OWN VEHICLE	30%
PUBLIC TRANSPORT	70%

TABLE NO. 8 :- TYPE OF TRANSPORTATION USED

AUTO(PUBLIC)	63%
BUS(PUBLIC)	9%
TRAIN	2%
BIKE(OWN)	15%
CAR(OWN)	11%

TABLE NO. 9 CAN SAFELY MOVE ON ROAD

CAN MOVE SAFELY ON ROAD	%
YES	37%
NO	63%

From Table No. 1, it was found that, 93% of the population is dependent on assistive devices. Among them 87% of patients were using stick and 6 % of them were using crutch, 7 % of the population not using any type of the assistive aids.

From Table No. 2, it states that, among 93% population who used aids, out of that 87% of the patients were dependent on assistive advices outside the home and remaining 13% of the patients were independent on the assistive devices outside the home From Table No. 3, it was concludes that 27% of the population was convenient with the basic facility available around the home and 73% of the population is inconvenient.

From Table No. 4, it was found that 100% of the population was convenient with the availability of basic facility around the hospital.
From Table No. 5, it was found that 17% of the population was convenient with the basic facility around the bus stops and remaining 83% of them were inconvenient.

From Table No. 6, it states that 7% of the population in the study could climb the bus and remaining 93% of them could not climb the bus.

From Table No. 7, it states that 30% of the population was using their own vehicle for transportation and 70% of the patients were not using their own vehicles for transportation.

From Table No. 8, it was concluded that among 74% of the population who are dependent on government/Public transportation out of that 63% were using auto, 9% were using bus and 2% train. And from 26% of the patients who are using their own vehicles among them 11% use their own cars and 15% use bike,

From Table No. 9, it was found that only 37% of the population could move safely on the road and 63% of the population could not move safely on the road.

DISCUSSION:-

57 for semi-ambulant (lower limb impairments) disabled with impairment in one or both LL with or without UL impairment with mean age 33.2 ± 5.2 yrs were participated in the study including 26 female and 31 male.

From the above study, we obtained that, 93% of the population was dependent on assistive devices. Among them 87% of patients were using stick and 6 % of them were using crutch and 7% of the population not using any type of the assistive aids. Out of all 93% of the participants were dependent on the Walking aids when they were moving in the public places, in that 87% of the participants was using assistive aids while moving out because they have a fear of falling down on road due to uneven surface and architectural problems for the functionally disabled patients and remaining 13% of the patients were

independent on the assistive devices outside the home.

(Fig:-1-foot path with broken paving blocks,2-footpath and road with obstacles,3-foot path with uneven surfaces,4-foot path with drainage lid obstruction,5-foot path without kerb,6&7-road corner without footpath facility,8-footpath with uneven slope in the entrance,9-footpath area used for parking,10-blocks ,stone, rough road in front of stairs entrance area,11-stairs without railing & footpath used for parking vehicles,12-stairs without railing inaccessibility to shops) 27% of the population was convenient with the basic facility available around the home and 73% of the population is inconvenient.100% of the population was convenient with the availability of basic facility around the hospital. 17% are convenient with the basic facility around the bus stops and remaining 83% of them were inconvenient. The study also shows that 83% of the patients were inconvenient with the lack of facilities available at and around the bus stops like railing near steps, ramp and non-slippery floors/uneven floors and for the patients who use crutches cannot climb the bus easily. 17% of the participants, who were independent and are without assistive devices, were convenient with the accessibility around the bus stop. [5]

Among 74% of the population who were dependent on public transportation, 63% were using auto and 9% only are using Government Bus facility those who could climb the bus. So 63% of the participants prefer to use auto as less distance to walk and easy to move in and out of the auto rather than bus. The distance between the road surface and the first step of the bus is too high and they find it difficult to climb the bus with assistive devices. 2% people were using train facility due to more distance to travel, they had problem in alight the train in stipulated duration through the crowd which were the most difficult task for them daily. Again distance from entrance to the train through platform was more.so only 2% prefer for train facility. A small compartment made available for the disable people.

(fig:13-bus stop without railing,14&15-bus stop without railing and high step on entrance,16-narrow crossing area for bus accessibility with uneven slope ,17-foot path used for parking vehicles,18-uneven surface for crossing walkway with narrow barriagators,19-bus door with high first step,20-crossing square area,21- long distance to cross in square) 26% of the populations were using their own vehicle for transportation and 74% of the patients were using public transportation. And from 26% of the patients who are using their own vehicles among them 11% use their own cars and 15% use bike. They prefer to use their vehicle as they had difficulty in getting in & out of the public transport, and difficulty in moving toward the bus stop.

The disabled people face more challenges and difficulties while travelling and using the public transport. Therefore, it becomes increasingly difficult to ignore the disabled issues while using the facilities of the public transportation. [6]

The low heights of the first step, width of the door, railing near the steps in the buses are required. These facilities will help the participants to walk and climb the bus easily.

In the study, 37% of the patients can safely move on road and 63% of the patients cannot move safely on road. 63% of the patients avoids going out in shops, malls, public places because they do not find the environmental Situations comfortable and 37% of them go because as they can manage with the existing environmental Situations. Non availability of ramp, railing for steps, non-slippery floors, foot path, crossing around the road had made the inconvenient environment for physical disabled person.

8% population left the job due to inconvenience in travelling with public transport as some of them were the main earning member of the family. The public transport was not accessible to travel from home to working place. Crossing chowk was the most challenging task as they could not cross the signal in stipulated duration and heavy traffic made them scarier. The 100% participants were satisfied with the basic facility around the hospital area according to participants, which was not true.

So if the situations in the environment are made accessible for patients who was working employee will be able to continue with their jobs. Enabling disabled people to overcome their handicap by providing a system that replaces what they lack is what makes such a work interesting and important. [7]

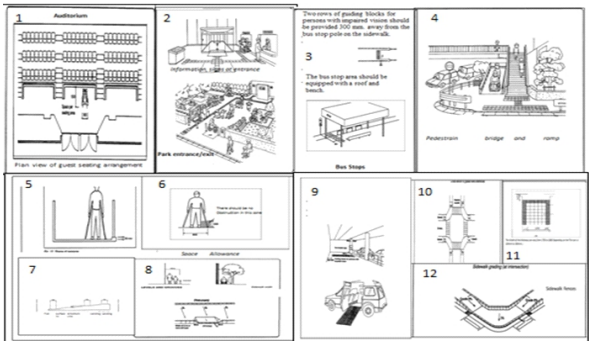
16% people expressed that the work places are not accessible. The work places do not have some basic facilities including, railing for stairs due to that they cannot climb the stairs with orthosis. So some of them discontinued using orthosis. 1% participants had a fall on road as the orthosis was stuck in the drainage cover and got fracture in upper extremity. After that incidence the person stopped using orthosis. According to 77% people foot path facility were not accessible, and 13% conveyed for non-availability foot path , 60% agree for occupied hackers or using for parking, few places completely destroyed, few places difficult to reach due to high kerb and trees. 6% of the participants with polio were stop using orthosis when moving in the environment due to lack of facilities. Road were completely uneven, foot path has broken bricks, uneven, not properly accessible to stairs and shops, without kerb line, not connecting to roads. Disabled people have anxiety to move outside in the environment and completely dependent on assistance for moving out due to inaccessibility.

Mobility impaired populations have been widely ignored in the past, but in recent years have begun to wage a campaign for equality. This includes equitable opportunities for employment, equitable access to education, and equitable access to goods and services. All of this requires a minimum degree of access to the places where employment, education, and goods and services may be found. [8]

Accordingly, barriers are those aspects of the built environment which lessen a disabled person's access. They may be parts of buildings, landscaping, walkways, or parking areas, and include high curbs, lack of curb cuts or ramps, gravel walkways, narrow sidewalks, extreme variations in the grade of walkways, debris which interfere with passage along sidewalks, narrow doorways, heavy doors requiring excessive force to open, and insufficient parking. [9]

But due to lack of services available in form of public transport, it's difficult to resume back to job or approaching to the health care Centre or moving in the public places for basic need / recreational purpose limits the participation of person in the society and he became dependent for the same. Due to lack of facility for government transport, patients are facing financial problems. They have to spend more money on auto or other for transportation.

Accessibility means availability of even surfaces on road, availability of foot path, width for the crutches @900 mm, kerb ramp and tread, risers, railing facility near bus stop, non-slippery floor in bus stop area, ramp facility, road crossing facility, pedestrian bridge, park entrance and exit, levels and grooves, availability of longitudinal walk gradient, slope and ramp facility with rail, convenient intervals with spaces and bench seats, safe crossing roads, guiding block, accessible bus stop/stand, accessible sub way/over Bridge, accessibility in and around the buildings , public and work places.(fig) [3,4,10,17-41]



(fig-1-Auditorium,2-park,3-bus stop,4-pedestritian brigde,ramp,5-width of foot path,6-space allowance for crutches,7-flat surface, landing,8-levelsand grooves,9-taxi stand, space for wheelchair,10-pedistration chowk,11- width of walkway,12- side walk grade.) So, when deciding which barriers to remove first we suggest that you first provide access to the business from public sidewalks, parking and public transportation and then provide access to the areas where goods and services are made available to the public.

Removal of architectural barriers in evaluating what barriers need to be removed, a business sshould look to the ADA standards for accessible design as a guide. These standards are part of the ADA title 3 regulation seeking input from people with disabilities in your community can also be an important and valuable part of the barrier removal process because they can help identify barriers in your business and after advice or what solution may work. [10]

Act Concerning Support and Services for Persons with Certain Functional Impairments, to promote the rights of people with disabilities in certain areas such as housing, education and provision of goods and services.[11]

The Promotion of Equality and prevention Of Unfair Discrimination Act is a comprehensive South African anti-discrimination law. It prohibits unfair discrimination by the government and by private organizations and individuals for functionally disables patients.[12]

Environmental And Architectural Barriers, people with physical impairments were not generally expected to participate in day to day life. Many were cared for by family or institutionalized. Few were expected to hold jobs outside the home, if at all. The situation began to change for a number of reasons, one of the most important being improved medical care.[13]

Architectural Barriers to the Participation of Disabled Persons in Community Recreational Activities were the willingness of the agencies to accept different types of disabled persons into their recreational programs paralleled their precepts of the adequacy of their facilities. Severely disabled persons would have a difficult time functioning in the recreation programs of many of these agencies because of architectural barriers. It is suggested that these organizations need help from rehabilitation specialties in evaluating and modifying their physical structure so that disabled persons may have greater freedom to participate in their programs.[14]

Accessibility is more important in daily life especially when dealing with external and internal environment. Realizing that 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. It has been widely accepted that disabled people, have fewer opportunities and lower quality of life than non-disabled. The disabled people face more challenges and difficulties while travelling and using the public transport. Therefore, it becomes increasingly difficult to ignore the disabled issues while using the facilities of the public transportation.[6]

There are great differences between people with disabilities and their able-bodied counterparts. They choose forms of recreation not involving substantial financial inputs. As fares, availability and accessibility have the strongest impact on leisure activities. Disabled people with a lower level of mobility choose the attractive outskirts of the city where the opportunity for open air recreation exists, or else spend their free time visiting relatives and friends.[4]

So the government Facilities provided should be made with minimal barriers and they should have easy accessibility at all levels including schools, medical facilities, and workplaces.[15] 'Sugamya Bharat Campaign' is a good step in the same direction. [16]

CONCLUSION:

The above study, conclude that, 93% of were dependent on the Walking aids when they were moving in the public places, 83% of the patients were inconvenient with the lack of facilities available at and around the bus stop, 63% of the patients avoids going out in shops, malls, public places because they do not find the environmental Situations comfortable, 8% participants left the job due to inconvenience in travelling with public transport. 16% people expressed that the work places are not accessible. Changes in the environmental architecture can improve the quality of life of many patients with disabilities.

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LIMITATION OF THE STUDY:-

Sample size is less and limited types of impairments are included in the study.

FURTHER SCOPE OF STUDY: - with Large Sample size, study should carry out on spastics and non-ambulatory disabled persons, neurological patients.

CONFLICT OF INTERST: - There were no conflict of interest
FUNDING: -Funding done by self.

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