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Hurdling Barriers: Exploring Inaccessibility in Higher Education Institutions for Mobility Assistive Device Users

Muhammad Taqveem Ashraf[1] & Dr Rahla Rahat[2]

[1]M. Phil Scholar, Institute of Social and Cultural Studies, University of the Punjab, Lahore, Pakistan
[2]Assistant Professor, Institute of Social and Cultural Studies, University of the Punjab, Lahore, Pakistan

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ABSTRACT

This article explores the challenges faced by students with disabilities using mobility assistive devices i.e., wheelchairs or crutches, in a large public-sector urban higher education institution. Cities are characterized by their rapid pace and complex infrastructure, such as buildings, roads, and public spaces, that present unique obstacles that hinder these individuals' mobility and overall experiences. For this qualitative study, the locale chosen was a large public sector university, and data was collected from 10 students with disabilities who use wheelchairs and other mobility assistive devices and reside in the campus student accommodation. The data was collected through in-depth interviews and analyzed using thematic analysis. The findings indicate that the infrastructure on campus is not accommodating for students with disabilities who use mobility aids, which directly and indirectly impacts their educational experiences. In addition, the university lacks a uniform policy for providing services and allocating resources for students with disabilities. The participants believe that the university is indifferent to their needs; however, the facilities and behaviors within departments vary and at times can be quiteenabling. This study contributes to the ongoing dialogue on enhancing accessibility, inclusivity, and equity within our urban educational landscapes.

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1.0 Introduction

Higher education institutions are primarily located in urban areas throughout Pakistan. These institutions attract a wide variety of students seeking academic aspirations. The urban environment, with its frenetic pace and complex infrastructure of buildings, road systems, and public spaces, poses unique challenges for students with disabilities who rely on mobility-assistive devices such as wheelchairs, crutches, and other assistive equipment. The mobility and, consequently, the overall educational experience of individuals with disabilities are significantly influenced by these obstacles. In addition, it discourages coexistence in cities that serve as cultural, social, and economic spaces for a diverse population by excluding this vulnerable group (Ocejo, 2020). Cities must be designed so that all of their inhabitants are included without discrimination (Dastrup, 2015). However, cities frequently fail their residents because the diversity requirements are unmet. When designing built spaces, the standards for inclusion are not taken into account, which diminishes the service provision to certain social groups.

People with disabilities are the most vulnerable category among those affected. The urban design does not facilitate them; the built spaces are not user-friendly, there are transportation barriers, and eventually, participation in life's activities becomes impeded (Baranzelli et al., 2021). A good city is one that helps to facilitate the people and provides inclusive space for all, which paves the way for exploring the potential for development. The institutions in the cities are also affected by the overall city dynamics including educational institutions. The marginalization of a group often relegates it to a stage where its functioning is challenged. The structures must serve as facilitators for the performance of social functions, but more often than not, minority groups are not catered to. Disability statistics indicate that one billion out of eight billion people had a disability in 2022 (Nations, 2022) and one in six in 2023 (Disability, 2023), making disability-friendly spaces both a moral and practical obligation.

Goal 11 of the Sustainable Development Goals seeks to enhance the sustainability, safety, and inclusivity of human settlements. This is crucial for vulnerable groups in cities, including people with disabilities. Reports show that more than 15% of people with disabilities are forced to live in unsuitable housing (Nations, 2017). Similarly, Goal 4 of the Sustainable Development Goals promotes inclusive and equitable quality education for all. The goal is to improve access, and target 4.5 exclusively deals with the need to eliminate any discrimination, such as against people with disabilities. Moreover, target 4.8 emphasizes the improvement of the education facilities and buildings to be sensitive to disabilities (United Nations, 2023).

In addition to the design of built spaces, urban sprawling poses challenges and increases reliance on transportation (Mouratidis, 2021). People with physical disabilities have a difficult time commuting to obtain the necessities of life. A study by the Asian Development Bank (2012) attributes 36 percent of the obstacles faced by people with physical disabilities to the tangible infrastructure and more than 64 percent to the means of transportation that is inaccessible to a large population. In a city with a poor transportation system, where reliance on it is not an option but a necessity, accessing life's essentials can become highly problematic. Transportation is just one of the many issues that can make living more challenging and intimidating. Thus, living in a city that

does not meet the needs of every individual and creates difficulties in their daily lives.

This study examines the obstacles encountered by individuals with physical disabilities using mobility assistive devices who reside and study in a higher education institution in an urban area. The concept of accommodating people with disabilities in urban environments is discussed with a focus on urban mobility. The study also discusses how to access built environments such as buildings and roads, as well as how to facilitate access within buildings such as the dining areas and restrooms, with mechanical access and staircases.

2.0 Literature Review

The literature reviewed for the study encompassed a comprehension of disability as a phenomenon as well as the philosophy of access in urban spaces. Along with it, the interaction of people with physical disabilities with the urban spaces and exploring the issues faced in the process of urban mobility. The literature helped to comprehend the sociology of infrastructure from the perspective of people with physical impairments. Theorists have examined and subdivided the concept of disability into social, biological, and psychological components (Leitef, 2018). However, the sociocultural context is the most pertinent literature regarding the study under discussion. People with disabilities are viewed as a subgroup of a larger population and are viewed as such in many instances, particularly when attempting to comprehend their identity.

Gleason (1991) has argued that the identity of people with disabilities was viewed as a deviation from the ideal due to the influence of the wave of liberalism, in which cultural pluralism was praised and ethnocentrism was minimized. Other theorists, with Louis Wirth being the most prominent, argue that considering people with disabilities to be a minority explains why they are subject to unequal treatment by the majority (Wirth, 1964). People with disabilities are stigmatized which emphasizes the socially constructed nature of disability (Goffman, 1963). The social conditions, such as the mode of mobility, income, and institutional design, do not accommodate the needs of individuals with physical disabilities. It also demonstrates that it is a socially constructed disadvantage, as the impairment is universally constant, whereas the challenges posed by the impairments vary (Retief, 2018).

Block refers to this issue that varies with the infrastructure as the "Theology of Access" (Creamer, 2016). Eiesland has established the basis for his argument regarding Block's proposal (Leitef, 2018), he argues that social structures must be created so as to not discriminate against any group. The social model emphasizes disability as an experience resulting from the interaction between individuals with disabilities and physical infrastructures. As the importance of physical infrastructure rises, the design of urban spaces within the context of the social model of disability becomes increasingly significant. Following the Fibonacci sequence, the ideal design of cities should accommodate human diversity without impeding the accomplishment of daily tasks. However, the design of urban spaces failed to accommodate children, women, and the elderly, let alone individuals with physical impairments (Degreas, 2022). It allows us to support the social model that the city, not the individuals, is disabled.

The concept of the "city for all" affirms that city planning must be inclusive. Nonetheless,

as Gleeson (2001) contends in his paper, 'Disability Discrimination' exists. Oliver (1990) argues that the design compels individuals to be inadequate, and unable to contribute or participate. Gleeson has enumerated obstacles that pose multiple problems. Physical factors, which include staircases, pavements, and entry and exit points, are the most important (Gleeson, 2001). Urban mobility is an essential issue, among others (Mwaka, 2023; Murray, 2002).

The requirements of people with physical disabilities are frequently neglected, despite the fact that urban mobility has a significant impact on urban livability Kapsalis et al., 2022; Hall, 2001). According to Salama (2022), inclusive designs can bring life closer to the requirements of humans, which makes the environment safe for people to exist effectively. Iwarsson and Stahl (2003) emphasize the importance of understanding universal design (Mace, 2019) in order to enhance the person-infrastructure relationship. Iwarsson et al. (2003) state that a modest effort, such as lowering the floor of vehicles, can at least begin the process of giving individuals with disabilities independent mobility. This debate enables us to probe into the sociology of infrastructure, which asserts that there exists a social infrastructure to the public infrastructure (Park & Chowdhury, 2022; Gamson, 1985).

The guidelines by the United Nations also assert that the ramps are needed, followed by tactile tiling and guide strips. The sidewalks must serve the purpose of the pathway for people with limited mobility as well as pedestrians (Malloy et al. 2017). It allows us to emphasize that the design of the sidewalks must facilitate the needs of all (Boodlal, 2011). The level of approach to the mass transit systems must be accessible with limited aid (Foundation, 2018). In addition, mechanically assisted access must be a fundamental requirement within the buildings, and the call button must not be more than 1000 mm above the floor (Tam, 2022). The minimum space for wheelchair users to access a counter is 900 to 1200 millimeters; similarly, the unobstructed opening for a door must be at least 900 millimeters (Foundation, 2018). The ramps must be 1200 mm long and have a resting area every 6 meters (Sanatosa, 2023).

In enclosed built spaces, the design of the restrooms also poses certain problems which is another basic necessity of life. The restrooms must have signage, and the entrances must open in both directions with a minimum of 900 mm of clear space. The drawbars must not exceed a distance of one meter (Foundation, 2018). A minimum space of 2200 mm is required for motorized and manual wheelchairs to pass through with ease for simple access. According to the Foundation (2018), the placement of the fixtures must not impede mobility. The reviewed literature and defined guidelines have emphasized the need for infrastructure to be human-centered, paying special attention to the needs and requirements of the structurally marginalized population, including persons with disabilities (Park & Chowdhury, 2022). In addition, the transportation facility must be accessible (Laporte et al., 2011), and the municipal environment must ensure that all residents enjoy a life that is equal, accessible, and safe.

The theoretical framework used for this study was primarily founded on the theories of Michael Oliver, Ronald Mace, and Kimberlé Crenshaw. It assisted in elucidating the social model of disability and the significance of the design in terms of its utility, which either aids or hinders people with disabilities. Michael Oliver contends in his book 'The Politics of Disablement' that

disability is not merely a physical or medical phenomenon but also has a social aspect. The social paradigm emphasizes that individuals are not disabled; rather, it is the infrastructure that renders them so (Oliver, 1990). The social model emphasizes that physical barriers prevent people with physical disabilities from functioning as physically abled individuals.

The other theory used as a basis was the Universal Design theory by Ronald Mace. He asserts that city design is extremely important, but its role becomes even more important in creating an inclusive and equally participatory environment. The Mace principles advocate for theflexible and effortless use of built spaces that require minimal physical effort. It also provides a margin for error, making it simpler for the already-built spaces to conform to the specifications (Mace, 2019). Lastly, the 'Theory of Structural Discrimination' by Crenshaw (Coaston, 2019) served as the prism for this study through which urban design and the challenges encountered by people with physical disabilities were analyzed. The marginalization of a certain segment of society is a product of oppression, in which the people at the intersection face its brunt the most. People with disabilities are not an exception to it, particularly in terms of urban planning. It relegates this group to the point where they are unable to contribute to society, diminishing their chances of overcoming the obstacles (Ocran, 2022).

3.0 Methodology

The methodology of qualitative research has been utilized to carry out this research. The purpose of the study was to obtain a comprehensive understanding of the lived experiences of students with physical disabilities who attend and reside in a higher education institution in a large city and make use of mobility-assistive devices such as wheelchairs and crutches. A large public university in the city of Lahore was selected to recruit ten participants. The participants were selected through purposive sampling, which refers to collecting a sample because they have a certain characteristic (Bhardwaj, 2019). The inclusion criteria included the following: i) having a mobility-limiting impairment and using mobility assistive devices, such as a wheelchair or crutches; and ii) being enrolled at the selected institution and residing there for at least six months. It was made certain that the sample included people of both sexes and that there was a balanced representation of wheelchair and crutch users.

The interview guide with open-ended questions was developed to address the research questions. The participants were located through students and the hostel administration. The time and place of the interviews were decided at the convenience of the participants. The in-depth interviews were audiotaped with the permission of the participants. Both languages; Urdu as well as English were utilized over the course of the interviews. The audio interviews were transcribed and translated. While the interviews were being transcribed, great care was taken to ensure that the participants' experiences were accurately conveyed in their entirety while also preserving their context.

The data were put through a thematic analysis, which allowed for the discovery of a recurring theme within the qualitative information. The codes were deciphered and then arranged into categories. The codes were then framed into the thematic analysis, and interpreted in the

purview of the reviewed literature. From the perspective of the designed infrastructure, the experiences of the participants were also cross-checked by personally visiting the hostels, departments, and related facilities, to improve the understanding of the challenges and analyze them in a way that could be structured in the framework of the study.

4.0 Results

The purpose of this research is to investigate the lived experiences of students with disabilities who make use of mobility-assistive devices while attending classes and living on campus at a public institution of higher education in Lahore. The outcomes of this research may be broken down into two major categories, which are the individual's lived experiences both indoors and outdoors on campus. The outdoors within campus includes roads, sidewalks, curb ramps, and the university transportation system. On the other hand, the indoors on campus include the academic and residential buildings, in addition to other buildings of significance suchas banks and eating places on campus.

Mobility within Buildings

The design of the built environment necessitates it to be accessible to all, but based on the experiences of the study's participants, the structures on campus largely fail to meet that requirement. However, the facilities and experiences varied across buildings. The data reveals how obstructions, barriers, and impediments within buildings impede the accessibility of people with disabilities.

Ramps, Stairs, and Doors

Ramps, railings, elevators, and light doors greatly facilitate access to and within buildings; similarly, elevators improve access between floors of the buildings. Access to the ground floor is generally manageable, whereas access to the upper floors becomes challenging or impossible. One of the participants who uses a wheelchair said:

> *“My department is accessible because it is a single-story building. Additionally,it has a ramp at the entrance making it convenient. However, in many buildings across the university, there are no ramps, while some are not constructed properly, for example, the ramp at the Bank is very steep, making it unsafe to use.”*

Similarly, a wheelchair-user participant from another department stated:

> *"My department is Special Education, so the administrative staff is aware of and sensitive to the requirements of individuals with disabilities. We have ramps that are appropriately constructed, so I have no difficulty accessing the classrooms."*

The crutches-user participants had additional concerns. One participant mentioned the dearth of physical support i.e., railings on the sides of ramps or stairs, stating:

> *“I am comfortable with both ramps and stairs. I only require a handrail to supportmy weight. Nevertheless, many structures lack railings. Additionally, it is essential to have railings inside the restrooms.”*

The findings indicate that ramps are essential for building access, but their mere presence is insufficient; they must be constructed according to specifications. For instance, professionals recommend that ramps must be at least 1200 mm in length and at a specific angle (Mace, 2019).

Participants did not identify ramps on campus as a major concern, as they were constructed in the majority of buildings and only a few were constructed improperly, including their steepness and lack of side railings.

The absence of elevators was an issue that affected both wheelchair and crutches users. One of the participants stated, "The elevator issue is not as significant in departments with one or two stories, but it becomes significant in departments with three or more stories." However, the issue was more substantial in the residential buildings, where a small number of participants, both male and female, resided on the second and third floors. One of the crutches users stated:

> *"My room is on the second floor because I was unable to get the room allocated onthe ground floor. The hostel building does not have an elevator or ramps, so I have to takethe stairs for small errands. Even last night, I had to fill my water bottle from the ground-floor water cooler."*

Wheelchair users also require specific door types. The ideal doors for wheelchair access should be at least 850 mm wide so that users do not have to reach through a large angle to open or close the door, and there is no risk of a sliding door slamming shut unexpectedly. Participants were questioned about their experiences with door designs.

Some participants had no problems with doors in general, while others encountered difficulties with doors in campus buildings. A participant expressed his displeasure by stating:

> *"Some doors are too difficult to open or swing inward, making it difficult for me toopen them while seated in a wheelchair."*

In addition, the interior space of the buildings, including classrooms and laboratories, must be wheelchair-accessible. This problem is exacerbated by doors that only open in one direction, preventing room access and egress and making it difficult to open the door. A crutch-using participant stated:

> *"The doors* are *large enough to pass through easily, they are standarddoors, and I do not consider it a problem, however the direction of a door's aperture is a significant barrier*".

Toilets and Bathrooms

The design of bathrooms and toilets must prioritize universal accessibility by minimizing the number of unnecessary steps and strategically positioning helpful handles. In universities, it is also necessary to have infrastructure that at least meets the minimum standards. However, according to data, the toilets in departments and bathrooms in hostels do not come close to fulfilling this minimum requirement at the selected university. A male wheelchair user shared:

> *"The washrooms area of my hostel has a step when we enter. The toilets have commodes installed, which make it easy for me to use, however, the bathing areas have a step to enter, for which I have to step off my wheelchair. Along with that, there are no handles or bars that I could use for my support."*

Another wheelchair user expressed:

> *"The space of the bathrooms is not much; it makes it impossible for me to take the wheelchair inside the toilet. I have to ask my friends and at times strangers for help. It becomes awkward and embarrassing."*

A female wheelchair user also shared her plight:

> *"There are steps in the bathroom. I have to crawl to access the bathrooms. I thinkeveryone knows the conditions of public toilets and bathrooms, they are wet and dirty so it is unhygienic and disgusting but what choice do we have."*

The wet toilets are a challenge for the participants who use crutches, as it makes it slippery for them in addition to being unhygienic. A participant who sometimes used an artificial leg highlighted:

> *"The bathrooms are always wet and unhygienic, which makes the chances of crutches to slip higher. Also, there is no place to sit in a bathing area making me lose my balance many times."*

Lastly, many participants complained that the toilets on campus have no commodes installed and only squat toilets are available. These squat toilets do not have handles or railings onthe sides to assist in sitting and getting up.

In conclusion, there are some basic facilities that are required by people with disabilities using mobility assistive devices on campus. These include ramps, rails around stairs, and in toilets and bathrooms, and the type and size of toilets. The campuses need to be designed to be inclusive and safe and maintain the dignity of everyone.

Mobility in the Outdoors

The design of public spaces has a significant effect on the mobility of all individuals, including those with disabilities who use mobility assistive devices. This extends to the design of roads, which play a crucial role in meeting the requirements of individuals with disabilities who use such devices. Frequently, the difficulties presented by these roads mirror those of Lahore's broader urban landscape. This includes not only the design of roads but also the planning of footpaths and the accessibility of public transportation vehicles, such as buses.

Roads

Most public-sector universities, including the research site, feature sprawling campuses that cover acres of land. Therefore, students, particularly those who live on campus, must traverse vast areas to meet their basic needs, including travel between hostels, academic departments, shopping centers, dining establishments, and essential services such as banks. The experiences of the participants corroborate the notion that the extensive configuration of the built infrastructure, particularly the abundance of buildings, has made walking commutes difficult. This difficulty is most pronounced for those utilizing wheelchairs or supports. A participant who uses a wheelchair described his daily commute as follows:

> *"My usual mode of transportation is an electric wheelchair. I reach my departmentby slowly traveling along the sides of the roads. It takes a considerable amount of time andis quite exhausting, particularly during the hot and humid summer months."*

In contrast to the experiences of wheelchair users, those of crutch users were vastly different.

> *"My daily routine involves a significant thirty-five-minute commute to the department."*

Another female participant stated that: she, too, uses a wheelchair for conveyance, albeit a manual one. She stated:

"I use my manual wheelchair to get to classes, and I travel on the road's shoulder.I have been involved in two near-collisions on a busy road but was uninjured each time. Without sidewalks, the road does not offer a safe environment for wheelchair users."

In these situations, the majority of participants seek assistance from their hostel mates or classmates. This strengthens their mutual dependence. For instance, a male participant stated:

"There is no transportation option available for individuals like me, so I sometimeshave to ask a friend to drop me off at both the department and the hostel." However, whenmy companion is absent, I also miss class. It is quite challenging."

Because the campus design and services have failed to accommodate crutches users, they experience a sense of disability as a result of the difficulties they encounter. Another male participant described his experience:

"I walk with crutches. However, I cannot travel long distances, so I ask a friend or, failing that, a stranger for a ride."

In contrast, female students with disabilities in comparable circumstances confronted even greater apprehension because they lacked comparable alternatives. The female students living in the hostel in most cases do not have personal transportation for cultural reasons, unlike the male students who typically have a motorcycle. Likewise, they cannot commute with strangers due to security concerns. Additionally, the campus restricts the entrance of private rickshaws due to security concerns. All of these factors, however, make campus mobility problematic for most students with physical disabilities, especially female students who rely solely on university bus services.

Campus Transport

Higher education institutions have a fundamental responsibility to provide inclusive services that meet the diverse requirements of all students, including those with disabilities. The selected university has extensive bus service; however, the current transport infrastructure does not adequately accommodate the requirements of students with disabilities. The findings disclose multiple obstacles, such as the lack of ramps for wheelchair users to board and exit the bus, the absence of designated seats, the distance between bus stops, and the absence of seating arrangements at bus stops, etc.

The issue of overcrowding on buses makes it uncomfortable for everyone especially difficult for those with mobility impairments. In addition, there are no seats or spaces designated for people with disabilities, which can cause discomfort and insecurity during travel. The lack of wheelchair ramps makes it virtually impossible for students in wheelchairs to board the buses independently. In addition, the prevalence of high steps at bus entrances creates a discouraging and possibly dangerous situation for crutches users and those with mobility issues. It is essential to address these issues to ensure that all students, regardless of their abilities, have easy and dignified access to the university's transportation services. In addition, participants were concerned about the distance and proximity between bus stations. According to one participant:

"The distance from the bus stop to my hostel is enormous, so I have to walk a considerable distance. Unfortunately, the problem with transportation services for individuals with disabilities does not end here."

Across the world, the buses facilitate the users by docking at a bus stop which could make the entry and exit of the passengers easier (Mace, 2019). However, this is not the situation with the university buses in operation. Another participant gave the following explanation for avoiding the use of buses:

"I must use my wheelchair because I am afraid of being injured on the overcrowdedbuses. In addition, the drivers are in a hurry, so I doubt they would wait for me to enter. Afew times when I did use it, everyone was in a hurry to get in, so they pushed me. The conductor repeatedly urged me to board the bus faster."

A female wheelchair user also stated:

"I use the transportation service frequently because one of my knees functions normally. I ascend using my knee, but I require assistance with my wheelchair. Otherwise,I require no assistance. Because they are too crowded, I do not use bus service for my dailycommute."

In conclusion, the personal experiences shared by participants underscore the urgent need for improvements in both the infrastructure and the attitudes of those involved in the bus service. Addressing these issues is not only a matter of convenience but also a matter of ensuring that all students can access the university's transportation services with the dignity and ease they deserve. It is imperative that the university takes proactive steps to rectify these shortcomings, fostering a more inclusive and supportive environment for all its students.

Footpaths

Pedestrian-friendly footpaths are essential for the mobility, safety, and inclusion of all road users, including those with restricted mobility. Movement barriers within the pedestrian environment may include curbs, steep slopes, obstacles within the path (poles, etc.), and widths too narrow to move through. Participants shared a number of barriers and enablers they confronted while moving around campus because of the design, quality, or absence of footpaths including the leveling, breadth, curb design, and slope of roads. One participant stated:

"Mobility issues affect people from every walk of life and for a variety of reasons. Sometimes the condition is transient, while other times it is permanent. The campus administration's complete indifference to these issues has rendered many roads and footpaths inaccessible."

Many participants discussed the problems with footpaths. The majority of participants viewed them as ineffective and inaccessible, so they used roads instead. One shared:

"If you glance around, you will notice that the footpaths have many issues. For instance, the majority of footpaths in the older part of campus are tiled, but the tiles are loose, tilted, or cracked, and there are large gaps or tree roots pushing between them. Thiscreates difficulties for individuals using a walker, cane, or wheelchair."

Another difficulty identified by the participants was the barriers and obstructions in the center of the footpaths that prevented wheelchairs from passing. These included enormous departmental signboards, electricity poles, and trees. A wheelchair user remarked:

> *"There are numerous large signs placed in the center of the sidewalk. The funniest(stated sarcastically) thing is the one in front of the Chief engineer's office. The building regulations should be familiar to the engineering department. They are responsible for ensuring that all campus buildings comply with regulations."*

Similarly, another participant stated:

> *"I understand that we should protect trees and not take them down, but they cannotobstruct the walkways. Those who construct roads should be the experts in this area. Theymust be circumventable. Some people argue that the roadways on campus are quite wide,so there is nothing wrong with using the side of the road. However, these roads are quite dangerous due to the speeding drivers in the area."*

Lastly, the participants highlighted the difficulties associated with curb ramps. A person using a wheelchair, scooter, walker, or other mobility device may find it challenging or impossible to cross a street if the footpaths end without a curb ramp. One participant who uses a wheelchair elaborated:

> *"It is challenging to enter and exit a footpath without an incline at each end. However, few footpaths are designed in this manner, compelling us to use the roads."*

In conclusion, pedestrian-friendly footpaths are essential for safe and inclusive mobility, particularly for those with limited mobility. On campus, participants identified a variety of issues, such as problematic curb designs, steep slopes, obstructive obstacles, and limited pathways. Due to the campus administration's indifference to these issues, many students believe that footpaths are inaccessible, compelling them to use roads despite the inherent dangers. Large signboards and trees that obstruct footpaths exacerbate the problem, and the absence of curb ramps at the extremities of footpaths hinders accessibility. Addressing these issues is essential for establishing genuinely inclusive and secure campus environments for all individuals, regardless of their mobility, and campus administrators must prioritize proactive solutions.

Discussion

This study was conducted to determine the challenges encountered by students with disabilities who live on campus in terms of accessibility within campus buildings and outdoors. The accessibility and free movement of students is prerequisite for a conducive environment in educational institutions that will enable students to get quality education while maintaining their health and well-being. The findings reveal that students with physical disabilities using assistive devices are a diverse group with a variety of challenges depending on their disability, personality, resources, and institutional affiliation. Yet many of them also had some common problems as well such as transportation.

There was no unified policy for students with disabilities and the services and facilities vary from department to department many times depending on the head of the institution. The data is divided into two themes: challenges in the indoors and the outdoors. The indoors include

building designs and services such as sizes and styles of doors, ramps, toilets, bathrooms, railings, stairs, and elevators. Previous studies show that individuals with disabilities are a vulnerable population because their most essential daily activities become difficult due to the infrastructure's design and the mobility facilities required to access it (Degreas, 2022; Baranzelli et al., 2021; Oliver,1990). The current study also shows that the structures, services, and behaviors on campus fail to meet the accessibility requirements, with obstructions, barriers, and impediments preventing students with disabilities from accessing facilities that are crucial for their academic success. Steep ramps, lack of mechanical access, and hard-to-open doors are significant issues for wheelchair and crutch users to reach classrooms, libraries, sports facilities, or banks on campus. The absence of elevators is more significant in departments with three or more stories, particularly in hostel buildings.

Studies suggest that mobility issues can hinder wheelchair users' access to social activities (Murray, 2002). The students using wheelchairs faced their own set of challenges of mobility as they, for example, require a specific width of doors that is large enough to accommodate a wheelchair entry into classrooms and toilets. The design of bathrooms and toilets must prioritize universal accessibility standards by minimizing unnecessary steps and strategically positioning helpful handles. The data revealed that the toilets in departments and bathrooms in hostels do not meet the minimum standards at the selected university. Participants shared that they use unsafe, unhygienic, dirty, and wet toilets and bathrooms with a lack of commodes seeking help from friends and strangers which made their experiences difficult and highly stressful for them. In conclusion, basic facilities required by people with disabilities using mobility assistive devices on campus include ramps, rails around stairs, toilets, and bathrooms, and the type and size of toilets. Campuses need to be designed to be inclusive, and safe, and maintain the dignity of everyone.

The design of public spaces significantly impacts the mobility of individuals, including those with disabilities who use mobility aids (Kapsalis et al., 2022; Murray, 2002). Roads play a crucial role in meeting the needs of these individuals, and the difficulties presented by these roads mirror those of Lahore's broader urban landscape. Most public-sector universities feature sprawling campuses, making walking commutes difficult, especially for those using wheelchairs or supports. This leads to a sense of disability for crutch users, who often seek assistance from their hostel mates or classmates. Female students with disabilities face even greater apprehension due to the lack of comparable alternatives, such as personal transportation, security concerns, and restricted entrance of private rickshaws.

The current transport infrastructure at the selected university does not adequately accommodate the needs of students with disabilities. This finding is consistent with that of the Asian Development Bank (2012), which found that a significant proportion of people with disabilities have very limited access to suitable public transportation. Obstacles include the lack of a ramp for wheelchair users to board and exit the bus, the absence of designated seats, the distance between bus stops, and the absence of seating arrangements at bus stops. The limited space inside overcrowded buses makes it difficult for individuals with mobility impairments to move around and find seating that meets their requirements. The absence of reserved seating in buses, bus

stops with seating, and the distance between bus stops within campus may furtherexacerbate the inconvenience experienced by those with mobility issues.

Participants faced challenges related to accessibility, such as travel time to bus stops, crowded buses, and occasionally insensitive conduct by other commuters and bus staff. These obstacles not only made it difficult for participants to physically access campus public transportation but also created a negative experience that discouraged their use of it. By addressing these issues, such as providing more accessible bus stops and educating bus staff about disability etiquette, we can ensure a more inclusive and welcoming transit system for all students.

The absence of designated seating areas for people with disabilities not only exacerbates their distress and inconvenience but also demonstrates the inadequacy of accessibility measures in university transportation services as a whole. In addition to designated seating areas, university transportation services should also consider implementing features such as wheelchair ramps and audio announcements to further improve accessibility. By taking these steps, universities can create a transportation system that prioritizes the needs of individuals with disabilities and promotes equal access for all students.

The study also recommended instituting training programs for bus drivers and personnel to increase their awareness and understanding of disability etiquette and appropriate assistance techniques. It also emphasizes a supportive and considerate attitude from transportation providers can significantly improve the overall experience of students with disabilities, thereby promoting a more inclusive campus environment. In the end, addressing these issues will contribute to the development of a university transportation system that is genuinely accessible to all individuals.

Pedestrian-friendly footpaths are necessary for the safety and inclusion of all road users, including those with limited mobility. Not only did these obstacles hinder the participants' ability to travel independently, but they also presented safety hazards (Park & Chowdhury, 2022). The current data also showed that inadequate curb ramps and inaccessible footpaths can increase the risk of accidents and falls for mobility aid users. In addition, their reliance on roads as opposed to footpaths exposes them to traffic hazards, which further jeopardizes their safety. In conclusion, addressing these issues is necessary for creating safe and inclusive campus environments that prioritize the safety and well-being of all students. Implementing measures such as widened footpaths, wheelchair-accessible stairways, and simple signage can greatly improve the pedestrian experience on campus. In addition, educating students about pedestrian safety and highlighting the significance of using footpaths can assist in altering their perspectives and encouraging them to choose safer alternatives that are conducive to everybody’s environment, regardless of the mode of mobility.

Conclusion

In conclusion, higher education institutions in cities must prioritize inclusivity, safety, and sensitivity to the needs of vulnerable groups, including students with disabilities using mobility aids. Accessibility standards, such as ramps, wider doorways, and universally designed restrooms, are crucial for ensuring independence and dignity for individuals with disabilities. Pakistan's government has committed to ensuring the rights of people with disabilities, including the right to

education. In line with Sustainable Development Goals (SDG) number 4 and 11, higher education institutions must prioritize making campuses inclusive, safe, and resilient, and providing quality education to all individuals. The disability-sensitive physical infrastructure design and services significantly enhance the chances of people with disabilities living a quality life. To reduce inequalities, cities must be planned to minimize physical barriers and provide facilities without discrimination.

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