

Research Article**Accessibility Issues Faced by Wheelchair Users: A Cross-Sectional Study**Iqra Imtiaz¹, Naveed Ahmed¹, Asses Ul Hassan¹, Liaqat Ali¹, Muhammad Mustafa², Zoya Mehmood^{1*}¹Department of Rehabilitation Sciences, Shifa Tameer e Millat University, Islamabad, Pakistan.²Institute of Health Sciences, Khyber Medical University, Islamabad Campus, Pakistan

*Correspondence: zoya_dpt.ahs@stmu.edu.pk

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Abstract

A cross-sectional survey was conducted in Islamabad to determine the accessibility issues faced by wheelchair users in commercial areas. Participants with various disabilities, ranging from spinal cord injuries to partial or full-body amputations, were enrolled using a convenient sampling technique. Exclusions included mentally handicapped individuals and those temporarily using wheelchairs post-surgery but otherwise healthy. The study was conducted from September 2021 to March 2022. Data was collected from 277 participants using a self-structured questionnaire to determine the accessibility issues they face and analysis was done using SPSS version 21. Out of the total of 277 participants, 202 (72.9%) were males and 75 (27.1%) were females. Results indicated that 147 (53.1%) participants reported difficulty finding special parking places for wheelchair users. Additionally, 118 (42.6%) faced issues using sidewalks and walkways due to the absence of handrails, and 95 (34.3%) cited the lack of accessible routes as a major problem. The study concluded that most commercial areas in Islamabad are not wheelchair-friendly, lacking adequate infrastructure to facilitate hassle-free commuting for wheelchair users. The findings highlight the critical need for improvements in urban planning to enhance accessibility in these zones. This study's unique focus on Islamabad provides context-specific insights that differ from broader studies conducted globally. It emphasizes the importance of tailored solutions to address local accessibility issues. The results underscore the necessity of addressing these barriers to ensure inclusivity for all citizens.

Keywords: Accessibility, ambulation, disability, Islamabad, wheelchair users**1. Introduction**

Advancements in the design of various equipment, designed to make disabled individuals more social and independent, have led to improvements in their quality of life and function (Van Dam et al. 2024). Wheelchairs, being the most commonly used mobility aid used by the physically handicapped, have led to massive improvements in their mobility, which is necessary for their ambulation (Avutu, Paul, and Reddy 2023).

Accessibility to general surroundings is the human right and cardinal need of each citizen and is one of the most important aspects of municipal planning (Nwangwu 2023). The first

and foremost requirement for mobility is accessibility, which in turn can lead to social inclusion (Borowska-Stefańska et al. 2024). In addition, people who are disabled are restricted by certain obstacles which cause hindrance in the performance of their daily life activities to certain areas (Neven and Ectors 2023). Furthermore, in order for wheelchair users to live a quality life and actively perform their daily life chores, requires hassle-free movement from one place to another (de Vries et al. 2023). But because of this inability to move properly, wheelchair users are unable to function properly in society which negatively affects their quality of life (Ferretti et al. 2024).

The World Health Organization's findings underscore that over 1.3 billion individuals, constituting approximately 16% of the world's population, live with some form of disability (Gutterman 2024). Additionally, an extra 190 million people, equivalent to 3.8% of individuals aged 15 and above, encounter significant challenges in their daily activities (Gutterman 2024). These figures emphasize the importance of fostering inclusive environments and implementing policies that cater to diverse needs, promoting equal participation and well-being for all.

Some of the customary obstacles faced by wheelchair users in accessing universities and other educational buildings include sharp ramps with no shade, marked but small, un-shaded parking lots, insufficient ramps at the entrances, high counters, and lack of shaded pathways (Sahoo and Choudhury 2023). In different areas, the absence of escalators in various buildings lifts in skyscrapers, and the inability to access various bus terminals are some of the cardinal factors that make certain places inaccessible to wheelchair users (Hoppe 2023).

The United Nations, while discussing their policy regarding the construction of buildings and public areas said that "No area of the built environment shall be made in a way that calls for exclusion of the disabled from that environment." (Jackson, Wilson, and Marcello 2023). Moreover, the limitation of knowledge on the part of the builders and the mindset of certain people of society regarding the disabled play a major role in the creation of inaccessible built environments (Bochenek 2023). Reduced accessibility for wheelchair users amongst different firms can be touted as a major factor that prevents them from getting jobs (Halstead 2023).

The accessibility of public and commercial spaces for wheelchair users is a critical aspect of ensuring equal rights and opportunities for individuals with physical disabilities. While previous studies have examined various

challenges faced by wheelchair users in accessing public areas, there remains a gap in understanding the specific barriers encountered in commercial settings such as malls, restaurants, cinemas, and educational institutions. This study aims to address this gap by conducting a comprehensive examination of the accessibility issues faced by wheelchair users in commercial areas. By focusing on these environments, we can gain insights into the unique challenges that arise in settings where individuals engage in leisure, social, and educational activities, as well as access essential services.

Ultimately, the findings of this research can inform policymakers, urban planners, businesses, and advocacy groups on strategies to improve accessibility and promote inclusivity in commercial spaces. By addressing these issues, we can work towards a society where individuals with disabilities have equal opportunities to participate fully in all aspects of community life.

2. Methods & Materials

A cross-sectional survey was conducted on 277 wheelchair users for a period of 6 months from September 2021 to March 2022. The sample size was calculated by using Rao software for a cross-sectional survey using an estimated population of 20,000 with a confidence interval of 95 percent and a response rate of 75 percent with a 5 percent margin of error. Data was collected from different commercial areas such as malls, restaurants, barber shops, and educational institutions of Islamabad using a non-probability convenient sampling technique.

The participants were selected based on a set of inclusion and exclusion criteria. The inclusion criteria were individuals who use a wheelchair to move from one place to another, and individuals suffering from a condition that has rendered them disabled, such as those suffering a spinal cord injury, cardiovascular accident, or amputation. Participants who were mentally

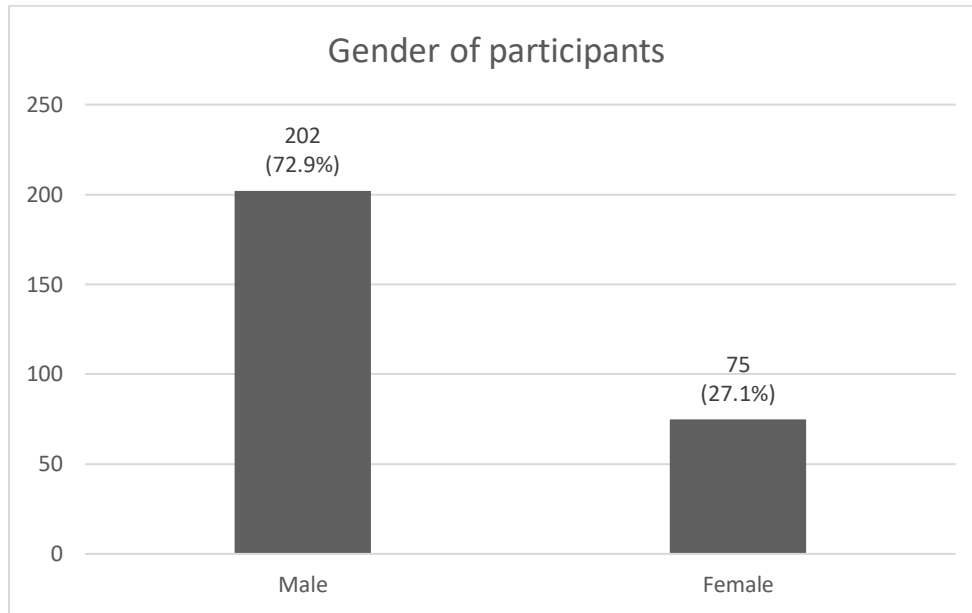


Figure 1: This figure shows the gender of participants included in this study.

handicapped and subjects using a wheelchair for the time being, as they have gone through a surgical procedure, but are otherwise healthy and able-bodied were excluded from the study. All the study procedures followed the “Ethics Guidelines of the Declaration of Helsinki”. Ethical approval was obtained from the Institutional Review Board and Ethical Committee of Shifa International Hospital (Shifa Tameer-e-Millat University) Islamabad, Pakistan (IRB# 267-21). Informed written consent was taken from each participant. Data was collected by using a self-structured questionnaire that contained questions regarding issues faced by wheelchair users in accessing different parking spaces, walkways, washrooms, entrances, and reception of different commercial areas of Islamabad. Consent was taken from the participants before they undertook this research. Qualitative variables were expressed as frequency and percentages. Data was analyzed using a Statistical Package for Social Sciences (SPSS) software version 21.

3. Results

A total of 277 participants filled out the self-structured accessibility questionnaire, out of which 202 (72.9%) were males and 75 (27.1%) were females as shown in Figure 1.

Table 1 shows the frequency (%) of accessibility issues faced by wheelchair users in different commercial places. According to the results majority 147 (53.1%) participants reported that they find difficulty in finding the special parking places for wheelchair users. Out of the total 277 participants, 118 (42.6%) reported that they face issues while using sideways and walkways because of the absence of handrails followed by 95 (34.3%) who reported the absence of accessible route to be the major issue.

Other major issues faced by the users were the absence of automatic doors, the absence of a clear path to enter the event area, uneven distribution of spaces for wheelchair seating, and the absence of a grab-bar or clear floor in the washroom followed by multiple other issues as shown in Table 1.

Table 1: Frequency (%) of accessibility issues faced by wheelchair users in different commercial places.

Sr. #	Commercial Areas	Accessibility issues	Frequency (%)
1.	Parking spaces	Absence of parking spaces	147 (53.1%)
		Absence of a ramp between the parking spaces	63 (22.7%)
		Absence of a passenger drop off area	62 (22.4%)
		Others	5 (1.8%)
2.	Sideways and Walkways	Presence of snow or debris on the walkway	60 (21.7%)
		Absence of handrails	118 (42.6%)
		Absence of an accessible route	95 (34.3%)
		Others	4 (1.4%)
3.	Entrance of building	Absence of an accessible entrance	47 (17%)
		Absence of automatic doors	109 (39.4%)
		Presence of handles or push plates	117 (42.2%)
		Others	4 (1.4%)
4.	Hallway of a building	Absence of a clear path from the entrance to the event area	106 (38.3%)
		Absence of slip resistant mats	82 (29.6%)
		Absence of stairs	81 (29.2%)
		Others	8 (2.9%)
5.	Reception of a building	Uneven distribution of spaces for wheelchair seating	102 (36.8%)
		Absence of a wheelchair friendly counter or desk	84 (30.3%)
		Absence of a suitable space in the waiting area for wheelchair users	73 (26.4%)
		Others	18 (6.5%)
6.	Washroom or restroom	Absence of a grab bar	91 (32.9%)
		Absence of clear floor space	89 (32.1%)
		Increased distance of the water closet's centerline from the sidewalk	74 (26.7%)
		Others	23 (8.3%)

4. Discussion

Ensuring healthcare accessibility is a fundamental right for all individuals, irrespective of their physical condition. The lack of accessible surroundings and insufficient availability of necessary equipment pose significant challenges for disabled individuals in accessing healthcare. Therefore, the current study aimed to identify barriers, causing hindrance in the safe and effective mobilization of wheelchair users.

A study conducted by (Yarfi, Ashigbi, and Nakua 2017) on the accessibility of the several public buildings to wheelchair users in Kumasi Ghana concludes up by stating that most of the public buildings out of the 84 buildings

observed are not accessible to wheelchair users (Yarfi, Ashigbi, and Nakua 2017). The previously mentioned study, in agreement with the results of the present study, points to the lack of guidance faced by many architects. Furthermore, buildings should be designed and constructed in a way that allows hindrance-free commuting of wheelchair users in and out of that building. Another study concluded that apart from a few of the educational institutes most were unreachable to wheelchair users. This study pinpointed the different infrastructural loopholes that rendered different buildings, including some educational institutes, inaccessible to wheelchair users.

Moreover, another research study carried out on 108 schoolchildren from three different schools using washrooms of Bungoma bus station deduced that most of the washrooms lacked the structures necessary for safe and stress-free commuting of disabled people to and from these places (Ochieng, Onyango, and Wagah 2013). This study stated that most of the commercial areas visited by wheelchair users lack washrooms with necessary wheelchair architectural facilities such as grab-bars on walls, easy door swinging, and adequate space for smooth movement/turning of a wheelchair inside the washroom.

A descriptive study, done by (Mohd Zikri and Yuhaniz 2019), dealing with the presence of ramps for wheelchair users in the car parks surrounding a park in Malaysia, concluded that only one out of six car parks had wheelchair-friendly ramps (Mohd Zikri and Yuhaniz 2019). This study, supporting the results of our study, points out the architectural barriers faced by wheelchair users in accessing any area or building.

Another study carried out by (Shahriari 2014) in Landskrona, Sweden, on the wheelchair users' accessibility to public transportation concluded that most of the walkways were out of reach of wheelchair users, due to factors such as faulty architecture of the walkways, increased distance of the walkways from a wheelchair user's residence to a public transport, presence of debris, or stones on the walkways. This study, similar to the findings of the present study, supported the fact that architectural barriers prove a major hurdle that affects the safe and effective commuting of wheelchair users in their surroundings (Shahriari 2014).

While this study provides valuable insights into the issues faced by wheelchair users, it is essential to acknowledge several limitations that may affect the interpretation and application of the findings. Firstly, the study's focus on a specific geographic area may restrict the generalizability of its conclusions to regions

with different cultural, social, and infrastructural contexts. Additionally, methodological constraints such as reliance on self-reported data and challenges in accessing certain populations could introduce biases into the research findings.

5. Conclusion

It is concluded that most of the commercial areas of Islamabad are not wheelchair friendly as they lack the adequate infrastructure that makes commuting wheelchair users to and from these buildings hassle-free.

Conflict of Interest

All the authors declare no conflicts of interest.

Funding

There were no funding contributions for this research from any source.

Study Approval

This study was approved by the Shifa Tameer-e-Millat University) Islamabad, Pakistan (IRB# 267-21).

Consent Forms

Every participant signed a consent form before participating in the research.

Authors Contributions

ZM conceptualized the study, II, NA, AUH, and LA did the experimental part, II and MM performed analysis of the results, ZM supervised the whole project and wrote the final manuscript.

Data Availability

All the data relevant to this study is available with the authors.

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