

Accessibility in Public Buildings for People with Disability: A Case of Patan, Nepal

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Abstract

Nowadays, there is growing local, national, and international awareness about the enormously widespread worldwide problem of disability. As a result, accessibility in built environments is crucial for a variety of reasons. Today, not every person can enter a building or an office successfully. The United Nations' policy that states "No piece of the developed condition ought to be defined in a way that rejects certain groups of individuals based on their incapacity or frailty" is logically inconsistent with the situation in question. The objectives of the study are to investigate the current status of accessibility in the public buildings of the historic urban core of Patan, Nepal. It is based upon detailed observations of accessible provisions through site analysis and photography with a focus on the access audit of new and old public buildings. The aim is to evaluate a specific environment's performance in terms of usability and accessibility for a wide variety of potential customers, including those with disabilities, and also to recommend accessibility enhancements. The gaps in implementation of the urban design guidelines are revealed by the access audit. The access audit demonstrates the compliance of various public infrastructures with the accessibility guidelines provided by the UN Design Manual. The study's findings suggest that the majority of the public structures under study do not meet the accessibility requirements for people with disabilities to the same extent as they should, as no one of them registered full compliance with the guidelines. Overall, it is indicated that accessibility is not well-integrated into older public facilities whereas a few newer constructions have incorporated accessibility into their designs. The public space's performance elements fell between 56.18% and 14.71% short of guideline requirements. Based on these findings, the local administration and the community need to work more to provide more public infrastructures which are suitable for people with disabilities. The findings of this study could be a road map for managers, planners, architects and engineers for safe and inclusive built environment.

Keywords

Disability, Accessibility, Universal design, Public space, Urban design, Social inclusion

1. Introduction

Disability is a circumstance, not a wonder. Everybody experiences these phases occasionally or at some point. Blackman, et al. [1] has stated that the elderly, sick, pregnant, large, young and people with baggage could all be portrayed as people experiencing a period of handicap. Even so, everyone has the right to live in dignity during such times. In this way, sensitivity cannot be a component of openness, yet each person has a special right to be open. In this way, planning professionals' commitment to a barrier-free outline doubles as their social responsibility. Today, not every person can enter a building or an office successfully. Even for a group of people—children, the elderly,

women, and people with disabilities like those who use wheelchairs, shopping carts, or child buggies, etc.—finding a place in a developed environment is occasionally still an incomprehensible problem. The United Nations' policy that "No piece of the developed condition ought to be defined in a way that rejects certain groups of individuals based on their incapacity or frailty" is logically inconsistent with the situation in question. Two terms—"openness" and "portability," which need to be taken into consideration—are conveyed to us by the standard for outlining and organizing the developed condition. Here, the word "accessible" refers to the goal of empowerment [1]. The concept of universal accessibility refers to access, both structural and

attitudinal, through the removal of barriers and the creation of environments that are practical for all potential users. Universal accessibility is essential to inclusion because it gives everyone a sense of autonomy, competence, and independence that enables them to use all areas of a space and actively engage with friends and family. Thinking about barrier-free and UD principles is the most impressive and significant way to create livable urban environments. Creating appropriate architectural and structural settings, commodities as well as amenities in all social sectors, is a requirement for community development. The use of public spaces by certain demographics of citizens, such as the elderly, pregnant women, and people with disabilities, may be hampered by physical barriers. Designing for people with disabilities is essential because they frequently face unique and obvious access issues in urban areas. The needs of people with disabilities must be taken into account, and barriers that prevents them from enjoying time in urban public spaces must be removed. It is believed that by implementing UD standards, people with disabilities could obtain their rights to a city that is more hospitable and comfortable for them, reducing their dependence on others [2].

2. Objectives

The goal of this research is to assess the current availability and condition of built environment in the urban context of the historic core of Patan, Nepal. It aims at evaluating accessibility features in public spaces in the study area. The case studies are based upon detailed observations of accessible provisions, carried out in new and old public buildings and open spaces. To accomplish the purpose of this study, the following research question is analyzed. What is the level of compliance to guidelines in existing condition of public buildings? The findings of this study could be a road map for managers, planners, architects and engineers for safe and inclusive built environment.

3. Methodology

This study is grounded in applied theory and quantitative methods to evaluate the current state of the built environment in public spaces and the application of accessibility features in accordance with best practices in the study area. This method emphasizes reality and existence, so the philosophical paradigm is classified as post-positivism.

4. Scope and Limitations

The current study has a few limitations that should be mentioned. Due to the broad subject, it has been restricted to two categories of disabilities: orthopedic impairment and visual impairment. Selective public buildings have been studied while taking time constraints into account because access audit is a labor-intensive approach. The buildings nominated here can be considered to be representative of all public spaces in Patan due to their eligibility for shaping general trend of public spaces in the contemporary city.

5. Research Setting



Figure 1: The Historic Core of Patan, Nepal

The third-most populous city in Nepal, Lalitpur, must increase accessibility and facilities to accommodate the requirements of PwDs who want to participate fully in society. The Central Bureau of Statistics of Nepal estimates that 513,321 people in Nepal are classified as PwDs, 4934 of whom reside in Lalitpur. While 818 people have low vision or are blind, there are 1669 (or 3.57 per 1000) people who are physically disabled (1.75 per 1000). The research setting, which is the historical core of Patan, is 1.22 sq.km in area and 5445.57 m in perimeter.

Examining the necessity of accessible urban public-built environment for people with disabilities in Lalitpur is one of the objectives of this study. A total of 10 prominent public buildings including government-service establishments, health and educational institutions and commercial complexes from Patan have been selected through category-based sampling.

6. Literature Review

6.1 What is Accessibility?

In a nutshell, accessibility means having access to everything. Accessibility refers to an overarching concept for all elements that have an impact on how people interact with their environment, according to a technical definition. A well-planned urban environment is thought to be livable and easily accessible for everyone. Today, creating livable cities is a hot topic for many urban planners. There is general agreement that accessibility and people's mobility are important elements in designing livable cities. In light of this, one of the useful interactions in a public area is accessibility. According to social theorists, accessibility is a fundamental social right. At the UN Conventions, where equivalent and non-discriminatory prospects for all are promoted in every spatial structure for communal use, accessibility is also a core value of urban design [3]. Because of the previously stated justification, accessibility is necessary irrespective of one's capability, age or position in society, in order for everyone to take benefit of the built environments [4]. Since moving around a city safely, independently, and conveniently is essential to urban living, everyone must be able to do so. According to this definition, a disability is any limitation or inability to perform a task that can be remedied by a suitable design. To accomplish this, it is believed that designers will apply their knowledge of various user needs more effectively in the real world [4].

6.2 Accessible Design

Design that complies with established applicable regulations for use by PwDs is known as accessible design. It can isolate PwDs from the vast majority of consumers and make them feel like an outsider because it is frequently accomplished by offering distinct specifications for "special" user groups. When introduced as an afterthought to new building or even existing designs, accessible design solutions can be pricy and stigmatizing. Accessible features that are later added show that the designers did not take PwDs into account up until law was enforced upon its implementation [5].

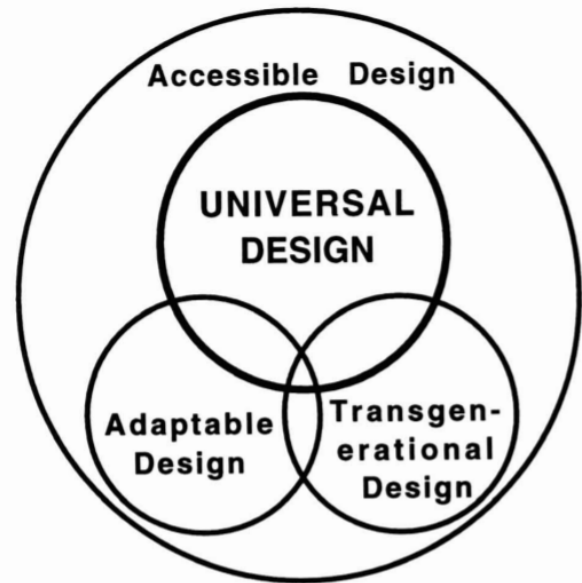


Figure 2: Association between universal, transgenerational, adaptable and universal design [5]

Although universal design incorporates accessibility from the start of the design process, it is less obvious because it is always accessible. Modifications to a conventional design are known as adaptable design features, and they serve to make the form useful for a person as required [6]. Similar to accessible designs, adaptable design elements can occasionally appear gimmicky, stigmatizing, and expensive [5]. Although adaptable strategies are occasionally used in universal design to achieve customization, it is best when all options are equally available.

Transgenerational design, also known as lifespan design, takes aging into account when creating products. Transgenerational design may not always take into account the full spectrum of potential impairments or other usability-affecting factors, such as differences between men and women, cultural differences, and literacy level, because it does not particularly address genetic ailments or changes that may occur as a consequence of an injury or disease. While some aspects of universal design are cross-generational, the strategy includes disabilities other than those that are age-related [5].

Therefore, universal design is accessible and sometimes adaptable across generations. The diagram shows how accessible design is divided into three categories: universal design, adaptable design, and transgenerational design. A design might fall into two of these categories at times and some might fit into all of them. Every single accessible design might not

necessarily identify as universal. Some users are excluded by designs that are "accessible" but not "universal" [5]. Of the three accessible design approaches, universal design discourages all forms of condition and integrates accessibility into design strategies, making it the most inclusive and least stigmatizing [5].

6.3 The Principles of Universal Design

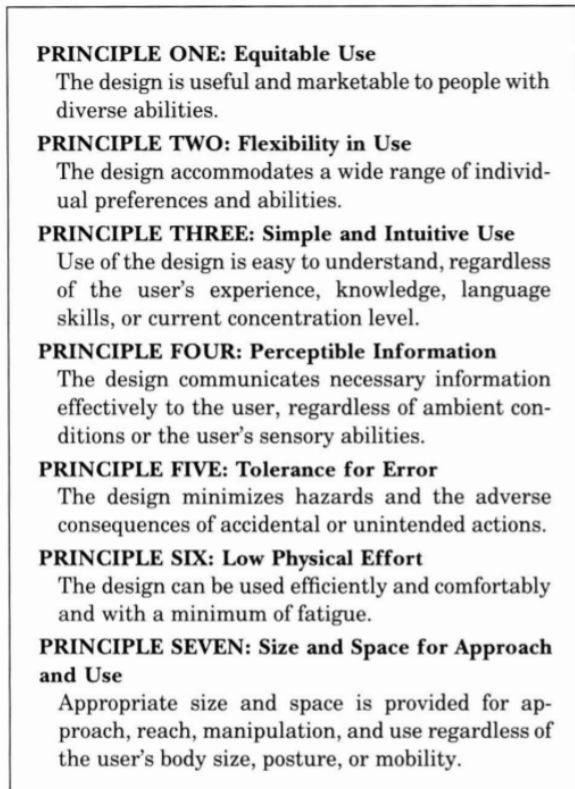


Figure 3: The Principles of Universal Design [5]

Ronald Mace, an architect, industrial designer, and wheelchair user, developed the initial universal design concept. To help direct the design process of environments, goods, and communications, Ronald served as the leader of a team that included architects, engineers, product designers, and environmental design researchers in 1997. They created the seven universal design principles. The guiding ideas are listed in Figure 3.

7. Data Analysis and Findings

Sawyer and Bright [7] state that the purpose of an access audit is to "establish how effectively a certain setting functions in regards to accessibility and

convenience of use by a diverse group of potential consumers, including individuals with impairments, as well as to propose access improvements." The gaps between the guidelines and implementation are revealed by access audit. In order to analyze the accessibility of the built environment, the UN Design Manual is utilized to assess application of architectural specifications in ten notable public buildings in the historic core of Patan and its periphery. This manual was chosen because it has a target audience that includes people with all kinds of disabilities and because the majority of the advised actions have been tried out in developed nations.

Its checklist consists of the ten groups, namely, ramps, elevators, platform lifts, stairs, railings & handrails, entrances, doors, corridors, restrooms and parking. These ten components were evaluated independently based on 85 distinct elements. Details of the evaluation criteria are provided in the Table 7 and Table 8.

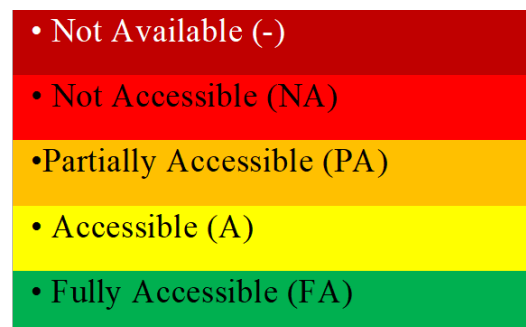


Figure 4: 5-point scale

The research was carried out on June-July 2022 by the author. Descriptive statistics scores were utilized to gauge how closely the urban design accessibility checklist was being followed. 85 items in each facility were assessed for accessibility based on the requirements for the respective checklist items. An item that was utilized but was not designed properly was referred to as "partially accessible." The aggregate percentile and level of compliance for all checklist items were computed for each building. To calculate the percentage of accessibility compliance, the sum of acquired points was divided by the total number of items.

Level of Compliance	Points Granted
Fully Accessible	1
Accessible	0.75
Partially Accessible	0.5
Not Accessible	0
Not Available	0

Figure 5: Level of Compliance

Formula for Calculation of Compliance score=

$$\frac{(\text{Not available} \times 0) + (\text{Not Accessible} \times 0) + (\text{Partially Accessible} \times 0.5) + (\text{Accessible} \times 0.75) + (\text{Fully Accessible} \times 1)}{\text{Total number of items}} \times 100 \%$$

7.1 Observation Results

The study’s findings suggest that the majority of the public structures under study do not meet the accessibility requirements for people with disabilities to the same extent as they should, as no one of them registered full compliance with the guidelines. The most compliant one is Namuna Macchindra School, which had a total accessibility percentage of 85.29% (see Figure 6). However, for the most part, it is indicated that accessibility is not well-integrated into older public facilities whereas a few newer constructions have incorporated accessibility into their designs. The public space’s performance elements fell between 56.18% and 14.71% short of the guideline requirements.

	0	NA (0)	PA (0.5)	A (0.75)	FA (1)	Compliance Score
District Court	31	7	6	10	31	48.82
Malpot Office	24	6	5	12	38	58.24
Nepal Bank	33	7	10	4	31	45.88
Municipality	21	7	4	4	39	51.76
Namuna Machh	17	0	2	6	60	77.06
Patan Hospital	13	3	6	9	54	75.00
District Office	24	8	6	6	41	57.06
Pulchowk Campus	26	8	9	2	40	54.12
Labim Mall	5	1	7	12	60	85.29
NTC Office	31	14	3	5	32	43.82

Figure 6: Compliance Score Chart: Public Buildings

The highest compliance on accessibility were found in Labim Mall (85.29%), Namuna Machhindra School (77.06%) and Patan Hospital (75.0%). Indeed, Labim Mall is a relatively new space, and was designed with accessibility in consideration. Namuna Machhindra too is a newly constructed building designed with the

consideration of accessibility for its students with physical and visual impairments. Patan Hospital scores 75% which is still inadequate for a public health institution. This deficiency could be attributed to the fact that the hospital is a relatively older construction which lacks maintenance and upgrading. The lowest compliances were found at NTC Office (43.82%) and District Court (48.82%). The majority of the components in these two facilities are incorrectly designed and constructed, including inaccessible stairs, upper floors, restrooms, and entrances.

8. Discussion

Rapid urbanization has a negative impact on many issues, including access to, use of, and the physical and functional structures of public buildings. Urban settlements’ public spaces fall far short of the modern standards of more affluent cities, especially in developing economies [8]. In urban areas, there aren’t many disabled people who can move around independently. This clearly demonstrates how little disabled people participate in urban life and social interactions, and how limited their opportunities are to move independently. As case study locations, a number of public buildings that represent Patan have been chosen. They are a reflection of urban development characteristics and the state of the built environment in developing economies. According to the access audit findings, the majority of Patan’s public buildings are inaccessible due to the following reasons (see Figure 9).

- Inaccessible entrances
- Non-compliant restrooms
- Lack of comfort
- Absence of variety in activities and facilities
- Lack of maintenance and cleanliness
- Lack of safety

The descriptive analysis of the data demonstrates the extent of application and usability of accessible design by PwDs. To guarantee the inclusion of individuals with impairments in our community and to uphold our commitment to the UN that ”Everyone has the right of equal access to public service in his country,” it is imperative that we address all of these issues and find solutions to the issues of physical and social exclusion of disabled people in the built environment.

S.N. Technical guidelines	Accessibility compliance									
	District Court	Malpot Office	Nepal Bank	Municipality	Namuna Machh	Patan Hospital	District Office	Pulchowk Campus	Labim Mall	NTC Office
1 RAMPES										
Ramp configuration	-	FA	-	-	FA	FA	FA	FA	FA	-
Width (min 0.9m)	-	FA	-	-	FA	FA	FA	FA	PA	-
Slope	-	FA	-	-	FA	FA	FA	FA	FA	-
Landings	-	FA	-	-	FA	FA	FA	FA	FA	-
Handrail	-	-	-	-	-	-	A	A	FA	-
Surface	-	FA	-	-	FA	FA	FA	FA	FA	-
Tactile marking	-	-	-	-	-	-	-	-	-	-
Obstacles	-	FA	-	-	FA	FA	FA	FA	A	-
Location	-	FA	-	-	FA	A	FA	FA	FA	-
2 ELEVATORS										
Accessible path	-	-	-	FA	-	FA	-	-	FA	-
Accessibility to all levels	-	-	-	FA	-	FA	-	-	FA	-
Elevator cab	-	-	-	FA	-	FA	-	-	FA	-
Control panel	-	-	-	A	-	A	-	-	A	-
Audiovisual signals	-	-	-	A	-	A	-	-	A	-
Floor surface	-	-	-	FA	-	FA	-	-	FA	-
Colour	-	-	-	FA	-	FA	-	-	FA	-
Opening/closing interval	-	-	-	FA	-	FA	-	-	A	-
Floor number in braille	-	-	-	-	-	-	-	-	A	-
3 STAIRS										
Width (min 1.5m)	FA	FA	FA	FA	FA	FA	FA	FA	A	FA
Landing (min 1.2m)	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA
Nosing (40mm)	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA
Handrails (0.5m-0.9m)	A	A	A	FA	A	FA	A	A	PA	FA
Tactile marking (min 0.6m wide)	-	-	-	-	FA	-	-	-	-	-
Emergency stairs	-	-	-	A	-	-	-	-	PA	-
Mechanical stairs (escalators)	-	-	-	-	-	-	-	-	FA	-
Intermediate Handrails*	-	-	-	-	-	-	-	-	-	-
Location of staircase	FA	FA	FA	A	FA	A	FA	FA	A	FA
4 RAILINGS AND HANDRAILS										
Easy to grip	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA
Securely attached	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA
Horizontal extension (0.3-0.45m)	PA	PA	PA	PA	PA	PA	PA	PA	FA	FA
Continuous throughout the full length	FA	FA	FA	FA	FA	FA	FA	FA	PA	FA
Low positioned windows at landings	FA	A	FA	FA	PA	FA	FA	-	A	FA
Space between handrail & wall (40-60mm)	-	-	-	-	-	-	-	-	FA	FA
Easy to identify	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA
Distance between handrails (0.9-1.4m)	-	-	-	-	-	-	-	-	-	-
Intermediate handrails*	-	-	-	-	-	-	-	-	-	-
Height (0.85-0.9m)	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA
5 ENTRANCES										
Accessible primary entrances	NA	FA	-	A	FA	FA	FA	PA	FA	NA
Access to conveniently located elevator	-	-	-	A	-	A	-	-	FA	-
Clearly identifiable	FA	FA	FA	PA	FA	FA	FA	FA	FA	NA
Landing dimensions	FA	FA	PA	FA	FA	FA	FA	FA	FA	FA
Landing surface	A	A	PA	A	FA	FA	FA	FA	FA	FA
Doors operate independently	FA	A	PA	A	FA	FA	FA	FA	FA	FA
Clear door width (at least 0.90 m)	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA
6 DOORS										
Door opening	FA	FA	FA	FA	FA	FA	FA	FA	FA	PA
Signage	A	A	PA	A	A	A	A	PA	A	A
Color	FA	FA	PA	FA	FA	FA	FA	FA	A	FA
Opened without much effort	FA	FA	FA	FA	FA	PA	PA	PA	PA	FA
Opening interval	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA
Push-buttons for automatic doors (1.2-1.4m)	-	-	-	-	-	-	-	-	-	-
Clear width of interior doors (0.8 m)	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA
Double leaf door (leaf width= 0.6m)	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA
Shape of handle	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA
Ht. of handles, locks, pulls (1.2-1.40m)	PA	PA	FA	FA	FA	FA	FA	FA	PA	NA
Threshold	PA	PA	PA	FA	FA	FA	FA	FA	FA	NA
7 CORRIDORS										
Width (min 0.90 m)	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA
Maneuvering through doors	FA	FA	FA	FA	FA	FA	FA	FA	PA	PA
Differences in level bridged by ramps	-	FA	-	-	FA	FA	FA	NA	A	NA
Obstruction	FA	A	FA	FA	FA	FA	FA	FA	FA	A
Surface	A	FA	FA	FA	FA	FA	FA	FA	A	FA
Signage	A	A	PA	A	A	A	A	PA	FA	A
Tactile marking	-	-	-	-	FA	A	-	-	-	-
Handrails	-	-	-	-	FA	FA	-	-	-	-

Figure 7: Access Audit

S.N. Technical guidelines	Accessibility compliance									
	District Court	Malpot Office	Nepal Bank	Municipality	Namuna Machh	Patan Hospital	District Office	Pulchowk Campus	Labim Mall	NTC Office
8 REST ROOMS										
Accessibility	NA	NA	NA	NA	FA	PA	NA	NA	FA	NA
Signage	A	A	A	A	A	A	A	PA	FA	-
Threshold	NA	NA	NA	NA	FA	PA	NA	NA	FA	NA
Fixtures										
WC/bidets ht. (0.45-0.5m)	NA	NA	NA	NA	FA	FA	NA	NA	FA	NA
Distance bet. toilet seat & wall (0.45-0.5m)	PA	PA	PA	PA	FA	FA	PA	PA	FA	A
Wash-basin height (0.80 m-0.85 m)	NA	NA	NA	NA	FA	PA	PA	NA	FA	NA
Grab bars height (0.95 m-0.95 m)	-	-	-	-	FA	-	-	-	FA	-
Grab bars diameter (30 mm-40 mm)	-	-	-	-	FA	-	-	-	FA	-
Grab bars clearance (35 mm-40 mm)	-	-	-	-	FA	-	-	-	FA	-
Grab Bar Texture	-	-	-	-	FA	-	-	-	FA	-
Grab bar Strength	-	-	-	-	FA	-	-	-	FA	-
Faucets										
Easy to grip and operable with one hand	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA
Pipes										
Are hot water pipes insulated or covered?	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA
Accessories and controls										
Mirror ht (max. 1m)	NA	NA	NA	NA	-	NA	NA	NA	FA	NA
Alarm system	-	-	-	-	-	-	-	-	-	NA
Wall mounts ht (0.5-1.2m)	-	-	-	-	-	NA	NA	-	FA	NA
Flushing mechanisms easy to operate	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA
Flooring										
Skid-proof, well drained and waterproofed	PA	PA	PA	PA	FA	PA	NA	PA	FA	PA
Doors										
Opening (min 0.75 m)	A	A	A	A	FA	PA	A	FA	FA	A
Releasable from outside (emergency)	NA	NA	NA	NA	FA	PA	NA	NA	FA	NA
Do pivoted doors open outward?	FA	NA	NA	NA	FA	NA	NA	NA	FA	NA
9 PARKING										
Number (1:50)	-	-	-	-	-	-	-	-	FA	-
Location	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA
Dimensions (3.60 m)	PA	PA	PA	PA	FA	FA	PA	PA	FA	FA
Drop-off areas (3.6m +1.2m)	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA
Surface	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA
Signage	-	-	-	-	-	A	-	-	FA	-

Figure 8: Access Audit

8.1 Key Research Findings

1. Comfort and suitability factor of access to public buildings and facilities is substantially inadequate for individuals with impairments (PwDs).
2. Standard conformity is apparent only in new establishments.
3. Patan’s public buildings lack the necessary amenities and accessibility for PwDs to feel comfortable.

9. Conclusion

People with disabilities face difficulties in daily mobility due to issues with accessibility in public spaces. Unreviewed and inadequate policy, regulation, and inadequate upkeep of communal infrastructures turn into reasons for the design failing to meet the needs of PwDs. Additionally, it is still unrecognized in developing nations how important it is to include disabled people in the planning and design stages of cities.

The findings of this study indicate that these needs have not been satisfied, even through the Lalitpur Municipality’s best efforts to incorporate accessible design in pedestrian areas and recreation facilities. Neglecting participation of PwDs and an insufficient knowledge regarding accessibility for disabled people

are two of the reasons why those facilities are not used by PwDs, the elderly, or are not recognized by able-bodied people.

Activities in inaccessible settings present some difficulties and embarrassments for disabled people. But disabled people work to get past obstacles in the environment both physically and socially in order to engage in and participate in social activities. By demonstrating their abilities and capacities in public settings and society, people with disabilities and people without disabilities can both benefit [9]. The right to use public spaces for disabled people falls under their civil liberties, not as a favor for their acceptance in our society. Urban designers and other professionals working in the built environment need to put in more effort and demonstrate more compassion in order to fully integrate wheelchair users and other people with disabilities into society. Public buildings must be designed to become as convenient as possible for disabled people in order for them to participate in society effectively. They shouldn’t just be built to comply with legal and regulatory requirements. The case study shows that Patan needs a high degree of awareness regarding the “disability” issue from the general public, authorities, and built environment specialists.

In closing, it is normal for people to be born with disabilities or to develop disabilities later in life. But it is impermissible if built environment of the city are planned in a manner that prevents those with

Location in City	Functions	Present condition	Problems faced by PWDs	Plan/Aerial Map
District Court, Lagankhel	<ul style="list-style-type: none"> Government establishment 	<ul style="list-style-type: none"> Inaccessible entrance No designated parking space Inaccessible toilets Upper floors not accessible No signs and markers for the visually impaired 	<ul style="list-style-type: none"> Inaccessible entrance Court rooms at the first floor not accessible. Inaccessible toilets 	
Land Revenue Office, Lagankhel	<ul style="list-style-type: none"> Government establishment 	<ul style="list-style-type: none"> Crowding Inaccessible entrance No designated parking space Inaccessible toilets Upper floors not accessible No signs and markers for the visually impaired 	<ul style="list-style-type: none"> Office rooms at the first floor not accessible. Shaded waiting area not accessible Inaccessible toilets 	
Nepal Bank, Gabahal	<ul style="list-style-type: none"> Financial Establishment 	<ul style="list-style-type: none"> Inaccessible entrance No designated parking space Inaccessible toilets Upper floors not accessible No signs and markers for the visually impaired 	<ul style="list-style-type: none"> Inaccessible entrance Office rooms at the first floor not accessible. Inaccessible toilets 	
Lalitpur Metropolitan City Office, Pulchowk	<ul style="list-style-type: none"> Government establishment 	<ul style="list-style-type: none"> Inaccessible toilets No signs and markers for the visually impaired 	<ul style="list-style-type: none"> Inaccessible park Changes in levels at several places Elevator frequently out of order 	
Namuna Machhindra School, Lagankhel	<ul style="list-style-type: none"> Educational Institution 	<ul style="list-style-type: none"> Accessibility features for visually impaired and wheelchair users. 	<ul style="list-style-type: none"> Upper floors not accessible via wheelchair No emergency exits. 	
Patan Hospital, Lagankhel	<ul style="list-style-type: none"> Healthcare institution 	<ul style="list-style-type: none"> No designated parking space Only one ramp available for the whole hospital. Provision of elevators and handrails in corridors. 	<ul style="list-style-type: none"> Crowding Inaccessible toilets at the emergency and general wards No indicators for visually impaired 	
Labim Mall, Pulchowk	<ul style="list-style-type: none"> Commercial complex 	<ul style="list-style-type: none"> Designated parking spaces Accessible toilets No signs and markers for the visually impaired Provision of elevator, escalators and ramps. 	<ul style="list-style-type: none"> Ramps at the entrance are locked. Inability to shop independently 	
Pulchowk Engineering Campus	<ul style="list-style-type: none"> Educational Institution 	<ul style="list-style-type: none"> No accessibility features for visually impaired and wheelchair users. Inaccessible toilets No signs and markers for the visually impaired 	<ul style="list-style-type: none"> Inaccessible entrances Upper floors not accessible via wheelchair No emergency exits. 	
Nepal Telecom Office, Jawalakhel	<ul style="list-style-type: none"> Government institution 	<ul style="list-style-type: none"> No designated parking space Inaccessible toilets No signs and markers for the visually impaired 	<ul style="list-style-type: none"> Inaccessible entrance Inaccessible toilets Office rooms in upper floors inaccessible 	
Lalitpur District Administration Office, Thasikhel	<ul style="list-style-type: none"> Government Institution 	<ul style="list-style-type: none"> No designated parking space Inaccessible toilets Upper floors not accessible No signs and markers for the visually impaired 	<ul style="list-style-type: none"> Crowding Inadequate signage Office rooms at the first floor not accessible 	

Figure 9: Location details of sampling areas

disabilities from using them. Relevant research on this subject emphasizes how the designs exacerbate the disabilities of people with disabilities. Making urban areas accessible to people with disabilities aims to enable their social inclusion, freedom of movement outside, integration into society, and most importantly, to boost confidence in themselves [10]. The goal is to ensure that they have good mental and physical health, that they can participate in social activities, and that they can live in the same living conditions like other community members.

10. Recommendations

Interventions to remove social and environmental barriers are necessary to address the challenges and isolation faced by people with disabilities in Patan's public spaces. In this case, it is important to ensure that there is a comprehensive legislative framework for disability-friendly environments and that urban design is efficient and inclusive. Below are some specific suggestions for the successful integration of disabled people into society, based on a review of the literature and results of access audits of physical characters of the case study buildings.

- A properly sloped ramp is needed for areas with higher elevations to promote wheelchair users' independent mobility. The ramp could then be used as a means of circulation for everyone, encouraging social interaction as well as access for the disabled.
- Wheelchair accessibility should be ensured by a proper slope and curb walkways at entry points.
- Appropriate handrails are needed for wheelchair users to move independently.
- The gateway should be big enough to let wheelchairs through.

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