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WHEELCHAIR ACCESSIBILITY OF PUBLIC BUILDING IN COLOMBO METROPOLITAN AREA IN SRI LANKA

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ABSTRACT

Access to the built environment is crucial for individuals with disabilities to ensure active participation in community activities, providing them with independence, safety, and dignity. This study assesses the accessibility of public buildings for wheelchair users in Colombo, the commercial capital of Sri Lanka. Using a descriptive cross-sectional study, 60 public buildings, their owners or responsible persons, and wheelchair users were surveyed. Building owners were contacted to assess accessibility using a survey form, and their views on wheelchair user attendance and knowledge about accessibility were recorded through an interviewer-administered questionnaire. Wheelchair users were purposively selected, and their experiences were captured through a semi-structured questionnaire. Results revealed varying compliance levels across building categories, with healthcare facilities scoring highest (mean compliance of 74, SD 8.4) and public utility buildings lowest (46.2, SD 28.3). Entrance accessibility scored highest (mean of 79.7, SD 32.8), while parking accessibility scored lowest (13.5, SD 31.1). A lack of awareness among building owners regarding wheelchair users' independence and legal requirements was noted. Additionally, half of the wheelchair users refrained from visiting public buildings due to architectural barriers. This study highlights the need for further improvements in building accessibility in Colombo. Wheelchair users often encounter architectural barriers, emphasizing the importance of professionals advocating for accessibility to ensure the independence, safety, and dignity of individuals with disabilities.

KEY WORDS: Wheelchair accessibility, architectural barriers, access to public buildings.

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01. Introduction

According to the statistics, about 10% of the Sri Lankan population has some disability (Ministry of Social Services, 2012). The country's population is about 23 million. This means approximately two million people have a disability. The number of traumatic injuries has been the leading cause of hospitalization, and the morbidity is proportionately increasing each year (Ministry of Healthcare and Nutrition, 2012).

Sri Lanka also has an ageing population. It is estimated that about 20% of the population will be over 60 years of age in the year 2025. That means one person in every five will be a senior citizen (Ministry of Healthcare and Nutrition, 2012). Disability is a common phenomenon among older people. Therefore, the number of disabled people in the country is on the rise (Ministry of Healthcare and Nutrition, 2012).

Providing accessibility can assure the independence, safety and dignity of people with disabilities. Accessibility is essential not only for wheelchair users but also for other people with disabilities, pregnant ladies, mothers with infants as well and elderly citizens. If they can access public buildings, they will have the opportunity to participate in activities that can contribute to social and economic well-being (Motivation Sri Lanka, 2012).

Accessibility to the built environment has become a global problem today. Countries have introduced various programs of action to overcome accessibility barriers. In 1990, the Americans with Disabilities Act (ADA) was passed by the US Congress (Rivano-Fischer, 2004). The ADA defines and prohibits discrimination based on disability. The ADA's accessibility guidelines (ADAAG) were developed by the Architectural and Transportation Barriers Compliance Board and adopted in 1992. Most published studies about wheelchair accessibility in buildings are based on ADA standards, and accessibility is determined by compliance with these standards (Rivano-Fischer, 2004). It is commonly quantified using the percentage of compliance, which is calculated as the number of facilities complying with the wheelchair accessibility requirement over the total number of facilities measured. Martin, in 1987, surveyed 13 public buildings in New York, which was based on specifications of American National Standard Institutes (ANSI) in 1971, and found that the median percentage of accessibility compliance was 77.

The significant areas of noncompliance were restrooms, ramps, and parking. Useh et al. (2001) surveyed 20 public buildings in Harare, Zimbabwe, and found the highest average of accessibility was elevators, which were 83%, while parking was the lowest at 18%. Further, it was found that recently built buildings were more accessible than old buildings. Rivano-Fisher (2004) surveyed 17 public buildings in Al Ain, United Arab Emirates (UAE), and found the most accessible area was the route, with a mean of 76%, and the lowest of parking, with a mean of 19%. Hamzat and Dada surveyed 38 public buildings in Ibadan, Nigeria, and revealed that 45.1% of the entrances and 19.4% of the routes were wheelchair accessible. It was also found that the most accessible buildings were hospitals (66.7%), while none of the social and recreation buildings were accessible (Hamzat & Dada,2005). Apart from general public buildings, some studies have looked at similar types of business buildings. For example, McClain et al. in 1993 reviewed the accessibility of restaurants in Midwestern states in the USA. This study found that parking was an obstacle to eating out, although entrance, ramp, and table height were also found to be in compliance with ADA guidelines. Another study conducted by McClain (2000) in shopping centers found that no shopping mall was fully compliant in any area of accessibility other than telephone specifications. Compliance ranged from 0% to 100% in different areas of shopping centers (McClain, 2000). Other studies, such as Food store accessibility by McClain and Todd, and Ahn et al. business buildings also showed parking, entrance, restrooms, and goods and services did not fully comply with accessibility guidelines. Typical findings of all the above studies were that none of the buildings was 100% compliant with the guidelines for measuring accessibility (McClain &Todd, 1990) (Ahn et al., 1994).

International agencies such as the United Nations Organization (UNO) declared the International Year of disabled persons (IYDP) in 1981 and the decade of disabled persons during the period of 1983 to 1992 (Hamzat & Dada,2005). The United Nations General Assembly adopted the standard rules on equalizing opportunities for persons with disabilities (Rivano-Fischer, 2004). Rule 5 of the standard rules specifically targets accessibility as it declares that “states should introduce programs of action to make the physical environment accessible”.

In addition, individual governments have also taken steps to ensure the accessibility of disabled persons. For example, the ADA was passed in 1990 with the guidelines stipulated for enhancing accessibility for wheelchair users (Ahn, McGovern, Walk, & Edlich, 1994); the Disabled Persons Act was passed in Zimbabwe in 1996 (Uheh, Moyo, & Munyonga, 2001); and the United Kingdom Disability Discrimination Act was passed in 1995 (Office of Public Sector Information). Meanwhile, similar Acts

were passed in Australia in 1992 and Hong Kong in 2004 (Australasian Legal Information Institute; Equal Opportunities Commission Hong Kong, 1997).

In Sri Lanka, the need for wheelchair accessibility to public buildings was brought to the public by professionals as well as wheelchair users through their own organizations. The disability movements advocate for including people with disability in development work. 'Disability Organization Joint Front' (DOJF) and some other non-government organizations launched a nationwide advocacy campaign to promote the inclusion of disabled people into mainstream development work (Motivation, 2012). This sort of campaign attracted the attention of the public as well as the government. "The protection of rights of persons with disabilities," Act number 28th of 1996, was enacted by the parliament on 17th September 1996 to protect the rights of persons with disabilities. The main objectives of the law are to establish a national council for persons with disabilities, and promote the advancement of protection of the rights of persons with disabilities in Sri Lanka (Ministry of Social Services, 1998).

Then, the Ministry of Social Services in Sri Lanka published a guideline on accessibility titled "Promotion of accessibility to build environment" in 1998 .This guidebook was prepared by a team of professionals, including officials from the Ministry of Social Services, Architects, Engineers, town planners, representatives from various organizations for people with disabilities, such as the visually impaired and physically disabled, and medical consultants in the field of rehabilitation and an Occupational Therapist. In this book, guidelines were given about access to public buildings in different accessibility areas, such as parking, pathways, and corridors, as well as access to other places, such as bus stations, railway stations, etc. The accessibility then became a legal requirement after the regulation was published in the Government Gazette on 17th October 2006 (Ministry of Social Services and Social Welfare, 2007). According to the government notification, all existing public buildings, public places, and places where common services are available should, within a period of three years, be made accessible to persons with disabilities in compliance with the provisions of regulations. In 2006, subsequently, nine government buildings, including 4 government hospitals and 5 community-based social service organizations, were made accessible. The government of Sri Lanka has announced the year 2007 as 'the year of accessibility' (Ministry of Healthcare and Nutrition 2012).

Even though wheelchair access was a mandatory requirement, authorities in the public buildings did not fully comply with the guidelines. Dr. Ajith C.S. Perera, who is a person in a wheelchair, filed a petition against the discrimination against people with disabilities to the Supreme Court of Sri Lanka. The Supreme Court

gave a landmark order under Supreme Court (Fundamental Rights) 221/2009 dated 27th April 2011 that all parts of public buildings and places, especially toilet and wash facilities, should be designed and constructed by accessibility regulations. Today, accessibility is a mandatory legal requirement in constructing public buildings, public spaces and common services (Idiriya, 2013).

Occupational Therapists, as a part of their duty, are involved with the community integration of the clients. Occupational Therapists advocate wheelchair accessibility and standards where they do not exist (McClain, 1990). In hospital discharge planning, independent living programs, home health care, and outpatient programs, occupational therapists try to ensure that their clients have the opportunity to be independent in various settings (McClain, 1990). Occupational Therapy in the community was further strengthened by replacing the guidelines of the international classification of disease, impairment, disability, and handicap (ICIDH) in 1980 to the international classification of functioning (ICF) in 2000. The Guidance talks about the bio-psycho-social model, which embraces social barriers as a form of disability whilst not denying a person-centered focus. This is crucial to a holistic approach. It is a model that engages the service user more directly in assessing solutions to the challenges they experience. The occupational therapist must enable wheelchair users to participate fully in their communities.

Research Problem

Despite legal mandates for wheelchair accessibility in public buildings in Colombo, Sri Lanka, there is a lack of comprehensive data on the actual state of accessibility and the awareness levels among building owners and users. This gap in information hinders efforts to improve accessibility and ensure the independence, safety, and dignity of wheelchair users.

Objective

The study aims to:

Assess the current state of wheelchair accessibility in public buildings in Colombo.
Understand the perceptions and knowledge of building owners regarding accessibility requirements.
Identify the architectural and attitudinal barriers faced by wheelchair users in accessing public buildings.

Methods

Methodology

Study Design

This descriptive survey assessed the wheelchair accessibility of public buildings, involving their owners and users in Colombo, Sri Lanka.

Study Population

Part 1: Public Buildings

Types of buildings: Government offices, business buildings, educational facilities, health facilities, recreational centers, and public utilities.

Participants: Building owners or managers.

Part 2: Wheelchair Users

Participants: Wheelchair users who access public buildings.

Study Period

Data collection occurred from October 2012 to March 2013.

Sample Size

Public Buildings: 60 buildings.

Wheelchair Users: 60 users.

Sampling Method

Purposive sampling was used to select buildings and wheelchair users. Buildings were selected from the Colombo metropolitan area, ensuring a diverse representation. Wheelchair users were identified through health care providers and oranisations organizations for people with disabilities in the Western province.

Instruments

Checklist: To assess public building accessibility.

Questionnaire for Building Owners: Semi-structured and interviewer-administered.

Questionnaire for Wheelchair Users: Semi-structured and interviewer-administered via telephone.

Data Collection

Public Buildings:

Procedure: Building managers were approached with a letter explaining the study's purpose, ensuring voluntary participation and confidentiality. Accessibility was assessed in areas such as parking, routes, ramps, entrances, toilets, and elevators through direct observation and measurements.

Compliance Measurement: Compliance levels were calculated using simple percentages and means, excluding areas not present in a building.

Wheelchair Users:

Procedure: Telephone interviews were conducted using a semi-structured questionnaire to capture users' experiences and satisfaction levels regarding accessibility.

Ethical Considerations

The Ethical Committee of the Faculty of Medicine, University of Kelaniya, approved the research on August 15, 2012.

Analysis

Public Buildings: Compliance levels were recorded and analyzed by calculating the percentage of compliant items and areas in each building.
Building Owners: Knowledge and views about wheelchair accessibility were summarized using simple percentages and means.
Wheelchair Users: Satisfaction levels were measured and recorded as percentages.

Results

Public buildings
Of those 80 buildings initially identified, 15 buildings were removed from data collection as they did not fulfill the inclusion criteria. Sixty five of them which represent the whole areas of the city were selected to be surveyed. Permission was refused by authorities in charge of five sites, mostly state-owned buildings were not allowed to take measurements due to security reasons. The buildings that were surveyed in this study included eighteen business buildings, four education buildings, eleven government offices, three heath care buildings, thirteen public utility buildings, and eleven recreational buildings.

Table 1. Type of buildings surveyed in this study.

Type of building	No of building	Percent
Business	18	30.0
Education	4	6.7
Government office	11	18.3
Healthcare	3	5.0
Public utility	13	21.7
Recreation	11	18.3
Total	60	100

Twelve buildings were built before 1969, seventeen buildings were built between 1970 and 1989, seventeen buildings were built between 1990 and 2005, and another eighteen buildings between 2000 and 2006. Out of 60 buildings, 27 buildings were privately owned, and the rest thirty-three buildings were state-owned.

Only one of the 60 buildings surveyed was found to be 100% compliant with accessibility guidelines. The compliance score of buildings had a theoretical minimum of zero and a maximum of 100. The building category with the highest compliance with guidelines was health care facility, with a mean compliance of 74 (SD-8.4). The lowest compliance was reported in public utility buildings, at 46.2 (SD-28.3). (Table 4.1.2)

Table 2. Compliance of public buildings based on types of buildings.

Building type	**Mean compliance score***	**Standard deviation**
Education buildings	53.0	09.6
Public utility buildings	46.2	28.3
Business buildings	67.1	21.7
Recreation buildings	51.8	34.0
Government office buildings	65.5	17.0
Health care buildings	74.0	08.4

*Compliance score ranges from 0 to 100

The highest compliance of accessibility area was an entrance, with a mean of 79.7 (SD - 32.8). The lowest level of compliance in the accessibility area was parking, which was 13.5 (SD - 31.1).

Table 3. Compliance of areas of accessibility in public buildings.

Building type	**Mean compliance score***	**Standard deviation**
Parking	13.5	31.1
Route to the Entrance	76.1	37.2
Ramp	61.6	30.6
Entrance	79.7	32.8
Toilets	75.0	34.2
Elevator	69.4	32.8

*Compliance score ranges from 0 to 100

Fifty-four buildings provided parking facilities to their customers. However, only eight buildings had designated parking areas for people with disabilities. Three parking areas were 100% compliant with the guidelines. In four places, the designated space was not wide enough to transfer from vehicle to wheelchair. The international symbol of wheelchair accessibility was not properly displayed in the three parking facilities. The lowest compliance of accessibility was reported in parking, and the mean value was 13.5 (SD- 31.1).

The mean compliance of the Route from parking to the entrance is 76.0 (SD- 4.6). Thirty-six of the sixty buildings surveyed in this study reported 100% compliance on the route. Nine buildings were not complying completely.

Thirty-five buildings required ramps to enter but only twenty nine buildings provided them. Out of them, eight buildings had ramps with 100% compliant to the guidelines. The slopes of 13 ramps were steeper. In three buildings the width of the ramp was less than the required 91.5 cm, 20 others handrails were needed. In five ramps, the rise was more than 76cm without level landing. Compliance of ramp in this study was 65.5 (SD-5.5)

The entrance of all 51 buildings had a clear opening width of 81.5 cm. Thirteen buildings complied with the height of the threshold. In twenty-nine buildings, door hardware was not operable. The mean compliant of the entrance was 76.0 (SD- 4.8)
52 out of 60 buildings provided public toilet facilities but only 26 had designated toilets for wheelchair users. Fifteen designated toilets were 100% compliant with all standards measured. All designated toilets had a clear door width of 81.5 cm. Overall compliance of the toilet was 75.0 (SD- 6.0).

Twenty-eight building provided with elevator. The route from the entrance to the elevator was 100% accessible. Eighteen elevators were at least 173 cm wide and 129.5 cm deep, which is wide enough to accommodate a standard type of wheelchair. The total compliance score of elevators was 69.4 (SD-5.9).

The oldest building surveyed in this study was built in 1884, and the latest was built in 2012. So, the buildings surveyed were built over a span of 128 years. Of all the buildings surveyed, 12 were constructed before 1969, 19 were built between 1970 and 1989, 12 were built between 1990 and 2005, and 18 were built after 2006. 6 buildings which were built before 1969 had undergone significant renovations.

Buildings that were built after 2006 showed the highest (median 75) compliance with guidelines which was made legal in 2006. The Lowest compliance (median 58) was reported in the buildings built in between 1970 to 1989.

Building owners or most responsible persons in the public buildings:

Sixty building owners or the most responsible persons in the public buildings were interviewed. Fifty-two building owners claimed that Wheelchair users visited their business places. However, only four building owners stated that they get wheelchair bound visitors daily.

Table 4. Frequency of visits to public buildings by wheelchair users reported by building owners.

Frequency	**Number**	**Percent**
Daily	04	06.7
Few times a week	09	15.0
Few times a month	17	28.3
Once a month	03	05.0
Less than once a month	19	31.7
Never	08	13.3
Total	**60**	**100.0**

There were seven questions asked to find out the level of knowledge. 30% of public building owners or responsible persons knew wheelchair users travel independently.55% thought ramps built for carrying goods were suitable for wheelchair users. 60% of them knew wheelchair accessibility was a legal requirement in Sri Lanka. 75% of them believed most of the elevators were wheelchair accessible. The majority of them knew wheelchair users need separate parking areas (82%). 92% of them recognized the international symbol of wheelchair. 93% of them said that new people with mobility problems needed separate toilet facilities. The mean level of knowledge was 69.5 (SD-2.3).

According to them, only 32 of 60 buildings were completely accessible for wheelchair users. Nine (16%) of buildings were made accessible after wheelchair accessibility became a legal requirement in Sri Lanka.

Wheelchair users in the Western province:

60 wheelchair users in the Western province who visited public buildings in Colombo were interviewed. Majority of them (n=42, 70%) were diagnosed as paraplegics. Five persons were having quadriplegia. Four persons were victims of stroke and another four were cerebral palsy individuals. There were three persons with Parkinson's disease and one amputee.

Table 5. Diagnosis of wheelchair users.

Diagnosis	**Frequency**	**Percent**
Amputee	01	1.7
Cerebral palsy	04	6.7
Paraplegia	42	70.0
Parkinson's disease	03	5.0
Quadriplegia	05	8.3
Rheumatoid Arthritis	01	1.7
Stroke	04	6.7
Total	**60**	**100.0**

Only 1 out of 60 people with disabilities refrained from visiting to public buildings. Half of them visited public buildings at least a few times a month.

Table 6. The frequency of visits to public places was reported by wheelchair users.

Frequency	**Number**	**Percent**
Daily	05	8.3
Few times a week	07	11.7
Few times a month	19	31.7
Once a month	20	33.3
Less than once a month	08	13.3
Never	01	1.7
Total	**60**	**100.0**

The majority of wheelchair users visited public buildings for health care (58.3%) and commercial (48.3%) purposes. The least number of wheelchair users in this study visited public buildings of educational purposes.

Table 7. Type of buildings visited mainly by the wheelchair users for last 3 months period.

Type of Building	Number	Percentage
Health	35	58.3
Commercial	29	48.3
Education	05	8.3
Govt. Office	11	18.3
Recreational	06	10.0
Public Utilities	12	20.0

Perceived satisfaction of facilities in public buildings was calculated by getting the averages of parking, route, ramp, entrance, toilets and elevators. Satisfaction of accessibility was high in Education (median 100, range 80 to 100) and health care buildings (median 78, range 30 to 100). The satisfaction of wheelchair users with access to recreation (Median 50, range 50 to 90) and government office (median 50, range 30 to 80) was around 50%. Satisfaction with access to commercial buildings was low. Even though median was 10 it has the widest range of satisfaction from 0 to 100. The lowest level of satisfaction was reported in public utility buildings (median 0, range 0 to 80).

Half of the participant refrained from visiting public buildings. The most common reason for that was due to architectural barriers in the public buildings (26.7%). Other reasons are family members did not like them to go out (8.3%), financial difficulties (3.3%), poor health condition (3.3%) and lack of interest in going out (1.7%).

In addition to the quantitative data, qualitative insights emerged from the interviews and observations conducted during the study. The feedback from building managers highlighted a lack of awareness and understanding of accessibility requirements. Many managers believed that ramps designed for goods were sufficient for wheelchair users, revealing a significant gap in knowledge about proper accessibility standards. Wheelchair users shared their experiences and challenges in navigating public buildings, emphasizing the emotional and psychological impact of inadequate facilities. They described frustration and exclusion when encountering architectural barriers, which often deterred them from visiting certain places. The qualitative data also underscored the importance of continuous advocacy and

education to improve accessibility and create a more inclusive environment for people with disabilities.

Discussion

The finding of this study shows that architectural barriers persist in public buildings despite wheelchair accessibility being a legal requirement in Sri Lanka. The highest score of accessibility of public buildings was reported in healthcare facilities, which was 74%, and the lowest was the public utilities building, at 46.2%. Similar gaps between the highest and lowest scores were previously reported (Rivano-Fischer, 2004; Uesh, 2001). The varying types and purposes of the buildings might have caused this range of differences. In some countries, for example, Nigeria, the highest percentage of accessibility was reported in hospital buildings, as access to the hospitals is regarded as essential for wheelchair users.

In contrast, social and recreational facilities were least accessible (Hamzat & Dada, 2005). Having the facility partially compliant with guidelines is not a good sign as this could not help to encourage the wheelchair users to live their lives fully as they were then refrained from participating in social activities. In this study too health care facilities showed the highest compliance this may also be due to knowledge of the professionals in health care facilities regarding accessibility issues of wheelchair users as they can guide construction workers for what is required in wheelchair accessibility as well as hospitals are mainly built for patients who are carried by wheelchairs and trolleys.

In this study, the Entrance was the most accessible area of the building. Mean compliance was 79.5(SD-4.2), and Parking was the least compliant, which was 13.5 (SD-4.2). These results are similar to some of the previous studies (Rivano-Fischer, 2004, Uesh, 2001, McClain et al 1993).

If parking is not provided to wheelchair users, there is not much use of the building, even if other areas are made accessible. Parking for disabled drivers was badly neglected at many places. A possible reason for this is the fact that many Sri Lankans with disabilities often do not drive. However, many disabled persons use their private vehicles and even trishaws and taxis to travel. These individuals may face immense difficulties when parking since there is no place for them. According to the previous studies, parking has been reported as the lowest compliant item. The reason for that was due to a lack of monitoring by relevant authorities and negligence of the building owners (Rivano-Fischer, 2004; Uesh, 2001; Hamzat & Dada, 2005; Mcclain et al 1993.). According to studies in the United States, parking

was the least used area for compliance, but the percentage of compliance was higher than that of this study. This may be due to the cultural difference between developed and developing countries. In developed countries, driving is a daily routine of many disabled people, so parking is a must. It is a positive sign that 82% of building owners think there should be separate parking for disabled visitors. In a study in America (McClain & Todd, 1990), researchers informed about the deficiency areas and later found some of those deficiencies were corrected. Parking was the mostly corrected item. In this study too deficiency areas were reported to the building owners.

Entrance (mean 79.7, SD-4.2) is much more compliant with the guidelines. This high compliance of entrance was similar to previous studies (Rivano-Fischer, 2004, Uesh, 2001, Hamzat & Dada 2005, Mcclain et al 1993.). Higher compliance of entrance is a good sign when promoting necessary changes to make buildings accessible because changing the entrance of a building may be rather major construction work. Compliance of route (mean 76, SD-4.8) and Entrance (mean 79.7, SD-4.2) are also an encouraging fact as wheelchair users are not completely left out from public buildings. In this study, the gradient of some ramps was less than the 1:12 specification, which means ramps were steeper. This may not be a problem for individuals who use electric wheelchairs but for manual wheelchair users find it difficult to negotiate those ramps. In one ramp, the width was 83 cm, which was less than 91. 5cm. When the width of the ramp was 83cm that was wide enough for a wheelchair to move, but it may be risky to propel along a narrow ramp. Therefore, wheelchair user may need another person's assistance to negotiate the ramp. In other words, the wheelchair user is not independent. This shows even though facilities are provided that becomes a waste of money and space unless proper guidelines were provided. Ramps were often available in Supermarkets since customers use trolleys to get their goods to vehicles. In this study, it was found that a ramp was steeper and that no handrails were fixed. This shows ramp which was built for other reason may not match with the requirement of wheelchair users. Building owners or the responsible persons think wheelchair users often travel with a helper (70%), so they do not want to provide ramps to the standards provided in the guideline, thinking wheelchair users would manage ramps with the support of the helper.

Fifty-two buildings provided public toilet facilities but twenty-six designated toilets for disabled individuals were found. There is a need to encourage building owners to provide toilet facilities. Wheelchair users, especially spinal cord injured clients, often face urinary incontinence and bowel accidents, so toilet facilities are essential for them to visit the building and use other facilities in the building. Overall

compliance of toilet was 75 (SD-6.0). Compared to previous studies, the compliance rate is better in this study, but this score is based on the buildings with a toilet. In previous studies, compliance ranged from 33% to 51% (Rivano-Fischer, 2004; Hamzat & Dada, 2005). Narrow doorways, narrow space for wheelchair maneuvering, lack of grab bars, not reachable towel hangers, hand driers, and no designated toilet were the major obstacles (Rivano-Fischer, 2004; Uesh, 2001; Hamzat & Dada, 2005).

Advanced technology and universal designs have caused high compliance of elevators. This study found twenty-eight elevators as multistory buildings, which are now becoming common in this city. Most multistoried buildings in Colombo are three or four stories, except new buildings with more than ten floors. The public area was confined to the ground floor in many of those buildings so that patrons who used wheelchairs would not face difficulty. However, the lack of elevators may prevent employees who use wheelchairs from working. According to the study conducted in Zimbabwe, this high compliance of elevators might be coincidental since the elevator is meant to accommodate many people. Hence, such facilities are conducive for wheelchair users as well (Uesh, 2001).

The buildings surveyed in this study were constructed a range of 128 years in between 1884 to 2012 some old buildings had undergone major renovations over time. However, recently built buildings were more compliant with the guidelines. This may be due to technological advances and abide with guidelines. In previous studies, it was reported that recently built buildings were more accessible than the old buildings (Ahn et al., 1994).

There was no difference of total compliance to guidelines found between privately owned building (mean 59.3, SD-5.5) and the state owned (mean 58.6, SD-3.9). This shows compliance to accessibility was similar in both sectors and both need further improvements in accessibility.

There were eighteen buildings among the buildings surveyed built after wheelchair accessibility became a legal requirement. Compliance of this building was 78 (range 37 to 98) which is the highest to the guidelines. High compliance with this building shows a positive effect of the new law as building designers have taken an interest in meeting the requirement of the accessibility of wheelchair users.

It was found that the knowledge about wheelchair accessibility to public buildings (mean 69.5, SD-2.3) among building owners and responsible persons in public buildings needs to be further strengthened.

Half of the wheelchair users assessed in this study refrained from visiting to public buildings. The main reason for that is an architectural barrier found in public buildings. A similar study in Zambia stated that the lack of accessibility of the built environment was the main impediment to participation by disabled people in most developing countries, particularly Zambia (Banda, M. Chalwe, et al.2012).

Conclusion

The study highlights the need for improved accessibility in the assessed buildings, emphasizing the importance of ongoing compliance monitoring. It calls for the Sri Lankan government to prioritize accessibility in public buildings and enact laws mandating compliance. Collaboration with stakeholders such as wheelchair users, medical rehabilitation professionals, and engineers is essential for effective implementation. Enhanced accessibility promotes independence, integration, and equality for wheelchair users, aligning with government initiatives for disability inclusion. However, awareness among the public and building owners regarding accessibility requirements remains limited, necessitating advocacy efforts. Occupational therapists play a crucial role in mediating between individuals with disabilities and authorities, providing Guidance for new constructions or renovations. Limitations include the use of purposive sampling, a small sample size, and the study's restriction to one geographical region. Recommendations include utilizing study findings to identify and address accessibility barriers, potentially transforming Colombo into a model barrier-free city. Occupational therapists are key advocates for wheelchair accessibility, ensuring their clients' independence, safety, and dignity. Additionally, the study serves as a model for future, more extensive research on accessibility in Sri Lanka.

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