

# Accessibility of Students with Physical Disability to Washrooms in Bungoma Bus Terminus, Kenya

Marilyn Apella Ochien'g<sup>1\*</sup>, George Mark Onyango<sup>2</sup>, George Godwin Wagah<sup>2</sup>

1. Faculty of Arts and Social Sciences, Department of Art and Design, Maseno University, Kenya

2. School of Architecture and Planning, Department of Urban and Regional Planning, Maseno University, Kenya

## ABSTRACT

**Purpose:** To assess the accessibility of students with physical disability to washrooms in Bungoma main bus terminus.

**Method:** A case study approach was used. Data were collected through a structured questionnaire and an observation schedule. A total of 108 respondents from three schools participated in the study.

**Results:** It was established that washrooms in the area were narrow and full of barriers which hampered access to the facilities. Respondents experienced difficulty in using the washrooms due to the narrow doors, high thresholds and lack of grab bars.

**Conclusion:** This study concluded that the numerous barriers in the washrooms of Bungoma bus terminus hampered the safety and mobility of students with physical disability.

**Key words:** Universal design, disability awareness, accessibility, physical disability.

## INTRODUCTION

The enactment of the Persons with Disabilities Act (PDA) in 2004 had a positive effect on the social and legislative landscape in Kenya. The Act led to the establishment of the National Council for Persons with Disabilities (NCPWD) (Government of Kenya, 2004). By providing a framework to fight stigma, the Act aimed at restoring the citizenship and humanity of people with disabilities. The PDA addresses the following broad areas: rights of people with disability, rehabilitation of people with disability, equalisation of opportunities and the establishment of the NCPWD (Government of Kenya, 2004). Provision of

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\*Corresponding Author: Marilyn Apella Ochien'g, Lecturer, Maseno University, P.O.Box 3242, Kisumu 40100, Kenya. Email:obadh79@yahoo.com

accessible bus termini would comply with two areas highlighted by the Act. These are: rights of people with disability and equalisation of opportunities (Ingstad et al, 2007).

Hoy (2004) advocates the provision of toilet stalls with the recommended minimum dimensions of 1500 mm by a width of 1675 mm, for use by persons with mobility aids. These stalls should be located close to other public washrooms (Hoy, 2004). Washrooms with dimensions of 1500 mm are easy to use by persons with disability, since a wheelchair user can access the facilities without bumping into the walls. Pagel and Harris (2002) propose that the water closet (WC) compartment door should open outwards and provide a clear opening of at least 900 mm. For privacy of the users however, it is important to ensure that the WC door does not open onto a circulation path. In addition to this, the door should have a horizontal handle. Hoy (2004) has established that doors to toilet stalls should have a clearance space of 1220 mm.

Pagel and Harris (2002) observe that a clear unobstructed approach to the WC should be provided. Grab bars should be fitted since they help ensure stability of users in areas where maintaining balance is a problem (Ochien'g et al, 2010). The preferred side grab bar is the reversed "L" shaped type (Hoy, 2004), with a clearance space of 38 mm between the wall and the grab bars. This ensures stability of balance, since most people brace their forearms between supports and walls for leverage. The clearance space would thereby provide adequate room for gripping, while preventing injuries resulting from arms slipping through the openings. Pagel and Harris (2002) have established that a small hand-wash basin should be installed at a height of 740 mm and be positioned so that it can be reached by a person seated on the WC. The positioning should allow for a minimum knee clearance of 450 mm.

For the purpose of this study, people with physical disabilities were required to evaluate the design of the public washrooms located in Bungoma bus terminus, so as to establish whether the existing design enhanced their independence and free mobility. Previous research that is mentioned above provided the guidelines for the study.

## **METHOD**

Stratified sampling was employed to select respondents who used Bungoma main bus terminus. This helped to reduce chance variations between the sample

and the population it represented. It also allowed each member of the sample to have an equal and independent opportunity to be included in the study.

The sampling frame consisted of a list of registered persons with physical disability in educational institutions in Bungoma. They belonged to special schools located in Bungoma Town, namely Nalondo Primary School, Joy Valley Kamatuni Primary School, and Nalondo Secondary School. The strata consisted of primary and secondary school students. 108 respondents participated in the study and the case study approach was followed.

Data was collected from the students through a structured questionnaire consisting of open and closed-ended questions, and an observation schedule. In order to understand issues of accessibility that persons with physical disability experience, the researcher visited washrooms in the study area. Non-participant observation enabled the researcher to cross-check the respondents' answers.

The researcher classified and tabulated data for the purpose of analysis. The quantitative data from the questionnaire was analysed using the Statistical Programme for Social Sciences (SPSS). Participants' responses were assigned codes and the variables defined before each entry. This information was coded for easy entry into the data sheet. Results were presented using central tendency.

## RESULTS AND DISCUSSION

Of the total number of 108 respondents drawn from Bungoma, 50% were male and 50% were female.

Respondents used various assistive devices as is shown in Table 1.

**Table 1: Assistive Devices used by Respondents (N=108)**

Assistive Devices Used	Frequency	Percent (%)
None	7	6
Special Boots	4	4
Wheelchair only	80	73
Crutches only	9	8
Crutches and Wheelchair	9	8
Crutches, Wheelchair and Walker	1	1
<b>Total</b>	<b>108</b>	<b>100</b>

6% of the respondents had neurological disorders and were able to operate without any assistive devices. 4% of the respondents used special boots, and 73% used wheelchairs only. Among the respondents, 8% used crutches only while another 8 % used both wheelchairs and crutches. There was also the 1% who used three assistive devices, namely crutches, wheelchair and a walker.

## Design of Washrooms

Respondents were required to evaluate the difficulties with doors and turning space inside the washrooms. Table 2 presents the findings.

**Table 2: Difficulties in using Washrooms**

	Difficulty Manoeuvring Through Door		Difficulty Turning Inside the Washrooms	
	N	(%)	N	%
Never	44	41	35	32
Rarely	2	2	7	7
Sometimes	6	6	19	18
Very Often	4	4	14	13
Always	52	47	33	30
<b>Total</b>	<b>108</b>	<b>100</b>	<b>108</b>	<b>100</b>

In Bungoma, 57% of persons with physical disability experienced difficulty in handling washroom doors. Of these, 47% of the respondents always experienced difficulty while manoeuvring through doorways, 4 % experienced difficulty very often, and 6% experienced difficulty sometimes. These results show that the design of washroom doors in Bungoma is such that a great number of persons with physical disability are discriminated against.

Difficulty in manoeuvring through doorways was due to the narrow doors and high thresholds. Solidere (2004) proposes that thresholds should be omitted wherever possible. In cases where this is not possible, then thresholds should not be more than 20 mm higher than the finished floor level. Thresholds higher than 6 mm should be bevelled or have sloped edges to facilitate the passage of a wheelchair (Solidere, 2004). About doorway widths, research has established that doors to accessible toilets should have a minimum clear opening of 900 mm. At the leading edge of the door to an accessible area, a clear wall space of at least 450 mm should be provided (Pagel and Harris, 2002).

61% of the respondents pointed out difficulty experienced while turning inside washrooms. Table 2 above presents this data. While 18% of the respondents experienced difficulty sometimes, 13% experienced difficulty very often, and 30% always experienced difficulty. An analysis of responses given by respondents in all the schools revealed that this difficulty arose as a result of inadequate transfer space provided in the water closet.

To address this problem, suites of male/female toilets should include at least one larger sized cubicle (Pagel and Harris, 2002). Hoy (2004) suggests that the cubicles for use by persons with mobility aids or others requiring personal assistance should conform to the following specifications: recommended minimum dimensions of accessible stalls should be 1500 mm by a width of 1675 mm. To ensure access through washroom doors, a door with a minimum clear width of 810 mm should be provided. In addition to this, a clear space of 1220 mm in front of washroom doors should be provided to ensure easy access (Hoy, 2004).

### **Grab Bars**

This study established that grab bars were missing in all washrooms within the study area. To ensure the usability of the toilets, grab bars should be provided since they aid the stability of users in areas where maintaining balance is a problem (Ochien'g et al, 2010). The preferred side grab bar is the reversed "L" shaped type (Hoy, 2004), with a clearance space of 38 mm between the wall and the grab bars. This helps to maintain balance for lifting, since most people brace their forearms between supports and walls for leverage. The clearance space would thereby provide adequate room for gripping, while preventing injuries caused by arms slipping through the openings.

### **Sinks**

Respondents in Bungoma noted that access to sinks was hindered. Of the 85% who pointed out that clear floor space was lacking, 57% of the respondents pointed out that clear floor space was never provided in front of sinks, 8% pointed out that this was rarely provided and 20% pointed out that this was sometimes provided. Regarding the design of sinks, the researcher noted that the space in front of the sink sometimes had clutter which prevented up to 57% of the respondents from utilising it. Hoy (2004) suggests that hand-wash basins should be mounted as far forward as possible, without encroaching on the recommended knee space

clearances. The distance from the edge of the sink to the taps should not exceed 485 mm for persons using mobility aids.

### **Clear Space in front of Urinal**

In Bungoma, totally 76% of the male respondents had a problem accessing urinals. While 43% of them highlighted the fact that clear floor space was lacking in front of urinals, 19% pointed out that this floor space was rarely provided and 14% noted that this space was lacking sometimes.

## **CONCLUSION AND RECOMMENDATIONS**

The purpose of this study was to evaluate the design of washrooms in Bungoma so as to establish their accessibility to people with physical disability. The study concluded that there are numerous barriers in the washrooms of Bungoma bus termini. These barriers hampered the safety and mobility of students with physical disability.

To mitigate the problems highlighted by the study, washrooms should have the following accessible components:

- Doorways should have a minimum width of 900 mm with thresholds of not more than 20 mm.
- Suites of toilets should include at least one larger sized cubicle with dimensions of 1675 mm by 1500 mm.
- The larger cubicle should be provided with grab bars to ensure usability by people with physical disability.

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## REFERENCES

- Government of Kenya (GoK) (2004). Kenya Gazette Supplement. The Persons with Disabilities Act, 2003. Nairobi: Government Printer.
- Hoy S (2004). City Of Toronto accessibility design guidelines. Available from [http://www.toronto.ca/parks/pdf/engagement/accessibility\\_guidelines.pdf](http://www.toronto.ca/parks/pdf/engagement/accessibility_guidelines.pdf) [Accessed on 16 April 2012].
- Ingstad B, Grut L, Olenja J (2007). See me, and do not forget me: People with disabilities in Kenya. SINTEF Health Research. Oslo: Norway. Available at <http://siteresources.worldbank.org/DISABILITY/Resources/Regions/Africa/LCKKenya2.pdf> [Accessed on 20 December 2011].
- Ochien'g A, Onyango G, Oracha P (2010). Architectural barriers experienced by people with physical disabilities in the central business district of Kisumu, Kenya. *Journal of Disability and International Development*, 3. Available at [http://www.zbdw.de/projekt01/media/pdf/2010\\_3\\_BiE.pdf](http://www.zbdw.de/projekt01/media/pdf/2010_3_BiE.pdf) [Accessed on 6 July 2012].
- Pagel M, Harris F (2002). Design for access 2. Manchester City Council. Available at [www.manchester.gov.uk/download/3521/design\\_for\\_access\\_2](http://www.manchester.gov.uk/download/3521/design_for_access_2) [Accessed on 20 February 2012].
- Solidere (2004). Accessibility for the disabled, a design manual for a barrier free environment. Urban Management Department of the Lebanese Company for the Development and Reconstruction of Beirut Central District (SOLIDERE). Available at <http://www.un.org/esa/socdev/enable/designm/index.html> [Accessed on 15 November 2011].