

ORIGINAL ARTICLE

## ACCESSIBILITY TO BASIC HEALTH UNITS FOR PEOPLE WITH PHYSICAL DISABILITIES

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### ABSTRACT

Objective: to evaluate the accessibility of the physically disabled to the physical structure of Basic Health Units. Methods: descriptive, exploratory research, with a quantitative approach, conducted in 80 basic units of Campina Grande-Paraíba, Brazil, in 2019. An adapted collection instrument was used, according to Brazilian Technical Standard 9050:2015. Chi-square and Fisher tests were used to verify associations. Results: conditions of public road (68%), access to the unit entrance (74%) and use of the International Symbol of Access (88%) were found to be prevalently negative. Associations were found between unit location area and table dimensions ( $p=0.004$ ), between building type and access to the area ( $p=0.023$ ;  $0.015$ ;  $0.026$ ), vertical circulation conditions inside the building and symbol use ( $p=0.012$ ;  $0.035$ ;  $0.005$ ;  $0.005$ ;  $<0.001$ ), and the furniture and sanitary facility ( $p=<0.001$ ;  $0.001$ ;  $<0.001$ ;  $<0.001$ ;  $0.002$ ;  $0.014$ ;  $0.005$ ). Conclusion: The municipal basic units do not have accessibility for People with Disabilities.

**DESCRIPTORS:** Disabled Persons; Primary Care; Health Services Accessibility; Architectural Accessibility; Health Centers.

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## INTRODUCTION

In the world, there are about 45 million people who have at least one type of disability. In Brazil, they correspond to 23.9% of the population<sup>(1)</sup>. The rights of this social segment were established from the 1988 Federal Constitution, which designated the protection and social integration of people with disabilities (PwD) as a responsibility of the three spheres of government. Then, it was strengthened by Law No. 7.853/1989, which provides support to PwD, bringing standards to ensure the effective social integration, from the full exercise of individual and social rights of PwD, in several areas, such as education, health, work and citizenship, criminalizing any prejudice or discrimination<sup>(2-4)</sup>.

Disability potentializes limitations, depending on each type, which interfere with the execution of daily practices considered common. Regarding physical PwD, there are problems that interfere in their locomotion if there is no adequacy of public and private spaces. Such limitations can be increased when added to the architectural barriers, making necessary the effectiveness of spaces, buildings, furniture, and equipment considered accessible, to reduce mobility difficulties to the physical space, allowing accessibility to PwD physically and their social inclusion in an equitable and integral way<sup>(5)</sup>.

Accessibility is defined as the possibility and condition of reach, perception and understanding of the individual, for the safe and autonomous use of buildings, spaces, furniture, urban equipment, and elements, according to NBR 9050, developed by the Brazilian Association of Technical Standards (ABNT)<sup>(6)</sup>. Accessibility enables the development of an inclusive and egalitarian country, as it is related to the universal access of people to goods and services, considering their particularities<sup>(7-8)</sup>.

Part of the legislation and policies related to this group address accessibility as a requirement for ensuring the fundamental rights of PwD, being present in the right to life, habilitation and rehabilitation, health, education, housing, work, among others. It is also addressed in NBR 9050:2015, which regulates criteria and technical parameters to be observed as to buildings, bringing the adaptation of the urban and rural environment, ensuring the proper conditions of accessibility with safety and autonomy<sup>(7)</sup>.

Accessibility is a fundamental term for the inclusion and quality of life of PwD because the environment has a direct impact on their experience. Inaccessible environments create even greater barriers, affecting the autonomy of PwD and preventing their mobility and right to come and go, present in the art. 5th of the Federal Constitution of the Republic<sup>(3,9)</sup>.

Despite Brazil has policies aimed at PwD, there is no proper implementation and they are not respected and fully complied with by public institutions, including health agencies<sup>(9)</sup>. Research describes as the cause the lack of supervision and planning of actions that can be taken in this context, to certify the operation of Basic Health Units (BHUs) in an appropriate and accessible way<sup>(9)</sup>.

Given the rights of PwD and the accessibility problems presented by the structures of the BHUs, this study is relevant because it seeks to evaluate whether the health units have adequate environmental conditions, providing an accessible space to PwD physically, without any discrimination due to their restriction or exclusion from architectural barriers. From this perspective, it was aimed to evaluate the accessibility of PwD to the physical structure of Basic Health Units in a medium-sized municipality in the Northeast of Brazil.

## METHOD

Descriptive, exploratory and analytical research, with a quantitative approach, carried

out in the 80 buildings that constitute the 84 BHUs (65 in urban areas and 19 in rural areas) of the municipality of Campina Grande-PB, characterized as the interior of the state of Paraíba, having a total of 385,276 inhabitants, distributed in 641 km<sup>2</sup> and three districts: Galante, São José da Mata and Catolé de Boa Vista, according to data from the Brazilian Institute of Geography and Statistics (IBGE)<sup>(10)</sup>. It is the site of the third Regional Health Center (NRS), incorporating 70 municipalities in a health macro-region<sup>(11)</sup>. The eligibility criteria for choosing the BHU were being in full operation and not undergoing significant renovations involving the physical structure (painting and minor repairs were not considered).

The research was conducted in the first half of 2019 by the researcher along with three employees, who were properly trained for the field research and use of the data collection instrument.

The collection instrument consists of a form in checklist format adapted<sup>(12)</sup> and updated according to NBR 9050:2015, addressing the necessary items for an accessible physical structure, allowing the structural evaluation of the external and internal area of the buildings in which the BHUs are inserted, in a concise and objective way. The adaptations in relation to the original form are based on the suppression of the items related to sensory disability, remaining only the items about physical disability.

The form is divided into two parts. The first deals with the circulation in the external and internal area, involving the public roads for PwD access to the place where the BHU is installed, the access to the entrance and to the interior of the BHU and the internal circulation, containing the necessary items so that the roads, the building, and the spaces are considered accessible. The second involves the items related to the accessibility of equipment, furniture, and sanitary facilities.

The data were collected from the technique of systematic observation, and for this, we used inelastic tape measure for measurement, graduated in centimeters. To register the images, smartphone cameras were used, following the NBR 9050:2015 standard.

The data obtained from the forms were stored and analyzed using the SPSS software version 20.0. For descriptive analysis, the absolute and relative frequencies of the variables were calculated and for inferential analysis, Person's chi-square test ( $X^2$ ) and Fisher's exact test were performed when the prerequisites of the first were not met. A p-value <0.05 was considered significant. The variables of general characteristics were considered dependent and Zone of location of BHUs/ Type of BHU as independent.

The research was submitted to the Research Ethics Committee and data collection started after the approval opinion (CAAE 08501019.8.0000.5187), number 3.187.495.

## RESULTS

Table 1 describes the main characteristics of access and circulation of the external and internal areas of the BHUs buildings. It was found that 54.4% (68%) of the public road conditions, 59.2% (74%) of the access to the BHU entrance and 70.4% (88%) of the use of the International Symbol of Access were responsible for the most negative scores in the evaluation.

Table 1 - Characteristics of access to the circulation of the external and internal area of the BHUs by PwD in a medium-sized municipality in the Northeast of Brazil (n=80). Campina Grande, PB, Brazil, 2020 (continues)

Variables	Yes		No		NA*	
	n	%	n	%	n	%
Public Roads						
Pedestrian Crosswalks	7	8,8	73	91,2	-	-
Curb cuts	59	73,8	21	26,2	-	-
Signed public works	1	1,3	79	98,7	-	-
Clear sidewalks	52	65	28	35	-	-
Potholes sidewalks	9	11,3	71	88,7	-	-
Sidewalks have minimum width (1.20m)	73	91,3	7	8,7	-	-
Traffic signs	18	22,5	62	77,5	-	-
Locality signs	12	15	68	80	-	-
Traffic lights with push buttons	0	0	80	100	-	-
From the access to the entrance of the BHU						
Lowering of the sidewalk	58	72,5	22	27,5	-	-
Private parking for PwD	0	0	80	100	-	-
Path from the parking space to the entrance	23	28,7	57	71,3	-	-
Corridors with arrows	3	3,7	77	96,3	-	-
From the access to the interior of the BHU						
Staircase without handrail	4	5	76	95	-	-
Staircase with handrail	7	8,8	73	91,2	-	-
Ramp	71	88,8	9	11,2	-	-
Circulation areas	62	77,5	18	22,5	-	-
Doors with rails	15	18,7	7	8,8	58	72,5
Regular floor	65	81,2	15	18,8	-	-
Free areas of collective circulation	73	91,3	7	8,7	-	-
Vertical circulation in the building						
Ramp	51	63,7	29	36,3	-	-
Staircase	11	13,8	69	86,2	-	-
Sloping ramp access	38	47,5	14	17,5	28	35
Non-stick ramp floor	38	47,5	14	17,5	28	35
Access by wide stairway	7	8,8	4	5	69	86,2
Insulated steps	9	11,3	2	2,5	69	86,2
Step tread	6	7,5	5	6,3	69	86,2
Visual signage on edge of floor	2	2,5	9	11,3	69	86,2
Handrail made of rigid material	10	12,5	3	3,8	67	83,7
Handrail firmly fixed	10	12,5	3	3,8	67	83,7
Handrail installed on both sides	5	6,3	8	10	67	83,7

Handrail 0.92m and 0.7m (from the floor)	7	8,8	6	7,5	67	83,7
Handrail at 0,04m away	0	0	11	13,8	69	86,2
Handrail extends at least 0,30m	1	1,3	12	15	67	83,7
Curved handrail	7	8,8	6	7,5	67	83,7
<b>International Symbol for Access (SIA)</b>						
Entrances	4	5	76	95	-	-
Parking areas and spaces	1	1,3	79	98,7	-	-
Toilets	47	58,8	33	41,2	-	-
Rescue assistance areas	1	1,3	79	98,7	-	-
Restricted areas (wheelchairs)	3	3,8	77	96,2	-	-
Preferential equipment/furnishings	0	0	80	100	-	-

\*Not applicable

Source: Authors (2020)

Table 2 shows the domain of accessibility of equipment, furniture, and sanitary installations in the BHUs.

Table 2 - Accessibility characteristics of equipment, furniture, and sanitary facilities for PwD in the BHUs of a medium-sized municipality in the Northeast of Brazil (n=80). Campina Grande, PB, Brazil, 2020 (continues)

Variables	Yes		No		NA*	
	n	%	n	%	n	%
<b>Furniture</b>						
Tables have a minimum width	58	72,5	22	27,5	-	-
Seats are between 0.4 and 0.45m deep	69	86,3	11	13,7	-	-
Drinking fountains are installed at 0.90m from the floor	9	11,3	59	73,7	12	15
<b>Sanitary Facilities</b>						
Toilets Suitable for PwD	40	50	40	50	-	-
Symbolized Toilets	49	61,3	31	38,7	-	-
Toilets available for both sexes	38	47,5	42	52,5	-	-
<b>Approach areas</b>						
Has free space equivalent to a rectangle	50	62,5	30	37,5	-	-
Side and back wall next to the toilet bowl	27	33,8	53	66,2	-	-
Horizontal bars have a minimum length of 0.8m	19	23,8	61	76,2	-	-
Horizontal bars are at a height of 0.75m from the floor	10	12,5	70	87,5	-	-
Toilet bowl is at a maximum height of 0.46m	74	92,5	6	7,5	-	-
Toilet bowl is at a height of 0.55m from the floor	61	76,2	19	23,8	-	-
The flush valve is at a maximum height of 1.00m	69	86,2	11	13,8	-	-
Washbasin is a pedestal-free type	64	80	16	20	-	-

Sink is at a height of 0.80m from the floor	65	81,2	15	18,8	-	-
Faucet with lever	2	2,5	78	97,5	-	-

\*Not applicable.

Source: Authors (2020)

As shown in Table 3, there was an association between the location zone of the units (urban/rural) and the existence of minimum width tables ( $p=0.004$ ).

Table 3 - Associations between the location zone of BHUs and furniture and sanitary facilities for PwD in a medium-sized municipality in the Northeast of Brazil. Campina Grande, PB, Brazil, 2020 (continues)

Variables		BHU Location Zone				p
		Urban		Countryside		
		n	%	n	%	
Tables have minimum width	Yes	52	89,7	6	10,3	0,004**
	No	13	59,1	9	40,9	
Seats have depth	Yes	56	81,1	13	18,9	1,000**
	No	9	81,8	2	18,2	
Drinking fountains are 0.9m from the floor	Yes	6	66,6	3	33,4	0,402**
	No	47	79,6	12	20,4	
Toilets are adequate	Yes	35	87,5	5	13,5	0,152
	No	30	75	10	25	
Toilets are symbolized	Yes	40	81,6	9	18,4	0,912
	No	25	80,6	6	19,4	
Toilets (male and female)	Yes	31	81,6	7	18,4	0,943
	No	34	80,9	8	19,1	
Has equivalent free space	Yes	41	82	9	18	0,824
	No	24	80	6	20	
Horizontal bars installed	Yes	23	85,2	4	14,8	0,520**
	No	42	79,2	11	20,8	
Bar length	Yes	16	84,2	3	15,8	1,000**
	No	49	80,3	12	19,7	
Bar height	Yes	7	70	3	30	0,387
	No	58	82,9	12	17,1	
Basin height (0.46m)	Yes	61	82,4	13	17,6	0,313**
	No	4	66,7	2	33,3	
Paper bowl next to toilet bowl	Yes	49	80,3	12	19,7	1,000**
	No	16	84,2	3	15,8	
Flush valve (height)	Yes	56	81,2	13	18,8	1,000**

	No	9	81,8	2	18,2	
Washbasin type without column	Yes	52	81,2	12	18,8	1,000**
	No		81,2	3	18,8	
Washbasin at a height of 0.80m	Yes	52	80	13	20	0,724**
	No	13	86,7	2	13,3	
Faucet with lever	Yes	2	100	0	0	1,000**
	No	63	80,8	15	19,2	

\*\* Fisher's Test

Source: Authors (2020)

In Table 4, the associations of the evaluation variables of Access to external and internal area, Internal circulation and the SIA, and Furniture and sanitary installation with the type of BHU (built/adapted) are presented.

Table 4 - Associations between the type of building of the BHUs with the External and Internal Area Access, Internal Circulation and the SIA and Furniture and Sanitary Installation in a medium-sized municipality in Northeastern Brazil. Campina Grande, PB, Brazil, 2020 (continues)

Variables	Type of BHU				p	
	Built		Adapted			
	n	%	n	%		
Access to the external and internal area						
Has sidewalk undercutting	Yes	35	60,3	23	39,7	0,023
	No	7	31,8	15	68,2	
Obstacle-free path	Yes	17	73,9	6	26,1	0,015
	No	25	43,9	32	56,1	
The floor is regular	Yes	38	58,5	27	41,5	0,026
	No	4	26,7	11	73,3	
Internal Circulation and the SIA						
The ramp access has an inclination	Yes	23	60,5	15	39,5	0,012
	No	3	21,4	11	78,6	
The handrail is made of rigid material	Yes	8	80	2	20	0,035**
	No	0	0	3	100	
The handrail height is 0.92m and 0.7m	Yes	7	100	0	0	0,005**
	No	1	17,7	5	83,3	
The ends of handrails	Yes	7	100	0	0	0,005**
	No	1	17,7	5	83,3	
Toilets	Yes	34	72,3	13	27,7	<0,001
	No	8	24,2	25	75,8	
Furniture and sanitary installation						

Toilets are adequate	Yes	30	75	10	25	<0,001
	No	12	30	28	70	
Toilets are symbolized	Yes	33	67,3	16	32,7	0,001
	No	9	29	22	71	
Has free space	Yes	34	68	16	32	<0,001
	No	8	26,7	22	73,3	
Bars on the bottom	Yes	22	81,5	5	18,5	<0,001
	No	20	37,8	33	62,2	
Length of bars	Yes	16	84,2	3	15,8	0,002
	No	26	42,6	35	57,4	
Lavatory	Yes	38	59,4	26	40,6	0,014
	No	4	25	12	75	
Washbasin at a height of 0.80m	Yes	39	60	26	40	0,005
	No	3	20	12	80	

\*\* Fisher's Test

Source: Authors (2020)

Figure 1 shows images taken in loco at the BHUs investigated. Images A and B confirm the lowering of sidewalks, unevenness, and the use of a house for the operation of a unit. Images C and D show aspects of the entrance and interior of the BHUs of the investigated municipality, with the predominant use of access ramps. Images E and F show sanitary facilities of the BHUs, showing that the bathrooms are used by both sexes and without bars on the back side of the toilet bowl.



Figure 1 - Demonstration of external and internal accessibility conditions of the PHU in a medium-sized municipality in the Northeast of Brazil. Campina Grande, PB, Brazil, 2020. Source: Authors (2020)

## DISCUSSION

The research showed that the BHUs of the investigated municipality did not offer satisfactory aspects of accessibility in relation to the public road, for not having pedestrian crosswalks, signaling of public works, with the presence of holes/ unevenness, no visibility of signs and no traffic lights. Such findings show that PwD may not be able to transit to reach their destination of interest safely.

The main focus of this study is the accessibility for PwD in the context of primary care, an important and indispensable aspect, because, according to the Brazilian Law of Inclusion of the Person with Disability No. 13,143 of 2015, it is the duty of the state to offer health care for PwD, which refers to the fulfillment of the promotion of personal, social and economic well-being<sup>(7)</sup>. To standardize aspects related to the accessibility of the physical structure for PwD, the NBR 9050:2015 establishes parameters for buildings, furniture, spaces, and urban equipment.

Urban mobility is a condition inherent to the displacement of human beings through the city, whether by means of transportation or not, which refers to accessibility issues in its singularity, thus becoming a right. Therefore, Law No. 12,587 of 2012 ensures that it is the duty of the Union, States and Municipalities to perform in their respective projects issue of resources to improve urban mobility issues, because only then is possible the accessibility to goods and services, especially in the context of health<sup>(13-14)</sup>.

The limitations in physical spaces that restrict participation and access to health services bring a negative impact on the individual's health. Physical PwD have a greater propensity to sedentarism and comorbidities, requiring greater attention<sup>(15-16)</sup>. A study developed in the city of Itumbiara, Brazil, which observed the conditions of mobility and urban accessibility by PwD, concluded that the streets do not have structures that enable free access to these individuals, with the presence of uneven sidewalks, without lanes and traffic lights. In this sense, it is worth pointing out that the adequacy of sidewalks is a fundamental piece to facilitate the access of PwD to services. Although the study compared here focuses on characteristics of the city, the external aspects of health units are also urban responsibility<sup>(15)</sup>.

However, the external access has a lowered curb, sidewalks free of furniture, with a minimum width of 1.20m, which meet the current standard. This observation is important because the lowering of the curb is intended for wheelchair traffic, making it easier to slide and get to the sidewalk. A study developed in São Jonas Manoel-GO<sup>(16)</sup> agrees with some of the findings presented here, highlighting, however, that the presence of such aspects does not annul the other findings evidenced in the public road that hinder access, adding that the study concluded that such difficulties may reduce the quality of life of these people.

Another Brazilian study, developed in Presidente Prudente-SP<sup>(13)</sup> with focus on BHUs, highlighted that the main physical impediments on sidewalks are: occurrence of unevenness (52.6%), presence of trees and/or bushes (21%), and holes (10.5%).

Regarding the entrance to the building, going through the areas of urban mobility, it was evidenced that the BHUs do not have private parking properly signaled and indicative arrows with the International Symbol of Access (SIA) routing of the main points. Regarding the private parking for PwD, a Brazilian study in Chapecó-SC showed that most units (79%) had no vacancies intended for this public<sup>(8)</sup>. Another Brazilian study conducted in São Paulo highlighted the lack of parking spaces for PwD in a universe of 19 public health units<sup>(13)</sup>.

The predominant inexistence of the SIA was another finding that deserves to be highlighted, since this symbol (white pictogram with a blue background) has as one of its uses to indicate an accessible path for PwD. The lack of signage is corroborated in another study, which analyzed the accessibility of BHU in Tubarão-SC, identifying the absence

of the symbol and arrows of location, which hinders the decision of directions that the PwD should take, suggesting the difficulty of implementation of the symbol in the units, especially in the external area<sup>(17)</sup>.

About access to enter the unit, most have access ramps, with a standardized circulation area of 0.8m, regular floor, and with circulation areas free of obstacles. The presence of access ramps at the entrance facilitates the transition of PwD, but the result contrasts a Brazilian study in the municipality of Baturité-CE, in which 74% of facilities did not have this construction, which is a positive point for health units in the municipality investigated here<sup>(15)</sup>.

Regarding the higher frequency of doors of 0.8m, which allow free passage to the interior of the unit, similarly, a study conducted in Chapecó-SC found that 100% of the observed doors met the criteria of the standard, as well as the regular floor, free of holes or any other obstacle was predominant<sup>(8)</sup>.

In the aspect of vertical circulation, that is, inside the building, the most frequent presence of ramps, with access at a maximum slope (2%) in order to minimize efforts by the PwD and with non-stick flooring, corroborates a study conducted in João Pessoa-PB, which identified the same aspects in hospitals, in which 100% had ramps with non-stick flooring, as well as the circulation area of at least 1.20 m, allowing them to move independently around the health unit<sup>(18)</sup>.

However, regarding drinking fountains, most units did not have an appropriate arrangement of equipment, which according to the NBR is 0.90m from the floor, once again hindering access to goods and services (in this case water), which corroborates the study developed in Baturité-CE, in which most units had no drinking fountain (75.8%) and 18.5% had one, but in an inaccessible way<sup>(19)</sup>.

In the approach areas of the sanitary facilities, it was verified that the BHU have free and adequate space, but many units do not have horizontal bars, and when present, the bars were not in adequate length and height. The sinks, on the other hand, do not have levers. Given these inadequacies, it is possible to state that the level of difficulty increases, since many times the PwD may present conditions of urinary or fecal incontinence and need to use the bathroom with ease and safety<sup>(20)</sup>.

Accessibility inadequacies are also described in the international literature<sup>(21-22)</sup>. A study developed in England highlights that PwD have several difficulties to access services, and that such mishaps go through issues of transportation to the entrance of the units<sup>(21)</sup>.

Regarding PwD access, a systematic review showed that few studies address the issue of accessibility, and three were found in the literature: the first showed no differences in relation to the satisfaction of access of people with and without disabilities in Afghanistan; in Thailand, access was considered moderate (neither good nor bad); and in Ghana, Africa, it was found that 71% of PwD face difficulties in access to services, in all of them finding physical barriers<sup>(22)</sup>.

The relationship between the type of BHU (built or adapted) and the accessibility variables was well determined. In this perspective, it is considered that houses adapted for the operation of BHU are not suitable to receive people with mobility difficulties, i.e., during the renovation of such places, the normative aspects of accessibility were not fully observed.

Therefore, the units do not meet a minimum percentage of 70% of the accessibility prerequisites of the BHUs, which corroborates the Brazilian study conducted throughout the state of Pernambuco<sup>(23)</sup> that assessed the main obstacles of access for people with disabilities, and observed that the units did not meet many access requirements, such as adapted bathrooms, handrails, ramps, etc.

Finally, it is noticeable that the social importance of the peculiarities of disability covers not only the health sphere, but also the entire society, because the way one interacts and performs activities is different and happens according to one's own resourcefulness. In this aspect, adaptation happens as a form of compensation<sup>(24)</sup>.

Inadequate buildings create significant barriers to physical PwD, and knowledge of such barriers allows policies to be formulated, bringing about improved quality of life and social integration of PwD<sup>(16-17)</sup>.

Despite the present construct is a source of knowledge about the reality presented here, it is not free of limitations, the main one being the limited sample size. It is believed that this research will subsidize the decision making regarding the construction or reform of the basic units, aiming at a comprehensive access for people with disabilities.

## CONCLUSION

This study found that the Basic Health Units investigated do not have an adequate structure to offer accessibility to people with disabilities, since they presented inadequacies in the public road, in the access to the entrance of the BHU and in the use of the SIA. It was also found that the area of location of the BHUs and the type of building interfere in the normative aspects of accessibility.

Buildings that lack accessibility can generate significant barriers for PwD physically, and the knowledge of such barriers, through studies in the area, allows public policies to be (re)formulated, culminating in improvements in access to health and social integration of this public.

It is noteworthy that the provision of care to PwD is recommended by principles that govern the current health system, and it is of fundamental importance to plan the construction or renovation of BHUs in accordance with the standards of accessibility, since physical barriers in access to health services are a risk factor for the health of this social segment.

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