

Accessibility to people with motor, visual, or hearing disabilities during delivery and childbirth: the structure of SUS facilities linked to Rede Cegonha

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Abstract *There are no nationwide studies characterizing accessibility for people with disabilities during delivery. This study aimed to describe the physical structure of hospital units regarding accessibility for pregnant and puerperae with motor (MD), visual (VD), or hearing (HD) disabilities in Brazil. This is an ecological, descriptive study conducted in all 606 health facilities linked to the “Rede Cegonha” where deliveries occurred, according to 2015 databases. We performed the descriptive and geospatial analysis and considered the presence of motor accessibility when the establishment had a handrail or elevator ramp, wheelchair-sized doors, and accessible bathroom with bars. We assumed visual accessibility when there was tactile signage on the floor (Braille system or embossed figures) and hearing accessibility when there was signage by texts, pictures, signs, posters, or symbols in the environments. In Brazil, only 26 (4.3%) of the facilities had accessibility for people with MD, 20 (3.3%) for people with VD, and none for HD. Motor accessibility was worse in the North and Northeast of Brazil, and hearing accessibility in the North region. Despite advances in the implementation of the “Rede Cegonha” in Brazil, the facilities’ structure is not adapted for women with MD, VD, or HD.*

Key words *People with disabilities, Maternal health services, Service structure*

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Introduction

In the last 2010 census, 24% of the Brazilian population reported having some type of motor (MD), visual (VD), or hearing (HD) disability. More than 13 million (7.1%) had some degree of MD, of which 734,421 (0.4%) were utterly unable to walk. VD was reported by 35,774,392 (18.8%) Brazilians, and of these, 506,377 (0.3%) were completely blind. Some hearing impairment degree was reported by 9,717,318 (5.1%) Brazilians, of whom 344,206 (0.2%) were totally deaf. These disabilities were more expressive in women, especially motor and visual¹.

Women with disabilities experience multiple social, economic, and health inequalities, with greater exposure to poverty, unemployment, and low schooling²⁻⁸. Pregnant women with disabilities are more susceptible to problems during pregnancy and delivery⁹⁻¹¹. Even so, international studies show that these women face barriers and challenges related to access and quality of reproductive health and cancer prevention services^{4,6,7,12-18}.

In 2002, the National Health Policy for People with Disabilities¹⁹ was established to reduce the multiple vulnerabilities experienced by people with disabilities. However, it was altered in 2010 by the National Health Policy for People with Disabilities²⁰, since understanding the concept of disability is evolving around the world. In Brazil, the Care Network for People with Disabilities, established under Ordinance N° 793, of April 24, 2012²¹, emphasizes the need to modify the structure of health establishments within the Unified Health System (SUS), ensuring access, improved physical structure, and professional qualification of the entire Care Network, from primary care to high complexity, including funding for this purpose, to cover service users with disabilities.

Martins *et al.*²² found that the physical structure of a primary health care facility (acronym in Portuguese – UBS) in João Pessoa, Northeast Brazil, was not adapted for people with disabilities, diverging from the SUS principles of equity and universality. In an analysis of 240 UBS in 41 Brazilian municipalities with more than 100 thousand inhabitants, Siqueira *et al.*²³ found that about 60% of the facilities were unsuitable for access by people with disabilities. The presence of steps, the lack of handrails, ramps, restrooms adapted for wheelchair users, and waiting rooms inadequate to needs were the most identified problems.

No studies evaluating accessibility in Brazilian maternity hospitals for pregnant women/mothers with MD, VD, or HD have been identi-

fied concerning delivery care. However, some evidence shows that the adequacy of the structure in maternity hospitals affects the reduction of maternal and child mortality and adverse perinatal outcomes^{24,25}.

From the perspective of greater social inclusion and the construction of full and effective citizenship of people with disabilities, in 2015, Brazil established the Brazilian Law for the Inclusion of People with Disabilities, also known as the Statute of People with Disabilities²⁶. This Law guarantees access to health for this segment of the population²⁶. However, despite scarce evidence, we can assume that significant challenges persist in guaranteeing universal and equitable access to health services during delivery and birth in the SUS network establishments to women with disabilities.

Taking this challenge as a reference and given the scarcity of studies addressing this topic, this study aims to describe the physical structure of hospital establishments linked to the Rede Cegonha (RC) regarding accessibility for pregnant women puerperae with motor, visual, or hearing disabilities in Brazil.

Methods

Study design, Analysis unit

This ecological, descriptive study collected data in a single moment in time from December 2016 to September 2017. The analysis units were public or SUS-affiliated hospital establishments linked to the RC.

Sample and study location

All hospitals that, in 2015, according to data from the Live Birth Information System (acronym in Portuguese – SINASC), met the following criteria were included: i) Performing 500 or more deliveries and location in a health region with an RC action plan, regardless of funding release (N = 581); and ii) Performing less than 500 deliveries, located in a health region with an RC action plan and with the release of RC funding (N = 25). Thus, the study population consisted of 606 establishments, 86 in the North, 175 in the Northeast, 223 in the Southeast, 81 in the South, and 41 in the Midwest. These establishments were identified by the link between SINASC and the National Registry of Health Establishments (acronym in Portuguese – CNES).

Brazilian regions have contrasting socioeconomic and health indicators. In 2017, the North region had an illiteracy rate of 8.8%²⁷ and a gross domestic product (GDP) of R\$ 337.231 billion²⁸. It had the highest maternal mortality ratio (MMR) in Brazil, with 76.0 deaths per 100,000 live births²⁹, followed by the Northeast region. The Northeast had a GDP of R\$ 898.082 billion²⁸, an illiteracy rate of 14.3%²⁷ and the second highest MMR, with 75.3 per 100 thousand live births²⁹. The Southeast has the highest demographic and urban concentrations and the best economic indicators. It has the highest GDP in the country (R\$ 3.332 trillion)²⁸, the lowest illiteracy rate (3.8%)²⁷, and the MMR was 54.3 per 100 thousand live births²⁹ in 2015. The South had a GDP of R\$ 1.066 trillion²⁸ and MMR of 43.7 per 100 thousand live births²⁹. The Midwest had a GDP of R\$ 632.889 billion²⁸, an illiteracy rate of 6.8%²⁷, and an MMR of 65.9 per 100 thousand live births²⁹.

Data collection

Data were collected through on-site observation using an Observation Guide especially developed for this study, and digitally, using RED-Cap © 2017, Vanderbilt University. This roadmap was based on the National Humanization Policy³⁰, National Policy of RC³¹, on Good Practices for Delivery and Birth Care³², Pregnant Women Care Guidelines: cesarean section³³ and Pregnant Women Care Guidelines: normal delivery³⁴. On-site observation aimed to evaluate care processes and hospital infrastructure conditions, physical plant, equipment, materials, and supplies.

The observation of the establishment was previously scheduled with managers of the state, municipality, and the establishment itself, who were invited to participate in the process or send a representative on the day of data collection, in order to visit the hospital, together with the evaluator, during the registration of information.

Study variables

The variables related to the accessibility of pregnant women and puerperae with MD, VD or HD were extracted from the instrument and are shown in Box 1. Data related to the hospitals' contextual variables were geopolitical region, Federative Unit (acronym in Portuguese – UF), municipality, and data from hospital geographical coordinates.

For analysis purposes, motor, visual or hearing accessibility variables were created for each

hospital and each hospital establishment setting, as described in Chart 1. Motor Accessibility in the hospital was considered when, during on-site observation, accessibility was identified in all environments analyzed (Chart 1). The same applies to Visual and Hearing Accessibility. Concerning visual and hearing accessibility analysis, rooming-in was not considered due to the lack of this information in the databases we adopted for this study.

Statistical analysis

Descriptive data analysis was performed by calculating absolute and relative frequencies for each variable within the hospital. After that, the proportion of maternity hospitals in each UF was observed with the appropriate items. This information was used to produce spatial distribution analyses by UF.

The characterization of the spatial distribution of hospital establishments by the accessibility of people with MD, VD, or HD required the elaboration of maps with the spatial distribution of points in their respective municipalities from the geographical coordinates obtained through the address of the hospital establishments. Descriptive analyses were performed using Stata® software, version 14.0 (StataCorp., College Station, United States).

Point maps were made using ArcGIS® software, version 10.5 (Esri Inc., 2017, United States). Thematic maps were prepared with Q-GIS® software, version 3.10.1³⁵. A map was created with distance lines between these establishments vis-à-vis all the other existing Brazilian establishments to visualize the outreach area of the establishments classified with accessibility for people with MD, VD, or HD, together. Radius ranges were obtained by adopting three distance parameters (30km, 50km, and 100km) from establishments with accessibility for people with MD, VD, or HD.

Ethical considerations

The Human Research Ethics Committee of the Federal University of Maranhão and the Sérgio Arouca National School of Public Health approved the research. All participants signed an Informed Consent Form. The research was financed by resources from the National Health Fund/Ministry of Health. This paper is nested in the Evaluation research on the management of delivery and birth care in the Brazilian SUS network.

Chart 1. Description of the study variables. Brazil, 2017.

	Hospital environment	Variable classification criteria
Motor Accessibility	Reception	<ul style="list-style-type: none"> ✓ The presence of motor accessibility at reception was considered when the environment was adequate for the variables: ✓ Ramp (s) with handrail or elevator; ✓ Door (s) with dimensions for the wheelchair size; ✓ Accessible bathroom with bars.
	Admission room	The presence of motor accessibility in the admission room was considered when the environment was adequate for the variable: <ul style="list-style-type: none"> ✓ Door (s) with dimensions for the wheelchair size.
	Obstetric unit ¹	Motor accessibility was considered for each of these environments (obstetric unit and joint accommodation) when the environment was adequate for the variables: <ul style="list-style-type: none"> ✓ Door (s) with dimensions for the wheelchair size; ✓ Accessible bathroom with bars.
	Rooming-in	
Visual Accessibility	Reception	The presence of visual accessibility for each of these environments (reception, admission room, and obstetric unit) was considered when the environment was adequate for the variable: Existence of tactile signage on the floor (Braille system or raised figures).
	Admission room	
	Obstetric unit ¹	
Hearing Accessibility	Reception	Hearing accessibility was considered for each of these environments (reception, admission room and obstetric unit) when the environment was adequate for the variables: <ul style="list-style-type: none"> ✓ Existence of signs through texts or figures or symbols arranged in a prominent place; ✓ Existence of information, information signs (signs, information posters inside the environment).
	Admission room	
	Obstetric unit ¹	

¹ Obstetric unit: collective pre-delivery rooms (with or without separation between the beds) or PDP room (pre-delivery, delivery, and post-delivery).

Results

The structure of hospital/maternity facilities linked to the RC in Brazil was not adapted for people with MD (Table 1, Figure 1), VD (Table 2, Figure 1), or HD (Table 3, Figure 1). Only 26 establishments (4.3%) had all four environments (reception, admission room, obstetric unit, and rooming-in) with the minimum characteristics of motor accessibility measured in this study, as described in Chart 1.

When considering the motor accessibility synthesis indicator, establishments in the Midwest (%) and Southeast (%) performed better than the other regions – South, although all have proportions of accessible environments below 10%. The states of Sergipe (22.2%), Mato Grosso do Sul (18.2%), Acre (16.7%), and Mato Grosso (16.7%) performed best. Reception – ramps with handrail or elevator, doors with appropriate sizes for wheelchairs, and accessible bathroom with bars – was the environment with the worst structure for motor accessibility (16.5%). The admission room – doors with appropriate sizes

for wheelchairs – obtained the best adaptation results (65.2%) (Table 1, Figure 1).

None of the 606 establishments evaluated in Brazil had tactile signages on the floor (Braille system or figures in relief) at the reception, admission room, and obstetric unit. Tactile signaling at reception was found in three establishments in the Northeast (1.7%), four in the Southeast (1.8%), one in the South (1.2%), and one in the Midwest (2.4%). In the admission room, only two establishments in the Southeast (0.9%) had tactile signages. In the obstetric unit, only three establishments in the Northeast (1.7%) and three in the Southeast (1.4%) had a structure that would allow accessibility to pregnant/puerperae with a visual disability (Table 2, Figure 1).

Signaling through texts, figures or symbols on signs, information posters inside the reception, admission room, and obstetric unit was observed in only 20 (3.3%) hospital establishments linked to RC. According to the synthesis indicator, northern establishments had the worst performance – none of the establishments met the

Table 1. Accessibility for people with motor disabilities in maternity hospitals linked to Rede Cegonha. Brazil, 2017.

Federative Unit	Number of maternity hospitals evaluated	Reception n (%)	Admission Room n (%)	Obstetric Unit n (%)	ALCON n (%)	Motor Accessibility Indicator n (%)
North	86	6 (7.0)	35 (40.7)	10 (11.6)	10 (11.6)	2 (2.3)
Rondônia	7	-	5 (71.4)	1 (14.3)	-	0(0.0)
Acre	6	2 (33.3)	4 (66.7)	2 (33.3)	2 (33.3)	1 (16.7)
Amazonas	11	1(9.1)	6 (54.5)	2 (18.2)	1 (9.11)	-
Roraima	1	0(0.0)	1 (100.0)	-	-	-
Pará	47	2(4.3)	14 (29.8)	3 (6.4)	5 (10.6)	1 (2.1)
Amapá	7	1(14.3)	1 (14.3)	1 (14.3)	2 (28.6)	-
Tocantins	7	-	4 (57.1)	1 (14.3)	-	-
North-east	175	21 (12.0)	119 (7)	25 (14.3)	35 (20.0)	5 (2.9)
Maranhão	14	3(21.4)	9 (64.3)	2 (14.3)	2 (14.3)	-
Piauí	8	-	1 (12.5)	1 (12.5)	2 (25.0)	-
Ceará	44	3 (6.8)	27 (61.4)	9 (20.4)	7 (15.9)	1 (2.3)
Rio Grande do Norte	11	-	5 (45.5)	1 (9.1)	5 (45.5)	-
Paraíba	10	2 (20.0)	8 (80.0)	-	2 (20.0)	-
Pernambuco	32	4 (12.5)	26 (81.3)	3 (9.4)	5 (15.6)	-
Alagoas	16	2 (12.5)	7 (43.7)	2 (12.5)	1 (6.3)	1 (6.3)
Sergipe	9	2 (22.2)	9 (100.0)	3 (33.3)	3 (33.3)	2 (22.2)
Bahia	31	5 (16.1)	27 (87.1)	4 (12.9)	8 (25.8)	1 (3.2)
Southeast	223	47 (21.1)	158 (70.9)	79 (35.4)	85 (38.1)	12 (5.4)
Minas Gerais	44	15 (34.1)	32 (72.7)	22 (50.0)	24 (54.6)	4 (9.1)
Espírito Santo	4	-	1 (25.0)	-	2 (50.0)	-
Rio de Janeiro	41	-	29 (70.7)	-	16 (39.0)	-
São Paulo	134	32 (23.9)	96 (71.6)	57 (42.5)	43 (32.1)	8 (6.0)
South	81	10 (12.4)	60 (74.1)	25 (30.9)	30 (37.0)	3 (3.7)
Paraná	23	2 (8.7)	18 (78.3)	7 (30.4)	8 (34.8)	-
Santa Catarina	34	4 (11.8)	24 (70.6)	10 (29.4)	16 (47.1)	1 (2.9)
Rio Grande do Sul	24	4 (16.7)	18 (7)	8 (33.3)	6 (25.0)	2 (8.3)
Midwest	41	16 (39.0)	23 (56.1)	12 (29.3)	9 (21.9)	4 (9.8)
Mato Grosso do Sul	11	5 (45.5)	9 (81.8)	5 (45.4)	3 (27.3)	2 (18.2)
Mato Grosso	6	1 (16.7)	5 (83.3)	4 (66.7)	1 (16.7)	1 (16.7)
Goiás	12	4 (33.3)	3 (25.0)	1 (8.3)	2 (16.7)	-
Federal District	12	6 (50.0)	6 (50.0)	2 (16.7)	3 (25.0)	1 (8.3)
Brazil	606	100 (16.5)	395 (65.2)	151 (24.9)	169 (27.9)	26 (4.3)

The symbol (-) represents values equal to zero. n (%) = absolute frequency and percentage.

ALCON: Rooming-in. Motor Accessibility Indicator: reflects the proportion of adequate establishments in the four environments analyzed (Reception, Admission Room, Obstetric Unit, and ALCON).

criteria for hearing accessibility (Table 3, Figure 1).

In the radius distance map of maternity hospitals with visual, motor, or hearing accessibility, we observed that, due to the lack of adequate maternity hospitals for the three accessibility indicators, two establishments with motor and hearing accessibility located in Bahia and Minas Gerais reached populations residing within the

state located at distances of 30km and 50km. At a distance of 100km, the establishment located in Bahia reached resident populations in the South of the state of Piauí, in the east of Pernambuco, Alagoas, and Sergipe, while in the other establishment in Minas Gerais, that same distance (100km), reached the largest part of Espírito Santo and Rio de Janeiro (Figure 2).

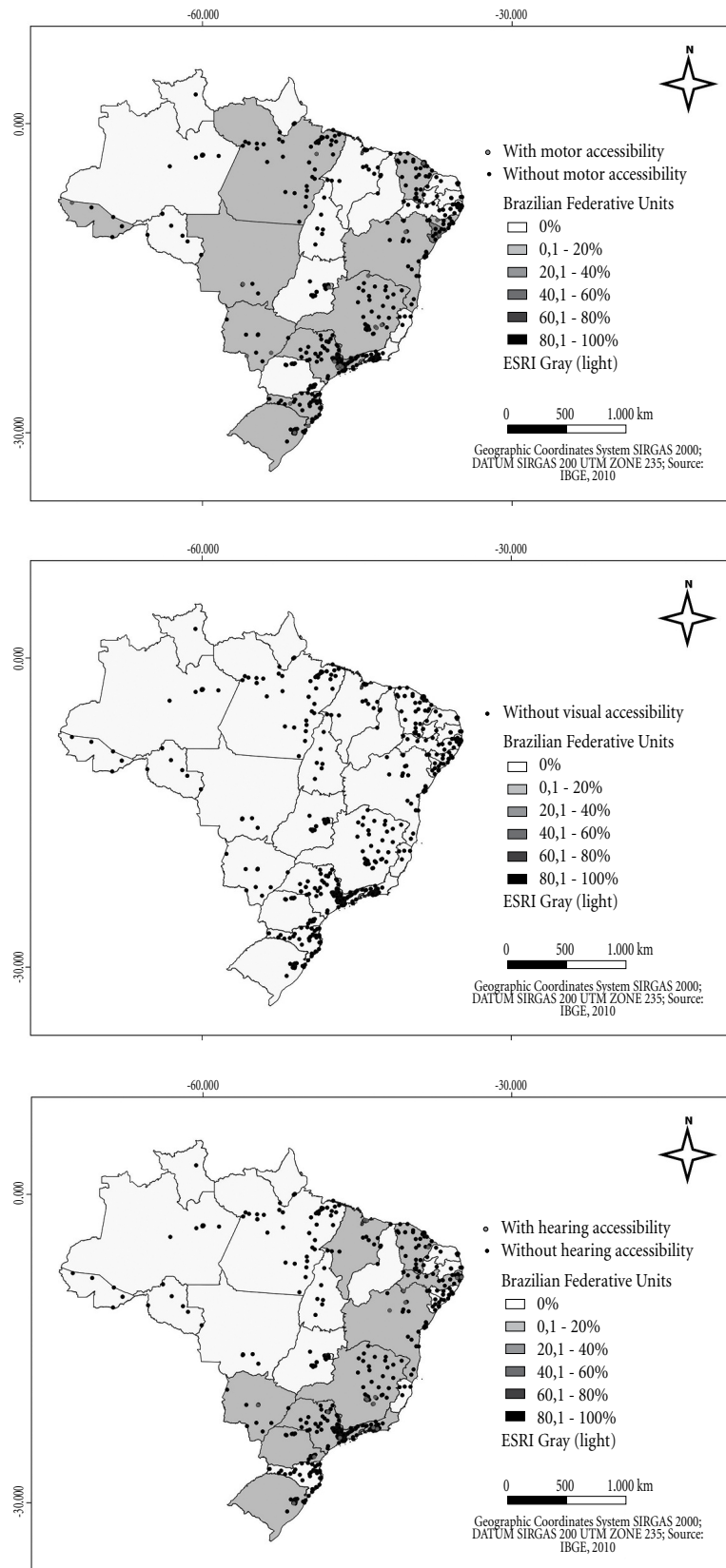


Figure 1. Accessibility for people with motor (A), visual (B) and hearing (C) disabilities. Brazil, 2017.

Elaboration: Silva IP.

Table 2. Accessibility for visually impaired people in maternity hospitals linked to the Rede Cegonha. Brazil, 2017.

Federative Unit	Number of maternity hospitals evaluated	Reception n (%)	Admission Room n (%)	Obstetric Unit n (%)	Visual Accessibility Indicator n (%)
North	86	-	-	-	-
Rondônia	7	-	-	-	-
Acre	6	-	-	-	-
Amazonas	11	-	-	-	-
Roraima	1	-	-	-	-
Pará	47	-	-	-	-
Amapá	7	-	-	-	-
Tocantins	7	-	-	-	-
Northeast	175	3 (1.7)	-	3 (1.7)	-
Maranhão	14	1 (7.1)	-	1 (7.1)	-
Piauí	8	1 (12.5)	-	-	-
Ceará	44	-	-	-	-
Rio Grande do Norte	11	-	-	-	-
Paraíba	10	-	-	-	-
Pernambuco	32	1 (3.1)	-	1 (3.1)	-
Alagoas	16	-	-	1 (6.3)	-
Sergipe	9	-	-	-	-
Bahia	31	-	-	-	-
Southeast	223	4 (1.8)	2 (0.9)	3 (1.4)	-
Minas Gerais	44	1 (2.3)	1 (2.3)	1 (2.3)	-
Espírito Santo	4	-	-	-	-
Rio de Janeiro	41	-	1 (2.4)	1 (2.4)	-
São Paulo	134	3 (2.2)	-	1 (0.8)	-
South	81	1 (1.2)	-	-	-
Paraná	23	-	-	-	-
Santa Catarina	34	1 (2.9)	-	-	-
Rio Grande do Sul	24	-	-	-	-
Midwest	41	1 (2.4)	-	-	-
Mato Grosso do Sul	11	1 (9.1)	-	-	-
Mato Grosso	6	-	-	-	-
Goiás	12	-	-	-	-
Federal District	12	-	-	-	-
Brazil	606	9 (1.5)	2 (0.3)	6 (1.0)	-

The symbol (-) represents values equal to zero. n (%) = absolute frequency and percentage.

Visual Accessibility Indicator: reflects the proportion of establishments that were adequate in the three environments analyzed (Reception, Admission Room, Obstetric Unit).

Discussion

This study points out that the structure of hospital facilities linked to the RC in Brazil is not adapted for people with MD, VD, or HD, corroborating the findings of other studies in which inadequacies were observed in the physical structure of family health units^{22,23}.

The National Health Policy for People with Disabilities²⁰, the Care Network for People with Disabilities²¹ and the Brazilian Law for Inclusion of People with Disabilities²⁶ are more current legal frameworks designed to ensure and promote similar conditions, the exercise of social rights of people with disabilities, targeting their social inclusion and citizenship. The results of this work

Table 3. Accessibility for people with hearing loss in maternity hospitals linked to the Rede Cegonha. Brazil, 2017.

Federative Unit	Number of maternity hospitals evaluated	Reception n (%)	Admission Room n (%)	Obstetric Unit n (%)	Hearing Accessibility Indicator n (%)
North	86	2 (2.3)	-	2 (2.3)	-
Rondônia	7	-	-	1 (14.3)	-
Acre	6	-	-	1 (16.7)	-
Amazonas	11	2 (18.2)	-	-	-
Roraima	1	-	-	-	-
Pará	47	-	-	-	-
Amapá	7	-	-	-	-
Tocantins	7	-	-	-	-
North-east	175	18 (10.3)	11 (6.3)	18 (10.3)	8 (4.6)
Maranhão	14	-	3 (21.4)	3 (21.4)	2 (14.3)
Piauí	8	1 (12.5)	-	1 (12.5)	-
Ceará	44	-	2 (4.6)	7 (15.9)	1 (2.3)
Rio Grande do Norte	11	-	-	-	-
Paraíba	10	-	-	-	-
Pernambuco	32	8 (25.0)	3 (9.4)	3 (9.4)	3 (9.4)
Alagoas	16	2 (12.5)	-	-	-
Sergipe	9	-	-	-	-
Bahia	31	3 (9.7)	3 (9.7)	4 (12.9)	2 (6.5)
Southeast	223	26 (11.7)	18 (8.1)	44 (19.7)	9 (4.0)
Minas Gerais	44	10 (22.7)	9 (20.5)	14 (31.8)	5 (11.4)
Espírito Santo	4	-	-	-	-
Rio de Janeiro	41	2 (4.9)	3 (7.3)	2 (4.9)	2 (4.9)
São Paulo	134	14 (10.5)	6 (4.5)	28 (20.9)	2 (1.5)
South	81	8 (9.9)	4 (4.9)	10 (12.4)	2 (2.5)
Paraná	23	2 (8.7)	2 (8.7)	1 (4.4)	1 (4.4)
Santa Catarina	34	2 (5.9)	-	2 (5.9)	-
Rio Grande do Sul	24	4 (16.7)	2 (8.3)	7 (29.2)	1 (4.2)
Midwest	41	5 (12.2)	3 (7.3)	11 (26.8)	1 (2.4)
Mato Grosso do Sul	11	2 (18.2)	2 (18.2)	5 (45.5)	1 (9.1)
Mato Grosso	6	-	-	4 (66.7)	-
Goiás	12	1 (8.3)	1 (8.3)	1 (8.3)	-
Federal District	12	2 (16.7)	-	1 (8.3)	-
BRAZIL	606	59 (9.7)	36 (5.9)	85 (14.0)	20 (3.3)

The symbol (-) represents values equal to zero. n (%) = absolute frequency and percentage.

Hearing Accessibility Indicator: reflects the proportion of establishments that were adequate in the three environments analyzed (Reception, Admission Room, Obstetric Unit).

are a counterpoint to these legal frameworks that emphasize the relevance of access and quality of services to these individuals, equity, comprehensive care, improving the physical structure of health establishments⁷, the dissemination of information, and a dynamic and global view of the health status of women with MD, VD, or HD^{7,24}.

SUS management and financing problems may hinder the more effective implementation

of public health policies aimed at people with disabilities, contributing to the low proportion of adequacy of establishments in the RC for people with disabilities³⁶.

The qualification of maternal and child health services, especially for the most vulnerable population, is an essential strategy for curbing health inequities and achieving internationally agreed goals. In Brazil, this theme has received greater

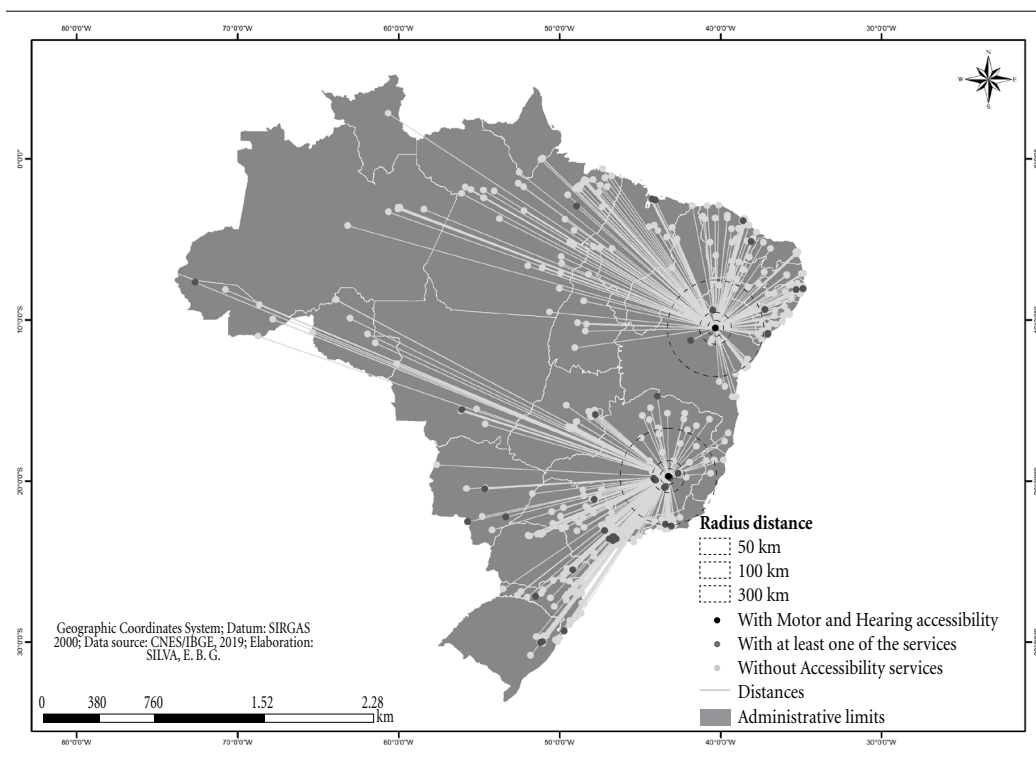


Figure 2. Distance from hospitals with accessibility for people with motor, visual and hearing disabilities. Brazil, 2017.

prominence in the last decades, mainly given the persistence of high MMR, with estimates above the standards required by World Health Organization (WHO), and is the only Millennium Development Goal (MDG) that was not achieved by the country in 2015, not reaching a reduction of 70% in the 1990–2015 period³³.

Women with special needs are at higher risk of problems related to pregnancy, delivery, and postpartum than the general population, such as significantly higher rates of depression¹⁰, diabetes, urinary tract infections³⁷, and preterm birth^{9,13,37}, and low birth weight^{9,13,37} among newborns. Therefore, there is a need to improve the physical structure of maternity hospitals linked to the RC, to make access more equitable and streamline health indicators among women with MD, VD, or HD.

The Ministry of Health also states that regional and population-based inequalities lead to different MMR and that it is necessary to build and measure reliable estimates stratified by regions and UF to subsidize the monitoring of priority areas related to women's health, especially pregnant women, ensuring the effective im-

plementation and evaluation of public policies aimed at this population³⁸.

Women with disabilities are found in all age groups, ethnicities, religions, economic backgrounds, and sexual orientation. It is about a segment of the population that suffers from inexpressive actions geared to their needs in health care services. They are characterized by a dual condition of vulnerability, from the perspective that being a woman and having a disability are two social disadvantages⁷.

This study highlights that maternity hospitals in the North and Northeast regions linked to the RC had more significant architectural barriers to access for pregnant women with MD, VD, or HD. Inequalities are more significant for motor accessibility, and this result suggests a reflection of regional disparities concerning access to health services in a context of low support for the care of pregnant/puerperae with physical disabilities. Also, these regions gather the worst socioeconomic and health indicators, reflecting the difficulty of achieving equity in the SUS for vulnerable populations, supporting the idea of other studies that reiterate the thought that women

with MD, VD, or HD are more exposed to poverty, unemployment, and low schooling^{2,7,8,38,39}.

The North and Northeast regions also have a more significant proportion of the population with exclusive access to SUS health establishments and significant barriers to access to high-complexity establishments⁴⁰, almost always with restricted access to mixed, lower complexity hospitals⁴¹, with potential impacts on maternal and neonatal mortality. Moreover, hospital care regionalization is still a challenge, hindering referrals to places with adequate accessibility for women with disabilities^{7,25,38}.

Hospital establishments in the South, Southeast, and Midwest regions showed, in general, better results. However, they did not achieve minimum proportions in several of the structural criteria studied. These results pointed to a significant number of pregnant/puerperae exposed to avoidable and unnecessary risks. Studies reiterate that the different patterns of the regions mentioned above can be justified by the excessive concentration of maternity hospitals in the state capitals and the difference in funding^{6,7,24,39}.

No establishment managed to show all structural items suitable for pregnant/puerperae with MD, VD, or HD in Brazil. The two establishments that guaranteed motor and hearing accessibility reach resident populations at a shorter (30km) and intermediate (50 km) distance considered in this study. These distances reach populations resident in Bahia and Minas Gerais states, where such establishments are located. This finding corroborates the regional inequalities found, mainly for the North region, whose distances are enormous until access to establishments with better structural conditions.

Despite the significant advances resulting from RC's implantation in Brazil, especially in the good labor care practices, few maternity hospitals linked to the RC have been suitable for pregnant women and puerperae with MD, VD, or HD. This result goes against what the policy mentioned above recommends since it is based on the components of the right to pregnancy, safe and humanized delivery and puerperium, and the right to reproductive planning, transport, and accessibility^{30,31}.

A limitation of this study is the impossibility to make inferences for the individual level, given the ecological design of the study, at risk of ecological fallacy. Another limitation is that the rooming-in environment was not studied for the characterization of visual and hearing accessibility, but only for motor accessibility. Despite this, the proportion of establishments with motor accessibility (suitable for all criteria analyzed in all environments studied) was higher than those with visual and hearing accessibility. The criteria used to characterize accessibility did not include all the standards recommended in NBR-9050⁴². Notwithstanding this, the results were very unsatisfactory, even considering only the very minimum. Also, the standards chosen throughout this work are those reflecting the minimum accessibility parameters. The use of more complete guidelines would reveal an even more challenging setting from the viewpoint of accessibility.

This work's strengths are the creation of maps to present the panorama of motor, visual, and hearing accessibility for pregnant women and puerperae, which allows identifying the geographic distribution of establishments in the national territory and better visualization of the barriers of access. This study also described accessibility in all facilities linked to the RC, analyzing unprecedentedly in the literature the accessibility for pregnant and puerperae women with MD, VD, or HD in hospital/maternity facilities throughout the Brazilian territory.

Conclusion

Hospital/maternity facilities linked to RC are not adapted for people with MD, VD, or HD in Brazil, especially in the North and Northeast regions. Despite the normative advances regarding the inclusion of people with disabilities in public policies, challenges remain regarding equity in the SUS for this population. Therefore, adapting the physical structure of these hospital establishments to this population's needs can contribute to improving maternal and child health indicators.

Collaborations

EBAF Thomaz: Study Design, Data Collection, Methodology Development, Data Analysis, Paper Writing Process and Critical Review of the Final Text. EM Costa: Data Analysis, Paper Writing Process, and Critical Review of the Final Text. YNLA Goiabeira: Paper Writing Process, and Critical Review of the Final Text. TAH Ro-

cha, NCS Rocha and RCS Queiroz: Study Design, Data Collection, Methodology Development, Data Analysis, and Critical Review of the Final Text. COM Marques - Study Design, Data Collection, Methodology Development and Critical Review of the Final Text.

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