

# ACCESSIBILITY EVALUATION IN AN EDUCATION AND HEALTH CARE CENTER

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## Abstract

The present study arises from questions regarding the accessibility of a community service Center in the areas of Health and Education: is the new building for this Service Center in line with the existing accessibility standards for this type of establishment? Are there any dangerous points that could put the community user at risk? Two objectives were established: 1) accessibility evaluation according to the current technical standards and 2) identify points of danger based on the perception of employees and interns working for the institution. The accessibility evaluation was performed through an observational study of the routes people regularly use. The dangerous points were identified through a semi-structured interview with four employees and five interns. The results indicated that some routes had corridors and doors that did not meet the technical standards on accessibility. The interviews allowed to identify some points of danger: 1) ditches without grids; 2) steps hindering the entrance with a wheelchair; 3) sloping ramps; and 4) holes. The findings may serve for the administration and management to standardize the environments in order to provide security and autonomy to its users.

**Keywords:** Accessibility. Evaluation. Health. Education.

## 1 Introduction

A considerable portion of the population that has the capacity to live and contribute to society observes its potential being limited on a daily basis. This limitation is imposed by the barriers presented in the most diverse physical environments, which bring up a much-discussed term in the last decades: accessibility.

Accessibility is deeply related to the provision of conditions for people with disabilities or who have reduced mobility for the safe and autonomous use - whether full or assisted - of public or collective spaces.

In this context, the accessible space is able to provide people with opportunities to interact with the physical environment, in such a way that people can fully experience it.

To ensure that environments conform to accessibility standards, projects must follow specific standards according to the specific building. The Resolution of the Board of Directors (RDC) No. 50 states the analysis, evaluation and approval of the physical projects of health establishments (BRASIL, 2002).

A health establishment is understood as any place intended to provide care services to the population, whether hospitalized or not, regardless of their level of complexity (BRASIL, 1994).

Thus, the accessible establishment must ensure individuals' performance in activities involving their locomotion, independent of their restrictions, with a physical structure suitable for this end. In this way, the Brazilian legislation seeks to give people with disabilities or with reduced mobility access to public and private healthcare establishments, as well as to provide treatment, under the appropriate standards and techniques (BRASIL, 2008).

The public spaces built in the past were not prepared to welcome people with disabilities in their facilities. As a consequence, there was no accessibility or planning to meet the needs of this population. In contrast to this context, when evaluating a newly constructed health building, this building is expected to have accessible conditions for those who benefit from it.

The Center to be investigated offers support for teaching, research and extension activities in addition to providing care to the external community in the health areas. Its new facility was recently opened and has been in operation since 2016. The college aimed to provide the community with a more adequate space that would expand research projects, in addition to increasing service capacity to users.

Considering the described context, this study aimed to investigate: does the new facility of this Service Center comply with the existing accessibility standards for this type of establishment? Are there any points of danger that could put the community user at risk?

In the context of the research question, the study has two specific objectives:

1. To identify and to evaluate the accessibility conditions of the Center;
2. To evaluate the potential points of danger on the investigated routes.

From this perspective, this study proposed to investigate the theme accessibility and the existing rules for a health establishment, since the literature on accessibility in these sites is still scarce.

## **2 Accessibility: concepts and adaptations to the health area**

Decree-Law No. 5,296, December 2, 2004, which regulates Laws 10.048 and 10.098/00, in the chapter on accessibility conditions, define it as:

The safe and autonomous, total or assisted use of spaces, furniture and urban equipment, of buildings, transport services, systems and means of communication and information by people with disabilities or with reduced mobility (BRASIL, 2004).

According to Roy (2005), when thinking of “universal access”, the concept of accessibility tends to cause great confusion. This is due to its intrinsic dependence on the interests and needs of the subjects who make use of it. Thus, when thinking of accessibility, it can be regarding connectivity, infrastructure, economic and social environment, access to information and education, cognitive supports, among others.

On the other hand, to Aceti (2007), the goal of accessibility is not to confer equal physical or psychological conditions on subjects. For the author, the aim is to promote equality in opportunities of access - both information and spaces, locomotion, education. Thinking about individual rights, barriers to access to a particular place, are configured as an obstacle to the freedom of movement. In this way, the lack of accessibility in a determined setting is configured as a discriminatory process.

It should be noted that the designed environment cannot be understood as comprehending measures favoring only people with disabilities, as these measures may segregate social groups increasing spatial exclusion. Such spaces should be intended to accommodate all potential users (DUARTE; COHEN, 2006).

Nicolletti (2010) highlights that full accessibility is not necessarily associated with the elimination of architectural barriers. For the author, other existing barriers must be considered, such as attitudes, norms and techniques, as well as barriers in instruments and communication between individuals. For Manzini (2014), accessibility refers to architectural, signaling, and communication barriers; the author adds that the study of social attitudes of the people in a community belong to the field of Social Psychology, and can be evaluated through scales that measure people’s social attitudes. Manzini (2014) considers that those are all barriers, but of different natures, and may be related to accessibility, which is associated with the physical environment (architectural, signaling and communication), and related to the social environment (attitudes, beliefs and prejudices).

Regarding the laws for buildings aimed at providing health services, the Resolution of the Board of Directors/Anvisa (RBD), nº50, of February 21, 2002, is the norm that regulates the physical design and the inspection of all healthcare establishments (HCE). The purpose of RBD No. 50 is to provide criteria to evaluate and design any HCE. It is noteworthy that the RBD is not intended to establish a typology for this type of establishment, or to predefine architectural programs, since it presents flexible rules for designing and creating the projects.

The Brazilian Association of Technical Standards - ABNT (2015) defines accessibility, through the NBR 9050 standard, as a possibility and condition of reach, perception and understanding for safe and autonomous use of spaces, buildings,

furniture, urban equipment and elements, as well as other services and facilities open to the public, whether they are public or private for collective use, both in the urban and rural areas, by people with disabilities or reduced mobility.

The definition of health is related to other concepts of environment where physical dimensions are considered, as well as social, cultural, economic and political factors, highlighting the need for healthy environments (COHEN et al., 2007)

The construction of healthy environments should take place jointly with social participation and intersectoral articulation, aiming to achieve the right to health and the improvement of the population's conditions (PEDROSA, 2004).

Studies on accessibility for people with disabilities in the area of health in Brazil are still restricted. However, they show the difficulty to access health services these individuals face due to the architectural and attitudinal barriers (PAGLIUCA; ARAÚJO; ARAGÃO, 2006).

Architectural and attitudinal barriers are representations of established symbolic violence toward people with disabilities; this occurs in part through the naturalization of the actions of both institutions and social actors, and partly because of the lack of knowledge of the legal order that supports these individuals (PAGLIUCA; ARAGÃO; ALMEIDA, 2007).

Based on the considerations presented above, this investigation is intended to study the accessibility conditions of a care center, grounded on the analysis of technical standards for healthcare buildings.

### 3 Method

The research presented quantitative and qualitative aspects and was developed through two studies. The first study, of observational and evaluative nature, consisted in evaluating the facilities of the Service Center. The second one, of qualitative nature, consisted in verifying how the people who work or train in the Center perceive this environment.

The study included the analysis of: 1) the routes through which users of the Center pass (AUDI; MANZINI, 2006); 2) the embarkation and disembarkation of patients; and 3) semi-structured interviews with professionals and interns to map out points of danger and other experiences related to accessibility.

The access routes were identified *in loco*, visiting the physical spaces of the Center. In this work, the route was defined as continuous, unobstructed and signaled paths, which allow free walking of all people, in school or health settings (AUDI; MANZINI, 2006).

The establishment of routes made it less complex to designate the paths traveled by the users. This protocol is considered as ideal to evaluate the conditions of architectural accessibility.

Thus, 20 routes were established, according to the following table:

Route	Description
1	From the waiting room to the social service room
2	From the waiting room to room 10
3	From the waiting room to the adapted men's and women's bathroom - rooms 11 and 12
4	From the waiting room to the men's and women's restrooms - rooms 14 and 15
5	From the waiting room to the Speech Therapy room – room 17
6	From the waiting room to the administrative staff room – room 23
7	From the waiting room to the eating area
8	From the waiting room to the adapted men's and women's bathrooms - rooms 25 and 26
9	From the waiting room to the Cardiovascular and Respiratory Rehabilitation Room – room 27
10	From the waiting room to the Evaluation room – room 30
11	From the waiting room to the hydrotherapy swimming pool – room 65
12	From the waiting room to the Orthosis room – room 52
13	From the waiting room to men's and women's restrooms – rooms 44 and 46
14	From the waiting room to the activities of daily living (ADL) Room – room 51
15	From the waiting room to the men's and women's restrooms – rooms 91 and 90
16	From the waiting room to Service Room – room 68
17	From the waiting room to the special equipment room – room 67
18	From the waiting room to the Audiometer Booth Room – room 69
19	From the waiting room to the Learning Disorder Investigation Laboratory - room 102; Adapted bathroom – room 107
20	From the waiting room to the circulation space – room 12

Chart 1 – Established routes in the Center.

All routes were measured using a tape measure and the notes were taken in a field diary.

For qualitative data collection, a script for semi-structured interview with 10 questions about the points of danger at the Center was prepared. The script was evaluated and approved by two external judges. After the approval and adaptation, nine people were interviewed. The inclusion criterion was to be an employee or intern at the Center, constituting, therefore, a homogeneous sample, all of which had experience in the investigated environment.

The characterization of the interviewed people are described in chart 2.

Identification	How long in the Center
Employee 1	2,5 yrs
Employee 2	4,5 yrs
Employee 3	5 yrs
Employee 4	3 yrs
Intern 1	7 months
Intern 2	9 months
Intern 3	1 yr
Intern 4	6 months
Intern 5	4 months

Chart 2 – Interviewees' characteristics

For treating the quantitative data, tables were elaborated with the dimensions resulting from measurements of each one of the elements found in the routes.

For treating the qualitative data, a thematic content analysis was performed, in which four categories were identified. The analysis was performed by two researchers, who identified the categories and discussed the contents and the selection of the speeches.

## 4 Results and discussion

In this section, the results of the quantitative data (analysis of the routes and embarkation and disembarkation) and qualitative data (analysis of the interviewees' perceptions about the Center) will be presented separately.

### 4.1 Routes and embarkation and disembarkation of the Center

As previously reported, 20 routes were identified. Table 3 presents the results of the evaluation of these routes.

Route	Description	Corridors: width in meters	Length of corridors: over 11m	Length of corridors: below 11m
1	From the waiting room to the social service room	1,32*	X	
2	From the waiting room to room 10 – group service	1,35		X
3	From the waiting room to the adapted men's and women's bathroom - rooms 11 and 12	1,27		X
4	From the waiting room to the men's and women's restrooms - rooms 14 and 15	1,30*	X	
5	From the waiting room to the Speech Therapy room – room 17	1,30*	X	

6	From the waiting room to the administrative staff room – room 23	1,45		X
7	From the waiting room to the eating area	1,75*	X	
8	From the waiting room to the adapted men's and women's bathrooms - rooms 25 and 26	1,70		X
9	From the waiting room to the Kinesiotherapy room (beginning of the corridor) - room 29;  (Following the corridor/external corridor) Cardiovascular and Respiratory Rehabilitation Room - room 27	0,89*  2,27	X  X	
10	From the waiting room to the Evaluation room – room 30	1,48*	X	
11	From the waiting room to the hydrotherapy swimming pool – room 65 – External corridor	2,11	X	
12	From the waiting room to the Orthosis room – room 52 – external corridor	2,31	X	
13	From the waiting room to:  men's restrooms – room 44  women's restrooms – room 46	1,18*  1,29	X	  X
14	From the waiting room to the ADL Room – room 51 – external corridors	2,38	X	
15	From the waiting room to the men's and women's restrooms – rooms 91 and 90	1,32*		X
16	From the waiting room to Service Room – room 68	1,20		X
17	From the waiting room to the special equipment room – room 67	1,35		X
18	From the waiting room to the Audiometer Booth Room – room 69	1,30		X
19	From the waiting room to the Learning Disorder Investigation Laboratory – rooms 102 and 107 – external corridor	2,50	X	
20	From the waiting room to the circulation space – room 12	2,51	X	

Chart 3 – Evaluation of the routes.

Note: the norm establishes that corridors below 11-meter long should have a width of at least 1.20m and, longer corridors, a minimum width of 2 meters.

Caption: \* corridors uncomplying the standard norm

By observing Chart 3, we found that 8 out of the 20 routes do not comply the norm. The norm states that corridors intended for pediatric or wheelchair patients, or patients on stretchers or beds must have a minimum width of 2.0m, which is in contradiction with the criteria considered suitable by the RDC nº 50. On the other

hand, the norm dictates that the corridors smaller than 11m must have width of at least 1,20m. In this situation, 12 routes were found adequate according to the standard.

We also observed that the corridors do not have handrails on either side of the walls. According to RDC rule 50, corridors destined for patient circulation must have handrails on at least one of the walls at a height of 80 to 92cm of the floor, ending in a curve.

According to RDC n°. 50, accesses are directly linked to the circulation of their users and materials. In this case, the functionality of the accesses should be considered, not the number of accesses, and a restriction on the number of access should be desired to achieve a greater control of the movement in the health care establishment - HCE.

Accesses should enable disabled users to enter the site without help.

The external area of the Center has only one entrance door both for embarking and disembarking patients in ambulances and/or buses and for other users. Therefore, it is observed that the entrance door is accessible to all pedestrians, but it does not present functionality by giving access both for vehicles and for people through the same site. As for the ambulance area, there is an area for maneuvering which allows vehicles to halt near the establishment, on the other hand, there is no covered parking.

According to the law (BRAZIL, 2011), the ambulance maneuvering area should be extended in order to allow them to back into the parking space, facilitating patient disembarkation. The minimum area to be covered is 21.00m<sup>2</sup> (NBR No. 50).

By analyzing the width of the ramps at the Center, it was observed that they presented widths ranging from 1.27 to 1.50m. Hence, in disagreement with RDC n° 50, which considers the minimum width of a ramp to be 1,50m with leveled platforms at the top and the end of the ramp.

According to NBR 9050 and RDC No. 50 for curved ramps, a maximum slope of 8.33% grade and a minimum radius of 3.0m measured at the inner perimeter of the curve is allowed, so the three ramps at the Center are in accordance with the standards.

By analyzing the doors that offer access to the users of the services provided in the establishment, it was observed that they have a width or free space of 0.88 cm. However, the standards indicate that examination or therapy rooms should have a minimum dimensions of 1, 20m x 2,10m. Therefore, the doors of the Center are in disagreement to the law.

In relation to bathroom and restrooms doors, DRC No. 50 recommends that the doors should open to the outside of the room or allow the door to be removed from the outside, so that they can be opened without the need to push the patient who could accidentally be falling behind the door. When considering locks, the doors need



them to be easily opened in case of emergency and the horizontal bar should be 90cm from the floor. The knobs must be the lever-type or similar. In relation to the locks and door openings, they were within the norms, however, the horizontal bars inside the bathroom had different heights ranging from 73 to 76cm, therefore, in disagreement with the RDC nº 50.

It should be emphasized that the observed sites do not cover all the internal environments of the Center, that is, the dimensions of the rooms were not evaluated, but the collective circulation spaces that gave access to the rooms, important both from the functional point of view and environmental aspects.

## 4.2 Interviewers' perceptions about the Center

The data collected from the interviews were classified into five categories: 1) Users' difficulties in relation to using the facilities of the Center; 2) Points of danger in the Center; 3) Accidents experienced by the interviewees; 4) Received guidance regarding dangerous spaces; 5) Suggestions for changes to improve points of danger.

Regarding the Users' difficulties using the facilities of the Center, the interviewees indicated:

Employee 1 (...) The bus stop is very far from here, so they end up having to walk a long distance, even those who come here by bus and are not wheelchair users.

Intern 4 (...) in some places there are small steps and they cannot go through with the chair by themselves and so they need help from their escort or we need to go get them

Intern 4 (...) patients arrived on the stretcher and they could not enter the physical therapy room even there, we've already seen this difficulty

Intern 4 (...) we've already seen patients being cared for in the waiting room because they could not enter with the patient, often on the stretcher. And I think this is very embarrassing both for students and for the patient.

Intern 4 (...) he came with oxygen by his side and then when he came, it was difficult, and we also saw a stretcher that was a little wider, and when we had to go through the door, which is very narrow, the door, we could not go through (...) the rooms do not have a bit of accessibility to enter.

Employee 3: Some mothers report the risks for children in relation to gullies, holes, open grids and spaces being opened that have no protection right? The children can run to the parking lot, wherever they want.

Employee 4: That the aisles are always very narrow, that there are a lot of ramps. In relation to the facilities, as there are a lot of faraway rooms, they say that sometimes they can't move inside the building due to the size of the wheelchair, so they have to go behind the building and when it is raining they end up getting wet (...)

Employee 4: (...) So it's not easy for you to use a wheelchair around, you go down the aisle, first you get to a ramp and you can't push it anymore because it's a steep ramp ...

Intern 2: Regarding the doors, because they are too narrow, sometimes to go through with the wheelchair, the ditches, the holes, when it ends, sometimes a corridor that

they did not close, now I think they even closed, but before it was not closed, and the rain, as it is open, when it rains hard they get wet because the ground gets slippery.

The interviewees' statements can be summarized in the following difficulties: 1) bus stop far from the Center; 2) small steps at the entrance; 3) narrow doors; 4) some narrow aisles for moving stretchers or wheelchairs; 5) gullies, holes, open grids; 6) steep ramps; 7) open spaces with no protection from the rain.

The points of danger in the Center perceived by the interviewees were:

Employee 1: (...) The ditches, not all places have grids, we only have grids on the places for passage, in fact, but in the corridors, next to the corridors that we use a lot for march training, to make circuits, they do not have grids (...)

Intern 4 (...) At the entrance of the Center, there is a small step that often the wheelchair does not pass, and to leave the waiting room to come here (referring to the meeting rooms) also has this step and they also say that there is the ramp and that they find the ramp is very sloping, so, if the chair is not good, right? So, if the tire is not very full, when they go down, they come down with everything and end up hurting.

Intern 4 (...) I think this ramp is a bit complicated because they have already reported, we even go down with them if the patient is a bit heavy, we have to go in two, holding (...)

Employee 3: There is. These holes, these ditches, ditches between the grass and the cement, these open spaces, like here, in the middle that has only the grid. The open space for parking, for campus, wherever the child can run, those little open sewage grids, the parking lot that is uneven, if you step there, there you can twist the foot. The grass itself, right? The "slopes" there I find dangerous.

Intern 2: In the corridor, when there is that ditch, that highest part, now I do not know if they've been all closed yet, but there were some high steps.

Intern 5: So, I think the rooms are a bit small in the sense of accessibility, I think they are not all accessible. In some of them we have the chair with a very small space, for example, the tables that do not have a correct space for the wheelchairs to fit (...), it is a matter of being inside the room and moving inside, even the furniture and utensils inside the room, many rooms are so tight that it is difficult to turn the wheelchair.

Intern 3: (...) The ramps themselves are ramps that many patients who have difficulty to move, they can slip on rainy days or even the respiratory issue of climbing the ramps, the distance of the rooms also in the case of those patients that I see also interfere a little.

Sobre os acidentes experienciados pelos entrevistados, apenas uma entrevistada relatou ter tido essa experiência:

The points of danger signaled by the interviewees were: 1) Ditches without grids; 2) Steps that make it difficult to enter with a wheelchair; 3) Very sloping ramps; and, 4) Holes.

It can be verified that only one of the interviewees mentioned that the rain can make the environment slippery and, consequently, offer danger.

It is important to point out that the definition of accessibility reaffirms that the use of spaces should guarantee autonomy and security (BRASIL, 2004). Therefore, the elimination of danger points becomes a priority modification in the Service Center that has been evaluated.

Regarding the accidents experienced by the interviewees, only one interviewee reported having had this experience:

Employee 1 (...) we've had some minor accidents here of patients who ended up stumbling and falling. (...) [on] the route coming from the bus stop to the Center.

Despite the points of danger indicated, fortunately none of the other eight participants experienced accidents during their stay at the Center.

Regarding the orientation received regarding the hazardous spaces, all interviewees reported that there was no information or guidance from the Service Center. As was reported by one of the following interviewees:

Employee 4: I don't think anyone received any guidance, neither we nor the users of the Center, nobody said anything, nobody says anything, it's something internal, but one ends up talking to the other and we listen a lot, but in relation to some formal guidance from the boss, nothing.

The previous speech is clothed with a subliminal message: one knows of the imminent dangers, but it consents to assume the possible responsibilities of accidents.

Almost all participants (eight) suggested changes to improve the Center's danger points:

Employee 1 (...) the placement of the grids on all these ditches entirely.

Employee 1 (...) the placement of awnings mainly on the external part that is where we get rain (...)

Employee 2: I believe that the ditches, if they are covered, if they make the protection against the adequate rain because even with that protection, then it gets wet a lot, right? The awnings. I think it has to be a bit more thought due to the limitations of the patients.

Intern 4: I think those steps that I mentioned could not exist, which is something that makes it very difficult.

Employee 3: Well, maybe end up with these open spaces here, these gardens here in the middle, this lack of grids, the gap, close them with walls. Since the clinic was not made adequate, right? Because it is all inadequate in my point of view in terms of accessibility and safety, it is all inadequate, it would have plenty to do, quite a lot.

Employee 4: (...) I think that first we would have to have some signs that identify the Center because as this entrance here is not open, a lot of people come here through this entrance and it already starts there, there is no identification sign, nothing, then I've already heard of people who have come here and gone away because they did not know they needed to enter the campus and come down here, then, when they come here, to start with, it does not have a cover, then the patients get wet when they arrive by ambulance, or when they arrive by car when it's raining, which is a problem, then they come here in the institution to go from one sector to the other, you think the patient

will not get wet, the patient ends up getting wet, then it should enlarge there. Now that they have put these awnings, but even so it is insufficient and the external corridors, both the physical therapy, O.T and speech language therapy, all of them, in addition to being very narrow, it rains because the coverage is too small, right? The coverage is insufficient and the corridors are too narrow, as to that, I do not know what could be done, I think nothing, because all the facilities have already been made (...).

The suggestions offered by the interviewees meet the need to eliminate the points of danger: 1) placing the grids in all of these ditches; 2) installation of awnings at the entrance and external corridors of the Center; 3) improve external and internal signaling; 4) elimination of steps; and, 5) elimination of parking gaps.

#### 4 Conclusions

This research aimed to identify and evaluate the accessibility conditions, as well as the points of danger present in the Care Center. Thus, after evaluating the access routes, the existence of specific laws for health facilities was not enough to ensure that the construction of the new Center guaranteed an accessible space for its employees and users. After interviewing interns and staff, the reports endorsed the non-accessibility previously verified on the routes, making it clear that the access difficulties as well as the reported points of danger are evident and present in the routine of all who need the Center.

It is worth noting that the inadequacies of the buildings and the lack of concern to comply with the accessibility laws are not an isolated case in society, but rather a problem of vast scope that must be duly faced by public agencies and their respective managers, regulating and designing environments that provide security and autonomy to its users.

Finally, it is worth noting that the literature, in its majority, evaluates educational environments, requiring new research that evaluates accessibility in health care facilities, given their importance, and that the literature is restricted on the theme.

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