Cadernos Brasileiros de Terapia Ocupacional
Brazilian Journal of Occupational Therapy

ISSN 2526-8910

Review Article

Assistive technology and public policies in Brazil

Tecnologia assistiva e políticas públicas no Brasil

Paula Alessandra Lima Santos Bastos[a], Marcelo Santana Silva[a], Núbia Moura Ribeiro[a], Renata de Sousa Mota[b], Teófilo Galvão Filho[b]

[a]Instituto Federal da Bahia - IFBA, Salvador, Brasil.
[b]Universidade Federal do Recôncavo da Bahia - UFRB, Feira de Santana, Brasil.

How to cite: Bastos, P. A. L. S., Silva, M. S., Ribeiro, N. M., Mota, R. S., & Galvão Filho, T. (2023). Assistive technology and public policies in Brazil. *Cadernos Brasileiros de Terapia Ocupacional, 31*, e3401. https://doi.org/10.1590/2526-8910.ctoAO260434012

Abstract

Assistive Technology is not widespread in Brazil. Advances have occurred gradually through achievements in the legal area and the promotion of research and development. The proposition of policies in this area can contribute to overcoming the social inequalities of a significant segment of the population that represents a real and expanding market. However, the low optimization of these resources by their users and the difficulty in finding them in the market and public agencies are worrying factors. This study addresses the impact of the demand for Assistive Technology on Brazilian public policies aiming to identify the relationship between the optimization of these resources and services and the formulation of targeted policies in the country. Through bibliographic, exploratory and qualitative research, a survey was conducted on the Brazilian legislation and the existing actions in the area of Assistive Technology, as well as an analysis of Brazilian public policies based on the normative evaluation criteria, applying the deductive method and the Bardin's content analysis technique. The scientific literature shows that, despite the gradual advancement in legislation and initiatives to promote projects in this area, factors that hinder the access, use, and application of assistive products, such as the scarcity of innovative technologies, entail difficulties for the formatting of effective policies and the adequate configuration of fostering actions in the area of Assistive Technology, which is essential to the process of social inclusion.

Keywords: Technology, Disabled Persons, Public Policy, Social Inclusion.

Resumo

A Tecnologia Assistiva é pouco disseminada no Brasil. Avanços têm ocorrido gradativamente por meio de conquistas na área jurídica e do fomento à pesquisa e desenvolvimento. A proposição de políticas nessa área pode contribuir para superar as desigualdades sociais de um significativo segmento da população que representa um mercado real e em expansão. No entanto, a baixa otimização desses recursos por seus

Received on Aug. 11, 2022; 1st Revision on Aug. 19, 2022; Accepted on Jan. 18, 2023.

usuários e a dificuldade em buscá-los no mercado e nos órgãos públicos são fatores preocupantes. Este estudo vem, portanto, abordar a repercussão da demanda por Tecnologia Assistiva nas políticas públicas brasileiras com o objetivo identificar a relação existente entre a otimização desses recursos e serviços e a formulação de políticas direcionadas no país. Por meio de pesquisa bibliográfica, com característica exploratória e abordagem qualitativa, foi realizado um levantamento da legislação brasileira e ações existentes na área da Tecnologia Assistiva, bem como a análise de políticas públicas brasileiras com base nos critérios da avaliação normativa, aplicando-se o método dedutivo e a técnica de análise de conteúdo de Bardin. Verificou-se na literatura científica que, apesar do avanço gradativo da legislação e das iniciativas de fomento a projetos nessa área, fatores de entrave ao acesso, utilização e aproveitamento dos produtos assistivos, como a escassez na oferta de tecnologias inovadoras, acarretam dificuldades para a formatação de políticas eficazes e a configuração adequada às ações de fomento na área de Tecnologia Assistiva – essenciais ao processo de inclusão social.

Palavras-chave: Tecnologia, Pessoas com Deficiência, Política Pública, Inclusão Social.

Introduction

Talking about Assistive Technology (AT) goes beyond discussing urban and architectural accessibility or the use of spaces and social environments. The relationship with the AT user is much closer, as it is directly and necessarily inserted in the daily lives of people who need it to perform simpler day-to-day activities - such as eating, dressing, moving around, communicating, and other self-care tasks, to educational, work, sports and participation in society activities. People with disabilities (physical, sensory or communication), motor dysfunction, reduced mobility or even with temporary disabilities, who have some limitation in their movements, have difficulties or even impossibilities in performing these tasks and, therefore, need of some technology, strategy or support that provides them with greater functional capacity, control of the environment, independence and autonomy, which are fundamental elements to improve social participation and human performance throughout their life context. The scientific literature presents several authors, such as Scatolim et al. (2017), Noda (2018), Paula et al. (2018), Manrique et al. (2019) and Silva et al. (2021), which contribute to the discussions raised by Galvão Filho (2009) in defense of the use of AT products and services as indispensable tools to promote these benefits that enable social inclusion and better quality of life.

In general, the term Assistive Technology identifies the set of resources and services aimed at expanding the functional ability in order to promote the autonomy and inclusion of people with disabilities (Bersch & Tonolli, 2006). Such authors understand that any product or strategy that enables the execution of an occupational activity by a limited individual in that particular function can be considered AT.

There are some synonyms to deal with the AT theme, such as “Technical Aids”, “Support Technology”, “Adaptive Technology” and “Adaptations”, but the expression “Tecnologia Assistiva” is a Brazilian translation of the term Assistive Technology as several countries have different perceptions and classifications, as mentioned by Galvão Filho (2009). Even present in academic and school debates, the AT concept is still relatively new

and little disseminated in the country, although it originated in 1988, when this terminology was officially created in the USA based on an important legal element, known as Public Law 100 -407, being renewed as the Assistive Technology Act in 1998 (Bersch, 2017). This US legislation makes up, along with other laws, the so-called Americans with Disabilities Act (ADA), a set that established the criteria and legal bases to regulate the rights of citizens with disabilities in the US, as well as the granting of public funds and subsidies. for the acquisition of resources for the disabled (United States Department of Justice, 2008).

In Brazil, the Technical Assistance Committee (CAT) was established by the Special Secretariat for Human Rights of the Presidency of the Republic (SEDH/PR) in 2006, and brought together specialist representatives from Brazilian government agencies, with the main objectives of proposing public policies and partnerships between public entities and society; the structuring of the guidelines in relation to this area of knowledge; the survey of regional reference centers and professionals working in AT for the creation of an integrated national network, as well as the stimulation, in the governmental spheres, for the creation of reference centers; in addition to proposing courses and other actions for the training and qualification of human resources in the AT area, as well as research related to the theme (Brasil, 2012, as cited in Sartoretto & Bersch, 2017).

With the aim of subsidizing public policies in the country, CAT members sought conceptual basis for the nomenclatures "Ayudas Tecnicas", "Ajudas Técnicas", "Assistive Technology", and "Support Technology", intensively reviewing the reference international theory. Based on the concepts derived from the National Secretariat for the Rehabilitation and Integration of People with Disabilities (SNRIPD) in Portugal and the concept recommended in the document "Empowering Users Through Assistive Technology" (EUSTAT), produced by a commission of European Union countries, In addition to considering the US legislation contained in the 1994 ADA and other researched references, the Comitê de Ajudas Técnicas (2007, p. 3) unanimously approved, in 2007, the Brazilian concept, which was elaborated as follows:

> Assistive Technology is an area of knowledge, with an interdisciplinary characteristic, which encompasses products, resources, methodologies, strategies, practices and services that aim to promote functionality, related to the activity and participation of people with disabilities, incapacities or reduced mobility, aiming at their autonomy, independence, quality of life and social inclusion.

In this way, Assistive Technology can be understood as an aid to promote functional capacity, enabling the performance of an intended function, but made unfeasible by a disability or even by aging. Its primary purpose is precisely to expand communication, mobility and environmental control, as well as work and study skills, with the aim of favoring independence, quality of life and social inclusion of people with disabilities (Sartoretto & Bersch, 2017).

There are countless benefits that AT can provide to people with disabilities or reduced mobility. Several authors, such as Toro-Hernández et al. (2019) and Tao et al. (2020), agree that the objective of AT is the search for an independent life, social inclusion and quality of life, while aiming to transform the social reality of this layer of society through the elimination of physical, environmental, urban and social barriers, allowing carrying out daily activities with greater autonomy and active access to public

spaces, education, work and leisure. For this, AT provides resources and services that promote the expansion of the individual's functional capacity.

As a definition, Bersch & Tonolli (2006) consider that any product or system, item, equipment or even part thereof, whether manufactured in scale or by order, which has the objective of maintaining, increasing or improving the functional capacity of people with disabilities are identified as Resources. They present a wide range of options that can be simple, such as an adapted household appliance, or complex, such as a computerized system. Examples of AT resources are products used to facilitate activities of daily living, such as an adapted spoon and other items, supports and equipment for use in other environments in the context of work, study, leisure or sports activities. Toys, adapted clothing, hearing aids, prostheses, software, canes and other manual or electrical instruments for the individual's mobility are also considered resources, even a more complex computerized system. Finally, any product that enables a person with physical limitations to perform an activity or function is an AT resource (Bersch & Tonolli, 2006).

These authors also claim that, in addition to the resources, AT also provides Services that support people with disabilities during the selection, purchase or use of the aforementioned assistive resources. These services are considered transdisciplinary, encompassing professionals from multiple areas, such as physiotherapists, occupational therapists, speech therapists, educators, psychologists, nurses, doctors, engineers, architects, designers, as well as technicians from other specialties (Bersch & Tonolli, 2006).

Despite the existence of a great demand for AT, considering the contingent of people with disabilities and reduced mobility and the elderly, its development is incipient in the country, as evidenced by Cossa et al. (2017) and Galvão Filho (2022). Initiatives to promote research and development, related public policy actions, and their dissemination in the market and society are still very limited and, in general, their concept is little explored in the academic field. The Brazilian northeast, more precisely, the Recôncavo Baiano region, is the pioneering region in the implementation of a bachelor's degree course focused on Engineering in Assistive Technology and Accessibility, offered by the Federal University of Recôncavo da Bahia (UFRB), and there is still a great need for national growth of the knowledge area.

Even in view of the relevance of the assistance nature of AT, which is essential for human action in its various occupations, and the significant demand existing in the country, the studies by Cossa et al. (2017) and Cruz & Emmel (2015), among others, report the low optimization of these resources by their users and the difficulty in finding them in the market and public agencies. Based on this justification, this study proposes to investigate the following problem: How the existence of demand for AT resources and services had repercussions on public policies in Brazil, with the objective of identifying the relationship between the optimization of AT resources and services and the formulation of public policies in the country.

The following sections present the methodological procedures and a literature review that addresses the legislation, public policy actions, the use of resources and services and the promotion of research and development focused on the AT area in Brazil.

Methodology

As for the methods used, this study is characterized as an exploratory research (Gil, 2019), since it aims to know the reality of Assistive Technology resources and services in the context

of Brazilian public policies, the object of this investigation. The methodological procedures were based on the documentary and bibliographical research technique for the literature review, using secondary data sources through bibliographic documents on legislation and other technical and regulatory documents focused on the subject, as well as scientific articles found during the search in academic databases Web of Science, SciELO and Google Scholar. The search for articles was concentrated on the Web of Science in October 2021, updated in the first half of 2022. A total of 394 scientific articles were found, of which 41 were selected after reading the titles and abstracts based on criteria of inclusion those with an impact factor focused on the scope of the research regarding public policies, legislation and research and development related to the progress of Assistive Technology in Brazil.

As a search strategy, the following terms were used with their respective results in five search attempts: a) assistive technology (title) AND public policies (all fields) AND Brazil (all fields), obtaining 5 results and selecting 1 article; b) assistive technology (title) AND public policies (all fields) and Brazil (all fields), as a result, 2 selected articles; c) assistive technolog* (all fields) AND public polic* (all fields) and Brazil* (all fields), obtaining 5 results, and selecting 1 article; d) assistive technolog* (all fields) and Brazil* (all fields), with 358 results, but only 9 articles were selected; e) assistive technolog* (all fields) AND Brazil* (all fields), refined by publication title (disability and rehabilitation-assistive technology), with 28 results, all selected.

A qualitative approach was used with the application of the deductive method, since it sought to analyze the relationship between the demand for such technological products and the formatting of targeted public policies in order to anticipate the occurrence of particular phenomena (Marconi & Lakatos, 2018).

Based on the normative evaluation (Simões, 2018), we sought to analyze aspects related to public policies for granting Assistive Technology resources, following the classic criteria of this evaluation: compliance, coverage, quality, cost and effects. For data analysis, the content analysis technique was used, which seeks to provide meaning to the data by the recurring frequency of terms in the speeches (Bardin, 2016), opting for the thematic analysis modality. For this, the analysis was organized into three chronological phases: pre-analysis; exploration of the material; treatment of results, inference and interpretation.

In the first phase, the documents selected for analysis were organized, and the codes were defined, in aspects previously based on the literature, in order to allow a deductive analysis of the data. The evaluation of public policies on Assistive Technology on mobility aid categories, as well as orthoses and prostheses, was taken as a reference, as they are included among the main categories in terms of their use and concession.

In the second phase, which consisted of coding the texts, an attempt was made to identify and extract relevant excerpts from the documents, called "key expressions", which revealed the essence of the text content and matched the criteria of compliance, coverage, quality, cost, and effects of normative evaluation.

The third and final phase of analysis comprised the treatment of results, inference and interpretation. Given the above, the interpretation of the data was carried out through the categorization of emerging Assistive Technology themes, which resulted in the following national thematic categories: Regulatory Framework for Assistive Technology; Actions to Promote Projects and Public Policies for Assistive Technology; Analysis of the Main Public Policies for the Concession of Assistive Technology.

Results and Discussion

The presented results are discussed in the following three sections in this way: 3.1 - the demand for AT in the Brazilian political scenario; 3.2 - its legal framework, promotion and existing public policies in the country; 3.3 - the need to adapt technologies distributed through concession programs.

The repercussion of the demand for assistive technology in the Brazilian political scenario

In the most recent literature, several authors, such as Scatolim et al. (2017) and Layton et al. (2020), and in a more global perspective of the theme, Alqahtani et al. (2021), ratify Rita Bersch's (2009) reflection on the existence of a significant portion of the population demanding AT resources and services. The 2010 IBGE census indicated 23.9% of the Brazilian population with disabilities (Instituto Brasileiro de Geografia e Estatística, 2022), and this number also includes the elderly, obese, pregnant women, and people with reduced mobility due to various other factors. factors. In addition to providing a gain in the quality of personal and family life, these technologies help the search for rights and social equality, and their production can increase job creation and tax collection – essential for the economy. There is, therefore, an important consumer market for such resources and services.

In this vision, the federal government has been acting through the Financiadora de Estudos e Projetos (FINEP), a public organization of the Ministry of Science, Technology and Innovation (MCTI). Aiming to stimulate the production of Assistive Technology, this agency promotes public policies and provides financial resources through public calls for proposals (Brasil, 2021b).

From this perspective, Cossa et al. (2017) carried out a study of the main public notices aimed at achieving subsidies for Assistive Technology projects existing in Brazil, seeking to identify the potential relationship between Assistive Technology and Innovation as a framework for social inclusion and citizenship. However, during the research, Cossa et al. (2017) observed that FINEP's actions directed at AT had not yet obtained satisfactory results, since the use of this technology is still very low compared to the demand of an expanding consumer market in view of the high number of people who need the technology assistance from these resources. And they also observed that, despite the financial volume offered in these notices to support AT projects, there is little knowledge about actions and public policies in this area by the general population.

In addition, the abandonment of these technologies by the user is a worrying factor that may imply the minimization of AT resources. According to Cruz & Emmel (2015), the lack of follow-up by a professional in the area to guide or train the resource can influence the result of its use, leading to abandonment of the product. In some types of resource, the Assistive Technology services available are necessary for a satisfactory result.

Bersch (2009) reflects on the existence of a path still to be taken towards the recognition and structuring of Assistive Technology as an area of knowledge, although advances in legislation aimed at the rights of citizens with disabilities have contributed to the provision of AT resources. This scenario still persists, and achievements are gradual, as identified by Scatolim et al. (2017), MacLachlan et al. (2018) and Hott & Fraz (2019).

This argument is ratified by Layton et al. (2020), who identify, globally, the serious inequality of distribution of these resources, pointing to the huge existing potential for

innovations, developments and delivery of AT in an adequate and sustainable way, as well as by de Witte et al. (2018), which present the elements of an international standard for the provision of Assistive Technology in order to guide the development of public policies.

Main achievements in legislation, in actions to promote research and development, and in public policies for assistive technology

However, important steps have been taken over the last two decades to favor the growth of the Assistive Technology area in the country. Table 1 shows the main publications related to the progress obtained in legislation and in the promotion of research and development of Assistive Technology in the country. Using as a source the articles studied during the literature review, after a survey of the legal instruments related to the theme, the main decrees and laws that contributed to the legal guarantee of the right to access Assistive Technology were highlighted.

Table 1. Regulatory Framework for Assistive Technology in Brazil.

Item	Year	Legislation
1	1988	Promulgation of the Federal Constitution of 1988. Article 227, paragraph 2, brings the first federal legal framework that makes reference to the duties of the family, society and the State to guarantee fundamental rights to children, adolescents and young people;
2	1999	Decree No. 3,298 provides for the National Policy for the Integration of the Person with Disabilities. Its 18th article deals with the concession of orthosis and prosthesis as a constituent part of comprehensive health care and the 19th article deals with the rights of Brazilian citizens with disabilities to technical assistance;
3	2004	Decree No. 5,296, of December 2, 2004: established the right of access for people with disabilities to public spaces, public areas, public transport, communication and information equipment and services; regulates Laws No. 10,098 of December 19, 2000, and No. 10,048 of November 8, 2000;
4	2008	Decree No. 186/2008: The UN Convention on the Rights of Persons with Disabilities and its Optional Protocol are ratified, being incorporated into Brazilian legislation as a constitutional amendment (Legislative Decree No. 186, 2008). It is up to the Brazilian government to implement policies that promote the rights of people with disabilities (Brasil, 2008);
5	2009	Decree No. 6,949, as of August 25, 2009 - Rights of Persons with Disabilities, the scenario of social exclusion of persons with disabilities, disabilities or advanced age has become an area of great concern for Brazilian national public policy;
6	2011	Law No. 12,435 is sanctioned on July 6 of the respective year, which amends art. 1 of Law nº 8.742/93, which provides for the organization of Social Assistance;
7	2011	Decree No. 7612, of November 17, 2011, Living Without Limits - developing citizenship and strengthening the participation of people with disabilities in Brazilian society by encouraging and rescuing their autonomy (Brasil, 2011);
8	2015	Brazilian Inclusion Law, Law No. 13,146, of July 6, 2015. Art. 74: "Persons with disabilities are guaranteed access to assistive technology products, resources, strategies, practices, processes, methods and services that maximize their autonomy, personal mobility and quality of life" (Law No. 13,146, 2015);
9	2015	Brazilian Association of Technical Standards – ABNT NBR 9050: Accessibility to buildings, furniture, spaces and urban equipment;
10	2016	New Brazilian Innovation Law, Law 13,243, of January 11, 2016, which establishes scientific development in Brazil and modifies some laws that were no longer meeting all needs related to social technology;
11	2018	Decree No. 9,296, of March 1, 2018. Regulates art. 45 of Law No. 13,146, of July 6, 2015, which establishes the Brazilian Law for Inclusion of Persons with Disabilities - Statute for Persons with Disabilities (Brasil, 2018c);
12	2018	Decree No. 9,345, of April 16, 2018: Amends the Regulation of the Severance Indemnity Fund for the acquisition of orthoses and prostheses by disabled workers (Brasil, 2018b).

Source: Updated and adapted from Cossa et al. (2017).

In addition, Table 2 indicates several actions to promote projects and public policies for Assistive Technology in Brazil, which were the result of the survey of the main related actions, carried out in scientific articles of the literature review, as well as in publications of public notices on the official website of FINEP.

Table 2. Actions to Promote Projects and Public Policies for Assistive Technology in Brazil.

Item	Year	Actions
1	2004	National Accessibility Program – presented in Decree 5,296/2004;
2	2005	Public Call MCT/FINEP/Ação Transversal – Assistive Technologies;
3	2006	Technical Assistance Committee - CAT, instituted on November 16, 2006 through Ordinance 142 of SEDH/PR with the objectives mentioned above;
4	2006	Public Call MCT/FINEP/ME - Science and Technology for Sport;
5	2006	Public Call MCT/FINEP/Economic Subsidy to Innovation;
6	2007	Public Call MCT/FINEP/CT-INFRA – PROINFRA – with the objective of supporting the development of innovative processes and products;
7	2007	On September 26, 2007, the Federal Government released its Social Agenda. Priority investment actions were established to equalize opportunities and promote the social inclusion of people with disabilities (Brasil, 2007, as cited in Bersch, 2009);
8	2009	Public Call - MCT/FINEP/Ação Transversal – Technologies for Social Development;
9	2010	Public Call MCT/FINEP – Ação Transversal – Assistive Technology;
10	2010	Public Selection Notice MCT/FINEP/FNDCT - Economic Subsidy to Innovation;
11	2010	National Health Policy for Persons with Disabilities, instituted by Ordinance MS/GM No. 1060, of June 5, 2002, of the Ministry of Health;
12	2011	Public Call MCTI/SECIS/FINEP/FNDCT – Cooperation - ICT – Company – Assistive Technology;
13	2012	Public Selection MCTI/FINEP/FNDCT - Economic Subsidy to Innovation – Assistive Technology;
14	2013	Public Call MCTI/SECIS/FINEP/FNDCT – Cooperation - ICT – Company – Assistive Technology;
15	2015	Public Call MCTI/SECIS/FINEP/FNDCT - Viver Sem Limites: public selection of projects for the social inclusion of people with disabilities, the elderly, and people with reduced mobility;
16	2020	Public Selection MCTIC/FINEP/FNDCT - Economic Subsidy for Innovation - Innovative technological solutions for products, services and processes implemented by Startups and Technology-Based Companies applied to the COVID-19 pandemic environment;
17	2020	Assistive Technology - public selection of projects in Assistive Technology to encourage research, development and innovation for the inclusion of people with disabilities, the elderly and people with reduced mobility;
18	2020	Advanced Materials and Strategic Minerals - aiming to support, with non-reimbursable resources, new ambitious and challenging goals in research, development and innovation programs and/or projects consolidated in Brazilian Scientific, Technological and Innovation Institutions (ICTs), as well as initiatives successful technology-based projects in the areas of Advanced Materials and Strategic Materials. In this way, it seeks to encourage the best programs and initiatives, contracting new goals from programs and initiatives that have already demonstrated technical quality and delivery capacity among the thematic lines, health and AT;
19	2021	National Assistive Technology Plan (PNTA), published on December 15, 2021.

Source: Updated and adapted from Cossa et al. (2017).

As for national public policies, Decree No. 3,298/1999 already provided for the National Policy for the Integration of Persons with Disabilities, which comprises a set of normative guidelines aimed at ensuring the individual and social rights of persons with disabilities - the task of bodies and entities of the Public Power. Art. 18 of this decree includes the granting of orthoses, prostheses, collection bags and auxiliary materials as a constituent part of comprehensive health care and rehabilitation, while Art. 19 provides for the term "technical aids", presenting a list of elements included in this concept (Brasil, 1999).

Subsequently, the National Health Policy for People with Disabilities, instituted by Ordinance MS/GM nº 1.060 of the Ministry of Health, of June 5, 2002, deals with these assistive resources and access to them as part of the actions carried out in specialized care, also providing, in its sole paragraph, the granting of funding for the acquisition of technical aids for people with disabilities (Brasil, 2010). Therefore,

promoting quality of life, preventing disabilities, providing comprehensive health care, improving information mechanisms, training human resources and organizing and guaranteeing the functioning of services is what is foreseen in its main guidelines, thus defining, as its general purposes, the protection of the health of people with disabilities, the rehabilitation of their functional capacity and human performance in order to contribute to their social inclusion and prevent injuries that allow the emergence of disabilities. Moreover, this policy establishes as a guideline of direct responsibility of the SUS and its network of units, ensuring the receipt of assistive technologies, among other actions (Brasil, 2010).

According to a study carried out by Cruz & Emmel (2015) and the impressions of authors of the most recent literature, such as Scatolim et al. (2017), it was Law nº 10.098, of December 19, 2000, which presented, at the national level, the first "assistive technology". This law establishes general norms and basic criteria for promoting accessibility for people with disabilities and reduced mobility. However, it was only in 2004 that this law was regulated through Decree No. 5,296, which also regulated Law No. 10,048, of November 8, 2000, which gives priority to service to the people it specifies (Brasil, 2004). This decree was an important milestone for public policies aimed at Technology and Accessibility of urban spaces and transport systems for people with disabilities, in addition to defining relevant concepts for the consolidation of the Assistive Technology area, such as "disabled person", "physical disability", "accessibility", "universal design" and "technical assistance", representing a significant opportunity for government actions aimed at human rights, social inclusion and equal opportunities.

In that same Decree (nº 5.296), with regard to the theme, it is also worth noting that the National Accessibility Program is presented in chapter VIII; in article 62, the requirement for the inclusion of themes aimed at technical aid, cure, treatment and prevention or minimization of deficiencies in the programs and lines of research developed with the support of public organizations; in article 63, the need to establish partnerships with universities and research centers for the national production of technical aids, components and equipment, based on scientific and technological development, as well as the reduction or exemption of taxes related to technical aids, as specified in Article 64; in article 65, the task of the public power to enable the recognition of technical aids as an area of knowledge, considering its expansion in professional training, including thematic contents in education from high school to graduate school; and also, in article 66, the institution of the Technical Assistance Committee (CAT), coordinated by the Special Secretariat for Human Rights and supervised by the National Coordination for the Integration of Persons with Disabilities (CORDE) (Brasil, 2004).

Then, the implementation of various actions and new political programs expanded in the Brazilian political scenario. It is worth mentioning the granting of assistance resources made available by the Unified Health System (SUS) from public health units and, exceptionally, universities and philanthropic entities that are part of the complementary health network (Brasil, 1993). The Department of Strategic Programmatic Actions of the Health Care Secretariat of the Ministry of Health centralizes the national program of "Concession of Ortheses and Prostheses", responsible for the distribution of orthoses for upper and lower limbs, manual and specialized wheelchairs, as well as shower chairs, also providing, through SUS, the monitoring and adaptation of orthoses and prostheses (Mello, 2008 as cited in Cruz & Emmel, 2015).

Through Decree 7612, of November 17, 2011, the Federal Government, aiming at equalizing opportunities and complying with the prerogatives of the UN Convention regarding the Rights of Persons with Disabilities, ratified by Brazil with the equivalent of a constitutional amendment, implemented the National Plan for the Rights of Persons with Disabilities – Living without Limits between 2011 and 2014, moving more than R$7.6 billion from the federal budget in favor of the rights of this population. Therefore, it is subject to inspection by the Federal Audit Court - TCU, with the objective of evaluating the main aspects of the governance of the Viver Sem Limite Plan to achieve the proposed objectives (Brasil, 2017).

Need to adapt the assistive technology granted by the government

Despite all these initiatives by the Federal Government, especially by the Ministry of Health, aimed at granting technologies, some obstacles to the effectiveness of these actions were observed. As set out in the discussions below, studies in the scientific literature point to the need for adaptations and follow-up for the best use and optimization of the functionality of several other resources and equipment, not just orthoses and prostheses. Adjustments and adaptations must take into account the ergonomic aspects of the equipment design configuration designed according to the highest and lowest percentile pattern of the population.

Moreira Soares et al. (2020, p. 1) point to this perspective when investigating the development process of Assistive Technology products for people with physical disabilities in Brazil, and highlight "[...] the possible influences of Emotional Collaborative Design in the Technology process Assistive", pointing to high dissatisfaction in different situations related to the use of AT, as well as poor understanding of the needs of people who need it. Barbosa et al. (2021) continue the discussion in a comparative evaluation of robotic devices to assist post-stroke patients in the rehabilitation process. According to these authors, the results show the relevance of assistive technology design for safety, ergonomics, reliability and feasibility for home use.

Along the same lines, Marques & Alves (2021) point out barriers or facilitators related to participation in parasports arising from environmental factors, emphasizing that dissatisfaction with the AT services provided and other benefits of public policies can be a barrier to participation. The reports of athletes with modular injuries, with the need to use a wheelchair, reinforce the understanding of the role of technology and the services provided, which should be to facilitate the performance of the individual.

Still on wheelchairs, Marques et al. (2021) showed inadequacies, according to simulation results and INMETRO reports, during analysis to verify the compliance of this equipment considering current standards. Similarly, Sugawara et al. (2021) show precisely this concern when developing a wheelchair model centered on the user, in an open innovation approach, following the World Health Organization (WHO) Wheelchair Guidelines, presenting a rigid structure, of good quality, acceptable and affordable, increasing the variety of these handheld devices available through the national public health system. This study emphasizes the importance of follow-up and feedback from rehabilitation professionals regarding the characteristics of assistive resources for screening the best project alternatives, saving considerable time and resources.

Oliveira & Rosa (2018) also observe aspects relevant to the technology development process, with the possibility of even reducing production costs, as is the case of the foot prosthesis developed and evaluated in this study.

Based on the criterion of conformity of the normative evaluation (Simões, 2018), it is seen that the intervention of the national program for granting the aforementioned assistance resources, despite having been implemented as foreseen in the legislation, presents flaws in the coverage of this policy, considering that the public concession for follow-up and adaptation does not include all the resources and, therefore, does not reach the disabled public in its entirety, since such products are distributed without careful observance of their adequacy to the user, which compromises the effectiveness of its quality, even if the technology specifications are theoretically met.

The lack of adaptation of the wheelchair is one of the examples raised, making many users pay for these adjustments or not using it, contributing to abandonment. Sugawara et al. (2018) evaluated the factors that influence the abandonment of AT resources in a rehabilitation center, corroborating the approach of Cruz & Emmel (2015), when they argue that many technologies are abandoned for various reasons, among them, inadequacy, misuse and the lack of training and monitoring by a qualified professional. In fact, the main abandonment factor is precisely the absence or scarcity of listening to the end user, throughout the process of conception, development, choice, acquisition and configuration of Assistive Technology resources.

In a research with a quantitative approach, Cruz & Emmel (2015), aiming to identify the form of acquisition of Assistive Technology resources by people with physical disabilities, as well as the usability and abandonment of these technologies, detected, by sampling, that 71.35% of the products purchased are made available by concession by the SUS, including a cane, shower chair, manual wheelchair, walker, crutch, orthosis and prosthesis, both for the upper and lower limbs. This means that users who acquired these technologies with their own resources unnecessarily paid for what was already guaranteed to them by law (Cruz & Emmel, 2015).

In addition, Cruz & Emmel (2015) found that the wheelchair ranks second in the abandonment statistics (20%) of these resources, second only to the cane (26%). This reveals that the expected effects of the AT concession public policies have not yet been fully achieved; rather, they point to the need for a more detailed survey, focused on the practical and everyday reality of user profiles, in order to optimize the use of these resources and public funds. The scope of this study did not include an analysis of the costs of a normative assessment methodology.

Still regarding the issue of abandonment, there is a gap in the process of adaptation, use and acceptance of assistive resources, and which represents a bottleneck in the growth of the AT area in the country: the shortage of qualified professionals. The Technical Assistance Committee, created by the Special Secretariat for Human Rights of the Presidency of the Republic - SEDH/PR in 2006, and composed of a group of Brazilian specialists, in addition to representatives of government agencies, aims to offer courses in the area of Assistive Technology for the training of qualified human resources, among other related actions, such as proposing government policies.

Pelosi & Nunes (2009) and Galvão Filho (2022) discuss this great need in the training processes related to AT, which, as it is an area of knowledge with an interdisciplinary characteristic, enables, in addition to the participation of the user and

his family, the interaction of the expertise of a diversity of professionals, involving the activities of education, engineering, occupational therapy, physiotherapy, speech therapy, psychology, social work, ophthalmology, as well as hearing specialists, prosthetics, among others (Pelosi & Nunes, 2009).

There are 49 higher education courses in the area of Assistive Technology in the world (Galvão Filho, 2022). However, the Brazilian reality is completely opposite to the international trend of growth in the offer of training processes, especially undergraduate and stricto sensu postgraduate courses. Brazil is very late in terms of initiatives for specialized training in Assistive Technology: it was only from 2018 onwards that the pioneering undergraduate course at the Universidade Federal do Recôncavo da Bahia (UFRB) was implemented – this is the Bachelor of Engineering in Assistive Technology and Accessibility. This scenario implies great difficulties in advancing relative actions and propositions of effective public policies, since there is a lack of specialists or qualified professionals engaged in the processes of elaboration, planning, implementation, execution and evaluation of these actions in that area (Galvão Filho, 2022).

Allied to this issue, there is another obstacle to be considered: the lack of knowledge on the part of the population about technology concession policies is an obstacle to accessing AT resources. This study also investigated the number of subjects who had information about the Federal Government's technology concession policies: 79% of the individuals interviewed said they did not know about any program (Cruz & Emmel, 2015). It is necessary that all information of public interest be duly published to society, through strategic channels, in a clear language that is simple to understand, in order to guide the public and facilitate access to these technologies and services (Bersch, 2009). According to Corrêa et al. (2021), a barrier to the progress of assistive technology, as well as access to rehabilitation, inclusive education and government policies for people with disabilities, is precisely the lack of knowledge in the area.

The Brazilian Law of Inclusion (LBI), Law nº 13.146, of July 6, 2015, in its Art. 74, also ensures access to assistive technology in order to maximize autonomy, personal mobility and quality of life; and in Art. 75, it is foreseen, as one of the purposes of the specific plan of measures, to facilitate and speed up the inclusion of new resources in the list of government agencies, including SUS (Brasil, 2015). The impact of the LBI went far beyond guaranteeing access to assistive products, as it changed the perception and understanding of the civil capacity of citizens with intellectual disabilities, also granting them the full exercise of the rights of political participation, reflecting in a broader performance in projects and within the scope of ST&I policy (Rodrigues et al., 2020).

Final Considerations

Bibliographical and documentary research indicated that access to Assistive Technology resources and services is essential for social inclusion and the exercise of citizenship. In addition to the legal guarantee, the focus on optimizing the conditions of access, usability and proper use of these products, in view of the significant public that demands it, is the mobilizing factor for structuring the public policies that are so necessary for the progress and realization of the rights of people with disabilities or Reduced mobility. Investment in research, technology and innovation has therefore become essential to serve this important consumer market.

The data found in this study indicate that the Federal Government's support for the development of projects through FINEP and public policies aimed at guaranteeing rights, accessibility and concession of technologies can represent significant opportunities to optimize the conditions of access to Assistive Technology, but they still do not fully contemplate the demand and specificities existing in the country. The result of the normative evaluation indicates that it is convenient to propose and format government policies for the development and production of innovative technologies and the periodic review of Brazilian public policies aimed at Assistive Technology products and services, aiming to reach the specificities and update and detail the statistical data of the Brazilian population of people with disabilities for the effectiveness and replicability of existing actions.

It is relevant to consider the development of a training program for health professionals, such as physiotherapists and occupational therapists, in the provision of Assistive Technology services, such as adaptation and professional monitoring for the choice, acquisition and training in the use of the appropriate resource, considering each case as specific. This would complement public actions for the concession of existing technologies and would minimize the possibilities of abandonment of resources by the user, as it would achieve the expected optimization, in addition to public funding – the resources granted by the government in terms of usability and utilization.

Another obstacle identified through the bibliographical research was the lack of knowledge on the part of the target public, as it is a factor that still persists and hinders access to AT resources and services and the inclusion process. It is the responsibility of the State to make information of public interest accessible. It should be disseminated through strategic channels that are easy to understand and accessible to all layers of society. As well as the dissemination, through campaigns, about the importance of these promotion actions and public policies for socioeconomic development and the area of Assistive Technology, in addition to the benefits of quality of life and social inclusion provided to the target audience.

In this sense, it would also be appropriate, as a focus in education planning, to encourage the study and practice of innovation focused on Assistive Technology as an area of knowledge. Decree No. 5,296, of 2004, in its art. 65, provides for the inclusion of content from high school to graduate school (Brasil, 2004), but lacks the formatting of policies that promote the practice and fulfillment of this guideline in the field of education, with a view to promoting knowledge, awareness and insertion of values in society about inclusion and the universe of Assistive Technology and its social, political and economic implications.

It is concluded, therefore, that not only knowledge and awareness are necessary, but the effective participation of all agents (government, public and private institutions, society and the consumer market) involved in this theme and imbued in the practice, effectiveness and improvement of the existing actions and new possibilities, so that there is access and optimization of Assistive Technology in the country and its consequent impact on the process of social inclusion. As a gap in this research, it can be mentioned that the limited dissemination of knowledge in the AT area was a limitation to the study of public policies. As for the future perspective, a more detailed investigation of technological productions is suggested based on the final result of FINEP's public notices, with due regard for the consumer market and the effective reach of the technologies developed.

Acknowledgements

Support from the Dean of Research, Graduate Studies and Innovation at the Federal Institute of Bahia (PRPGI-IFBA) and the collegiate of Master's Degree in Intellectual Property and Technology Transfer for Innovation (PROFNIT-IFBA).

References

Alqahtani, S., Joseph, J., Dicianno, B., Layton, N. A., Toro, M. L., Ferretti, E., Tuakli-Wosornu, Y. A., Chhabra, H., Neyedli, H., Lopes, C. R., Alqahtani, M. M., Van de Vliet, P., Kumagaya, S. I., Kim, J. B., McKinney, V., Yang, Y. S., Goldberg, M., & Cooper, R. (2021). Stakeholder perspectives on research and development priorities for mobility assistive-technology: a literature review. *Disability and Rehabilitation Assistive Technology*, *16*(4), 362-376.

Barbosa, I. M., Alves, P. R., & Silveira, Z. C. (2021). Upper limbs' assistive devices for stroke rehabilitation: a systematic review on design engineering solutions. *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, *43*(236), 1-16.

Bardin, L. (2016). *Análise de conteúdo.* São Paulo: Edições 70.

Bersch, R. D. C. R. (2009). *Design de um serviço de tecnologia assistiva em escolas públicas* (Tese de doutorado). Universidade Federal do Rio Grande do Sul, Porto Alegre.

Bersch, R. D. C. R. (2017). *Introdução à tecnologia assistiva*. Porto Alegre: CEDI. Recuperado em 11 de agosto de 2022, de https://www.assistiva.com.br/Introducao_Tecnologia_Assistiva.pdf

Bersch, R. D. C. R., & Tonolli, J. C. (2006). *Introdução ao conceito de tecnologia assistiva e modelos de abordagem da deficiência.* Recuperado em 11 de agosto de 2022, de http://www.bengalalegal.com/tecnologia-assistiva

Brasil. Secretaria de Atenção à Saúde. (1993, 9 de setembro). Portaria nº 116/1993, de 9 de setembro de 1993. *Diário Oficial [da] República Federativa do Brasil*, Brasília. Recuperado em 11 de agosto de 2022, de https://bvsms.saude.gov.br/bvs/saudelegis/sas/1993/prt0116_09_09_1993.html

Brasil. Casa Civil. (1999, 20 de dezembro). Decreto nº 3.298, de 20 de dezembro de 1999. Regulamenta a Lei no 7.853, de 24 de outubro de 1989, dispõe sobre a Política Nacional para a Integração da Pessoa Portadora de Deficiência, consolida as normas de proteção, e dá outras providências. *Diário Oficial [da] República Federativa do Brasil*, Brasília. Recuperado em 11 de agosto de 2022, de http://www.planalto.gov.br/ccivil_03/decreto/d3298.htm

Brasil. Casa Civil. (2004, 2 de dezembro). Decreto Nº 5.296, de 2 de dezembro de 2004. Regulamenta as Leis nos 10.048, de 8 de novembro de 2000, que dá prioridade de atendimento às pessoas que especifica, e 10.098, de 19 de dezembro de 2000 que estabelece normas gerais e critérios básicos para a promoção da acessibilidade das pessoas portadoras de deficiência ou com mobilidade reduzida. *Diário Oficial [da] República Federativa do Brasil*, Brasília. Recuperado em 11 de agosto de 2022, de http://www.planalto.gov.br/ccivil_03/_ato2004-2006/2004/decreto/d5296.htm

Brasil. Casa Civil. (2008, 9 de julho). Decreto Legislativo nº 186, de 9 de julho de 2008. Aprova o texto da Convenção sobre os Direitos das Pessoas com Deficiência e de seu Protocolo Facultativo. *Diário Oficial [da] República Federativa do Brasil*, Brasília. Recuperado em 11 de agosto de 2022, de http://www.planalto.gov.br/ccivil_03/congresso/dlg/dlg-186-2008.htm

Brasil. (2010). *Política nacional de saúde da pessoa com deficiência.* Brasília: Editora do Ministério da Saúde.

Brasil. Financiadora de Estudos e Projetos – FINEP. (2011, 17 de novembro). Decreto nº 7.612, de 17 de novembro de 2011. Institui o Plano Viver sem Limite. Presidência da República. *Diário Oficial [da] República Federativa do Brasil*, Brasília. Recuperado em 11 de agosto de 2022, de http://www.finep.gov.br/chamadas-publicas/chamadapublica/588

Brasil. Secretária-Geral. (2015, 6 de julho). Lei nº 13.146, de 6 de julho de 2015. Institui a Lei Brasileira de Inclusão da Pessoa com Deficiência (Estatuto da Pessoa com Deficiência). *Diário Oficial [da] República Federativa do Brasil*, Brasília. Recuperado em 11 de agosto de 2022, de http://www.planalto.gov.br/ccivil_03/_ato2015-2018/2015/lei/l13146.htm

Brasil. Tribunal de Contas da União TCU. Jusbrasil. (2017). *Relatório de Auditoria (RA): RA 022584206*. Recuperado em 11 de agosto de 2022, de https://tcu.jusbrasil.com.br/jurisprudencia/507688259/relatorio-de-auditoria-ra-ra-2258420161/relatorio-507688325

Brasil. (2018b, 16 de abril). Decreto nº 9.345, de 16 de abril de 2018. Altera o Regulamento do Fundo de Garantia do Tempo de Serviço - FGTS, aprovado pelo Decreto nº 99.684, de 8 de novembro de 1990, para dispor sobre as normas de movimentação da conta vinculada do FGTS para aquisição de órtese e prótese pelo trabalhador com deficiência. *Diário Oficial [da] República Federativa do Brasil*, Brasília. Recuperado em 11 de agosto de 2022, de http://www.planalto.gov.br/ccivil_03/_ato2015-2018/2018/decreto/D9345.htm#:~:text=DECRETO%20N%C2%BA%209.345%2C%20DE%2016,pr%C3%B3tese%20pelo%20trabalhador%20com%20defici%C3%AAncia

Brasil. Presidência da República. (2018c, 1 de março). Decreto nº 9.296, de 1º de março de 2018. Regulamenta o art. 45 da Lei nº 13.146, de 6 de julho de 2015, que institui a Lei Brasileira de Inclusão da Pessoa com Deficiência - Estatuto da Pessoa com Deficiência. *Diário Oficial [da] República Federativa do Brasil*, Brasília. Recuperado em 11 de agosto de 2022, de https://www.gov.br/mdh/pt-br/centrais-de-conteudo/pessoa-com-deficiencia/decreto-no-9296-2018-regulamenta-o-artigo-45-da-lei-brasileira-de-inclusao-da-pessoa-com-deficiencia-estatuto/view

Brasil. Financiadora de Estudos e Projetos – FINEP. (2021b). *Chamadas públicas.* Recuperado em 11 de agosto de 2022, de http://www.finep.gov.br/chamadas-publicas/chamadaspublicas?pchave=&tema%5B%5D=Tecnologia+Assitiva&situacao=&d1=02-01-2016&d2=27-05-2021&task=&boxchecked=0&filter_order=ordering&filter_order_Dir=asc&2766c5edfe59b8f1a04e1e9e21cbe25e=1

Comitê de Ajudas Técnicas – CAT. (2007). *Ata da Reunião VII, de dezembro de 2007, Secretaria Especial dos Direitos Humanos, Presidência da República (CORDE/SEDH/PR).* Recuperado em 11 de agosto de 2022, de https://www.assistiva.com.br/Ata_VII_Reuni%C3%A3o_do_Comite_de_Ajudas_T%C3%A9cnicas.pdf

Corrêa, A. Z. A. H., Masuchi, M. H., Baeta, N. C. D. C. C., Takiuchi, L., & Bianco, B. (2021). Disability inclusion in higher education: knowledge and perceptions of the academic community. *Disability and Rehabilitation Assistive Technology*, *16*(7), 735-740.

Cossa, R. B., Silva, N. A., Glavam, R. B., & Machado, M. L. (2017). Tecnologia assistiva e inovação como ferramentas de propulsão da inclusão social e cidadania. *Revista Espacios*, *38*(17), 1-11.

Cruz, D. M. C., & Emmel, M. L. G. (2015). Políticas públicas de tecnologia assistiva no brasil: um estudo sobre a usabilidade e abandono por pessoas com deficiência física. *Revista FSA*, *12*(1), 79-106.

Galvão Filho, T. (2022). *Tecnologia assistiva: um itinerário da construção da área no Brasil.* Curitiba: Editora CRV.

Galvão Filho, T. A. (2009). A Tecnologia Assistiva: de que se trata? In G. J. C. Machado & M. N. Sobral (Eds.), *Conexões: educação, comunicação, inclusão e interculturalidade* (pp. 207-235). Porto Alegre: Redes Editora.

Gil, A. C. (2019). *Métodos e técnicas de pesquisa social.* São Paulo: Atlas.

Hott, D. F. M., & Fraz, J. N. (2019). Accessibility, assistive technology and information units: links to the inclusive existence. *Perspectivas em Ciência da Informação*, *24*(4), 199-210.

Instituto Brasileiro de Geografia e Estatística – IBGE (2022). *Pessoas com deficiência.* Recuperado em 11 de agosto de 2022, de https://educa.ibge.gov.br/jovens/conheca-o-brasil/populacao/20551-pessoas-com-deficiencia.html

Layton, N., Bell, D., Buning, M. E., Chen, S. C., Contepomi, S., Delgado Ramos, V., Hoogerwerf, E. J., Inoue, T., Moon, I., Seymour, N., Smith, R. O., & de Witte, L. (2020). Opening the GATE: systems thinking from the global assistive technology alliance. *Disability and Rehabilitation Assistive Technology*, *15*(5), 484-490.

MacLachlan, M., Banes, D., Bell, D., Borg, J., Donnelly, B., Fembek, M., Ghosh, R., Gowran, R. J., Hannay, E., Hiscock, D., Hoogerwerf, E. J., Howe, T., Kohler, F., Layton, N., Long, S., Mannan, H., Mji, G., Ongolo, T. O., Perry, K., Pettersson, C., Power, J., Ramos, V. D., Slepickova, L., Smith, E. M., Tay-Teo, K., Geiser, P., & Hooks, H. (2018). Assistive technology policy: a position paper from the first global research, innovation, and education on assistive technology (GREAT) summit. *Disability and Rehabilitation. Assistive Technology*, *13*(5), 454-466.

Manrique, A. L., Dirani, E. A., Frere, A. F., Moreira, G. E., & Arezes, P. M. (2019). Teachers' perceptions on inclusion in basic school. *International Journal of Educational Management*, *33*(2), 409-419.

Marconi, M. D. A., & Lakatos, E. M. (2018). *Metodologia do trabalho científico: projetos de pesquisa, pesquisa bibliográfica, teses de doutorado dissertações de mestrado e trabalhos de conclusão de curso*. São Paulo: Atlas.

Marques, L. S., Magalhães, R. R., de Lima, D. A., Tsuchida, J. E., Fuzzato, D. C., & de Andrade, E. T. (2021). Finite element analysis of a commercial wheelchair. *Disability and Rehabilitation: Assistive Technology*, *16*(8), 890-901.

Marques, M. P., & Alves, A. C. J. (2021). Investigating environmental factors and paralympic sports: an analytical study. *Disability and Rehabilitation: Assistive Technology*, *16*(4), 414-419.

Moreira Soares, J. M., Martins Fontes, A. R., Fernandes Ferrarini, C., & Aires Borrás, M. Á. (2020). Multicase study on product design in the area of assistive technology in Brazil. *Disability and Rehabilitation: Assistive Technology*, *15*(4), 442-452.

Noda, K. (2018). Google Home: smart speaker as environmental control unit. *Disability and Rehabilitation: Assistive Technology*, *13*(7), 674-675.

Oliveira, D. S., & Rosa, S. S. R. F. (2018). Development and experimental evaluation of a national prosthetic foot. *IEEE Latin America Transactions*, *16*(3), 741-747.

Paula, J. N., de Mello Monteiro, C. B., da Silva, T. D., Capelini, C. M., de Menezes, L. D. C., Massetti, T., Tonks, J., Watson, S., & Nicolai Ré, A. H. (2018). Motor performance of individuals with cerebral palsy in a virtual game using a mobile phone. *Disability and Rehabilitation: Assistive Technology*, *13*(6), 609-613.

Pelosi, M. B., & Nunes, L. R. O. P. (2009). Formação em serviço de profissionais da saúde na área de tecnologia assistiva: o papel do terapeuta ocupacional. *Revista Brasileira de Crescimento e Desenvolvimento Humano*, *19*(3), 435-444.

Rodrigues, D. C., Sobrinho, M. V., & Vasconcellos, A. M. D. A. (2020). Formação de coalizão de defesa e atores chaves da política. *Revista de Administração Pública*, *54*(6), 1711-1728.

Sartoretto, M. L., & Bersch, R. (2017). *O que é tecnologia assistiva.* Recuperado em 11 de agosto de 2022, de https://www.assistiva.com.br/tassistiva.html

Scatolim, R. L., Santos, J. E. G., Cruz Landim, P., de Toledo, T. G., Fermino, S. C. M., Cardozo, D., Garavello, M. F., & Sanches, R. S. (2017). Legislação e tecnologias assistivas: aspectos que asseguram a acessibilidade das pessoas com deficiências. *INFOR*, *2*(1), 227-248.

Silva, A. D. M., Furtado, G., Dos Santos, I. P., da Silva, C. B., Caldas, L. R., Bernardes, K. O., & Ferraz, D. D. (2021). Functional capacity of elderly with lower-limb amputation after prosthesis rehabilitation: a longitudinal study. *Disability and Rehabilitation: Assistive Technology*, *16*(5), 556-560.

Simões, A. A. (2018). *Curso: Avaliação de Políticas Públicas: tipologias e técnicas de análise.* Brasília: Enap. Recuperado em 11 de agosto de 2022, de https://repositorio.enap.gov.br/bitstream/1/3369/1/Programa%20de%20Curso%20-%20Avaliação%20de%20Políticas%20Públicas%202018%20%28final%29.pdf

Sugawara, A. T., Ramos, V. D., Alfieri, F. M., & Battistella, L. R. (2018). Abandonment of assistive products: assessing abandonment levels and factors that impact on it. *Disability and Rehabilitation: Assistive Technology*, *13*(7), 716-723.

Sugawara, A. T., Seigui Oshiro, M., Yamanaka, E. I., Ramos, V. D., & Battistella, L. R. (2021). Developing a rigid frame wheelchair in Brazil. *Disability and Rehabilitation: Assistive Technology*, *16*(5), 538-544.

Tao, G., Charm, G., Kabacińska, K., Miller, W. C., & Robillard, J. M. (2020). Evaluation tools for assistive technologies: a scoping review. *Archives of Physical Medicine and Rehabilitation*, *101*(6), 1025-1040.

Toro-Hernández, M. L., Kankipati, P., Goldberg, M., Contepomi, S., Tsukimoto, D. R., & Bray, N. (2019). Appropriate assistive technology for developing countries. *Physical Medicine and Rehabilitation Clinics of North America*, *30*(4), 847-865.

United States Department of Justice. (2008). *Americans with disabilities act of 1990, as amended*. Recuperado em 18 de dezembro de 2022, de https://www.ada.gov/law-and-regs/ada/.

Witte, L., Steel, E., Gupta, S., Ramos, V. D., & Roentgen, U. (2018). Assistive technology provision: towards an international framework for assuring availability and accessibility of affordable high-quality assistive technology. *Disability and Rehabilitation: Assistive Technology*, *13*(5), 467-472.

Author's Contributions

Paula Alessandra Lima Santos Bastos conception and writing of the text, organization of sources and analyses. Marcelo Santana Silva organization of sources, analysis and revisions. Núbia Moura Ribeiro organization of sources, analyzes and reviews. Renata de Sousa Mota analyses and reviews. Teófilo Galvão Filho analyses and review. All authors approved the final version of the text.

Corresponding author

Marcelo Santana Silva
e-mail: marcelosilva@ifba.edu.br

Section editor

Profa. Dra. Ana Allegretti