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Children of Autism: A multidisciplinary analysis of Autism Spectrum Disorder

Joéliton Alves dos Santos[1] and Maricelma Solange Gonçalves dos Santos[2]

ABSTRACT

This article presents a comprehensive literature review on Autism Spectrum Disorder (ASD), addressing its discovery, neurobiological bases, symptomatology, patient profile, and the evolution of intervention processes. Aspects of drug physics and chemistry, studies on chromosomes, early and late diagnoses, socialization and insertion in the labor market, in addition to legislation that supports people with ASD, are also explored. This work seeks to contribute to a broader and more inclusive understanding of the subject, fostering knowledge and awareness.

Keywords: Disorder of the Autistic Spectrum. Neurobiology. Socialization.

INTRODUCTION

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition characterized by challenges in social communication, restrictive behavior patterns, and repetitive interests. Since its initial description by Leo Kanner in 1943 and Hans Asperger in 1944, the understanding of ASD has evolved significantly. Currently, the global prevalence is approximately 1 in 100 children, with regional variations (WHO, 2021). In Brazil, studies point to a similar prevalence, with research conducted in cities such as São Paulo and Belo Horizonte highlighting the increase in the number of diagnoses in recent years (Paula et al., 2011). This increase can be attributed to increased awareness of ASD and improved diagnostic tools.

The recognition of ASD as a spectrum highlights the great variability of clinical manifestations and challenges faced by people diagnosed. While some have significant difficulties in language acquisition and social interaction, others demonstrate high abilities in specific areas, such as memory, mathematics or music. Studies conducted in Brazil, such as the

[1] Professor, Consultant, speaker and Accredited to SEBRAE. Director of the Department of Economic Development and Strategic Policies of the Municipality of Ipiaú-BA Dr. in Education and Public Policies from the Federal University of Rio de Janeiro.
Master in Public Policy Education from the Federal University of Rio de Janeiro. Master's degree in Educational Sciences from the Inter-American Faculty of Social Sciences. Specialist in ASD, Neuropsychologist, Neuropsychopedagogue, Psychopedagogue and Pedagogue.
E-mail: joelitonz@gmail.com
[2] Specialist in Pedagogical Training in Inclusive Education from the State University of Santa Cruz Specialist in Special Education from the Faculty of Technology and Science
Pedagogue from the State University of Bahia
E-mail: maricelmass.galvao@gmail.com

work of Couto et al. (2020), also highlight the relevance of socioeconomic and cultural factors in the identification and support of ASD, evidencing disparities in access to appropriate treatments in less favored regions.

Brazilian legislation has played a crucial role in supporting people with ASD, especially after the enactment of Law No. 12,764/2012, known as the Berenice Piana Law, which establishes the rights of people with autism. This law represents a milestone in inclusion and guarantees access to health, education, and social support services. In addition, initiatives such as the "TEAcolhida Project", in states such as Santa Catarina and Bahia, have promoted the dissemination of good service and inclusion practices.

This article aims to explore the different aspects related to ASD, highlighting the scientific and social advances that directly impact the lives of people diagnosed. Through a comprehensive literature review, it seeks to provide a broader and more inclusive understanding of the subject, with a special focus on the peculiarities and advances observed in the Brazilian context.

METHODOLOGY

The methodology used in this article reinforces the multidimensional and interdisciplinary character of the study on Autism Spectrum Disorder (ASD). Through a detailed literature review, it was possible to consolidate existing knowledge and identify gaps that require greater attention in future research. The analysis of national and international literature, as well as the integration of different areas of knowledge, provided a comprehensive view of crucial topics, such as neurobiology, diagnosis, socialization, employability, and public policies.

The choice for the qualitative approach was particularly effective in exploring the nuances of ASD in the Brazilian context, highlighting the advances and challenges still present. Public policies such as Law No. 12,764/2012, professional training initiatives promoted by the S System and inclusion programs in schools and work environments were analyzed as fundamental pillars for the construction of a more inclusive society. At the same time, the limitations identified, such as the lack of uniformity in the application of these policies and the scarcity of support in more vulnerable regions, reinforce the need for innovation and greater articulation between the public and private sectors. The relevance of the author's constant qualification was also highlighted as an essential aspect for the critical and contextualized analysis of the theme. Through access to recent studies, government reports, and practical experiences, it was possible to broaden the understanding of the challenges faced by people with ASD and their families, as well as to propose ways to overcome these barriers.

This article, therefore, not only contributes to the theoretical deepening of ASD, but also encourages new studies and the implementation of more effective public policies. The pursuit of innovation, inclusion, and equity must be an ongoing priority, joining academic, governmental, and social efforts to ensure that people with ASD have access to a full, productive, and dignified life.

THE DISCOVERY OF AUTISM

Leo Kanner and the concept of early childhood autism Leo Kanner, an Austrian psychiatrist based in the United States, was the first to describe early childhood autism in 1943. In his groundbreaking paper, titled Autistic Disturbances of Affective Contact, Kanner presented 11 cases of children who exhibited a unique combination of social isolation, communication difficulties, and restricted interests. He identified these symptoms as being different from other known conditions, such as schizophrenia, suggesting that autism was a distinct and congenital syndrome. Kanner's contribution was fundamental to establish the initial bases of the diagnosis and to stimulate research on the disorder.

The contributions of Hans Asperger and the autism spectrum While Kanner conducted his research in the United States, Hans Asperger, in Austria, also studied children with similar characteristics. In 1944, Asperger described a group of boys with significant difficulties in social interaction, obsessive interests, and advanced verbal skills. He coined the term "autistic psychopathy" to describe these children, noting that many of them had normal or above-average intelligence. Asperger's work remained relatively unknown outside of Europe until the 1980s, when it was incorporated into the concept of the autism spectrum. Their observations helped broaden the understanding of ASD, especially with regard to individuals with preserved cognitive abilities.

The evolution of diagnostic criteria in the DSM and ICD Since Kanner and Asperger's first descriptions, the diagnostic criteria for autism have undergone several changes. The Diagnostic and Statistical Manual of Mental Disorders (DSM) and the International Classification of Diseases (ICD) play central roles in standardizing these criteria. In the DSM-III (1980), autism was formally recognized as a separate disorder, with an emphasis on difficulties in social interaction, communication, and repetitive behavior. Later, in the DSM-IV (1994), additional categories were introduced, such as Asperger's Syndrome. The most recent edition, the DSM-5 (2013), consolidated these categories under the term "Autism Spectrum Disorder" (ASD), reflecting the variability of symptoms and levels of support required. The ICD-11, published in 2021, also adopts this comprehensive approach, in line with changes in the DSM.

NEUROBIOLOGY OF ASD

The neurobiology of Autism Spectrum Disorder (ASD) is a complex field of investigation that combines evidence of structural and functional changes in the brain, analysis of synaptic connections, and investigations into associated genetic and epigenetic factors. International and national studies have deepened the understanding of the mechanisms underlying ASD, contributing to advances in diagnosis and treatment.

EVIDENCE OF STRUCTURAL AND FUNCTIONAL CHANGES IN THE BRAIN

Several studies reveal that people with ASD have changes in brain volume and connectivity. According to studies conducted by Courchesne et al. (2007), there is an accelerated increase in brain volume in children with autism in the first years of life, followed by slowing down or stagnation of growth. Gesivaldo Santos (Lattes ID: 6343067786002769) points out that, in the Brazilian context, these alterations are corroborated by neuroimaging studies that identify significant differences in regions such as the prefrontal cortex and the limbic system, responsible for decision-making processes, emotional regulation, and social interactions.

Research also suggests hyperconnectivity in local regions of the brain and hypoconnectivity in long-range networks (Just et al., 2012). These changes affect communication between different brain regions, contributing to characteristics such as language difficulties and social interaction, as well as repetitive behaviors.

THE ROLE OF SYNAPTIC CONNECTIONS AND NEURODEVELOPMENT

Synaptic connections play a crucial role in neurodevelopment and the proper functioning of the nervous system. In individuals with ASD, an imbalance between synaptic excitation and inhibition is observed, related to alterations in proteins such as neuroligin and neurexin (Sudhof, 2008). These findings suggest that mutations in synapse-associated genes contribute to changes in behavior and cognition.

In Brazil, Santos et al. highlight that research on synaptic proteins is expanding, with initiatives that seek to understand how early interventions can modulate synaptic plasticity in children diagnosed with ASD. Recent studies show that treatments based on sensory stimulation can positively influence synaptic remodeling and reduce symptoms associated with ASD.

ASSOCIATED GENETIC AND EPIGENETIC FACTORS

The influence of genetic factors on ASD is widely documented. Twin studies reveal high concordance rates between monozygotic twins, suggesting significant inheritance (Tick et al.,

2016). Genes such as SHANK3, MECP2, and others linked to neurodevelopment have often been linked to ASD.

Gesivaldo Santos emphasizes that, in Brazil, the genetic contribution is investigated with a focus on the country's ethnic diversity, seeking to identify specific genetic variants of local populations. In addition, epigenetic research has highlighted the impact of environmental factors, such as exposure to pollutants and prenatal complications, on the modulation of gene expression in susceptible individuals.

The integration of genetic and epigenetic studies in the international and Brazilian scenario has expanded knowledge about the biological bases of ASD. These findings point to the need for personalized approaches in treatment and intervention, taking into account both genetic factors and environmental contexts.

SYMPTOMATOLOGY AND PROFILE OF PATIENTS WITH ASD

Autism Spectrum Disorder (ASD) is characterized by a wide variability of symptoms and clinical presentations, reflecting the complexity of its expression along the spectrum. This section addresses the main aspects of symptomatology, including communication difficulties, repetitive behaviors, and restricted patterns of interest, and explores the variability in symptom manifestation.

DIFFICULTIES IN VERBAL AND NON-VERBAL COMMUNICATION

One of the main challenges faced by individuals with ASD is related to communication, which can range from severe impairments in language development to subtle difficulties in pragmatics. Studies show that about 30% of people with ASD remain nonverbal throughout their lives (Tager-Flusberg & Kasari, 2013). These difficulties include:

Verbal communication: Delays in speech development, repetitive use of words or phrases (echolalia), and difficulty starting or maintaining conversations.

Nonverbal communication: Difficulty interpreting gestures, facial expressions, and tone of voice. There are also limitations in the use of body expressions to complement or replace verbal language.

In the Brazilian context, Gesivaldo Santos (Lattes ID: 6343067786002769) emphasizes the importance of identifying these difficulties early, especially in populations with limited access to early intervention services. Programs such as "Better Early Childhood" have been implemented to support the development of communication skills in vulnerable children.

REPETITIVE BEHAVIORS AND RESTRICTED PATTERNS OF INTEREST

Another striking characteristic of ASD is the presence of repetitive behaviors and highly restricted interests. These behaviors can include:

Stereotyped motor movements, such as swinging hands or rotating objects. Insistence on routines and resistance to changes in the environment.

Intense interests focused on specific topics, often unusual for the age or context.

According to Silva et al. (2020), these behaviors, although considered challenging, can also be a source of comfort for individuals with ASD in stressful situations. Therapeutic intervention, such as Applied Behavior Analysis (ABA), can help redirect these behaviors in a functional way.

VARIABILITY IN SYMPTOM MANIFESTATION ACROSS THE SPECTRUM

The expression of ASD varies widely among individuals, ranging from those who require substantial support to those with high abilities in specific areas such as mathematics, memory, or the arts. The International Classification of Diseases (ICD-11) and DSM-5 recognize this variability when describing the levels of support needed for each individual.

In Brazil, Santos et al. (2021) highlight that socioeconomic and cultural factors influence the perception and diagnosis of ASD. Children from families with less access to education and health care may experience significant delays in diagnosis, exacerbating the challenges related to the disorder.

Understanding the variability in symptoms is essential to develop personalized approaches that consider individual needs and promote the social and educational inclusion of people with ASD. Symptomatology and Profile of the Patient with ASD.

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PHYSICAL, CHEMICAL AND BIOLOGICAL ASPECTS

Autism Spectrum Disorder (ASD) is a complex condition that involves multifactorial interactions between genetic, environmental, and neurochemical factors. In the management of associated symptoms, international and Brazilian studies have investigated drugs, the role of the microbiota-gut-brain axis, and specific biomarkers. However, the limitations of these approaches indicate the need for further studies and caution in interpreting the results.

MEDICATIONS USED IN THE MANAGEMENT OF ASSOCIATED SYMPTOMS

The use of medication in ASD is not aimed at treating the disorder itself, but at managing associated symptoms, such as anxiety, hyperactivity, and aggressiveness. Internationally, drugs such as atypical antipsychotics (risperidone and aripiprazole) are approved by the FDA to treat irritability in people with ASD (McPheeters et al., 2011). However, these medications have limitations, such as significant side effects, including weight gain and sedation.

In Brazil, the prescription of these drugs follows international guidelines, but faces specific challenges, such as the scarcity of specialized services and the difficulty in accessing high-cost drugs. In addition, self-medication and lack of specialized follow-up are limitations observed in low-income populations, as pointed out by Santos (2021). The author points out that, although medications are useful in some cases, they should always be accompanied by non-pharmacological interventions, such as behavioral therapies.

STUDIES ON THE MICROBIOTA-GUT-BRAIN AXIS

The relationship between the gut microbiota and ASD has been widely studied in recent decades, with research indicating that changes in the microbiome can influence behavior and neurodevelopment. International studies suggest that gut dysbiosis, characterized by an imbalance in microbial composition, may exacerbate ASD symptoms such as anxiety and irritability (Cryan et al., 2019).

In Brazil, research in this area is still at an early stage, but it already points to an association between diet, microbiota, and behavioral symptoms. A study conducted by Furlan et al. (2020) showed that Brazilian children with ASD have specific patterns of dysbiosis, highlighting the importance of nutritional interventions. However, the limitations of these studies include small sample sizes and the difficulty in establishing causality between changes in the microbiota and ASD symptoms.

RESEARCH ON SPECIFIC BIOMARKERS

The identification of biomarkers for ASD is a promising area, but still under development. International research points to potential markers, such as changes in the levels of inflammatory cytokines, oxytocin, and serotonin, which may be associated with symptom severity (Thapar et al., 2017). Despite the advance, limitations include the heterogeneity of the autism spectrum and the lack of standardization in collection and analysis methods.

In Brazil, Santos (2021) highlights the scarcity of longitudinal studies in this area, limiting the clinical applicability of biomarkers. In addition, barriers such as inadequate funding and the absence of advanced laboratory infrastructure jeopardize the progress of biomedical research in the country. To overcome these limitations, it is necessary to invest in international collaborations and in the training of local researchers.

STUDIES OF CHROMOSOMES AND GENETICS OF ASD

The genetics of Autism Spectrum Disorder (ASD) is an ever-evolving field, revealing associations between specific genetic alterations and the development of spectrum traits. International and Brazilian studies have explored mutations in genes related to neurodevelopment, as well as the impact of environmental factors on gene expression. However, the complexity of ASD and the interaction between genetics and environment present considerable challenges to understanding this condition.

MUTATIONS IN GENES ASSOCIATED WITH NEURODEVELOPMENT

International research has identified mutations in several genes linked to neurodevelopment in individuals with ASD. Among the most studied genes are SHANK3, associated with the formation and function of synapses, and MECP2, related to the regulation of gene expression in neurons (Vorstman et al., 2017). Alterations in these genes are often linked to more severe forms of ASD, often accompanied by comorbidities, such as intellectual disability.

In Brazil, genetic studies have advanced in recent decades, but they still face limitations related to infrastructure and financing. Research conducted by Santos et al. (2021) highlights that mutations in the SHANK3 gene were observed in a group of Brazilian children with ASD, corroborating international findings. However, the author emphasizes the need to increase the number of participants to ensure greater representation of the Brazilian population, which is genetically diverse.

THE IMPACT OF ENVIRONMENTAL FACTORS ON GENE EXPRESSION

In addition to genetic mutations, environmental factors play an important role in modulating gene expression in people with ASD. Epigenetics, which studies hereditary changes in gene expression without modifying the DNA sequence, has received increasing attention. Environmental exposures during pregnancy, such as maternal infections, nutritional deficiencies, and contact with toxic substances, have been associated with epigenetic changes in ASD-related genes (Ladd-Acosta et al., 2019).

In Brazil, the impact of environmental factors is especially relevant due to socioeconomic inequalities and disparities in access to antenatal care. Regional studies highlight that exposure to environmental pollutants, such as heavy metals, may be associated with increased risk of ASD in vulnerable populations (Silva et al., 2020). Despite these advances, understanding of the interaction between genetics and environment is still limited, especially in developing countries, where longitudinal studies are less available.

STUDY LIMITATIONS

While genetic advances have broadened knowledge about ASD, significant challenges remain. Internationally, spectrum heterogeneity makes it difficult to identify consistent genetic patterns, and many cases cannot be explained by known mutations alone (Sanders et al., 2015). In Brazil, limitations include the small number of comprehensive population studies, the lack of resources for large-scale genetic analyses, and the need for international collaborations to strengthen local research.

EARLY AND LATE DIAGNOSIS IN ASD

The diagnosis of Autism Spectrum Disorder (ASD) is a challenging and essential process to ensure appropriate and effective interventions. This document details widely used screening tools, such as M-CHAT and ADOS-2, as well as discusses the challenges related to diagnosis in adults, considering international and Brazilian updates.

SCREENING TOOLS

The diagnosis of ASD is predominantly clinical, based on the observation of behaviors and the history provided by parents or guardians. The most commonly used screening tools include M-CHAT (Modified Checklist for Autism in Toddlers) and ADOS-2 (Autism Diagnostic Observation Schedule, 2nd edition).

M-CHAT

The M-CHAT is a questionnaire designed to screen children between 16 and 30 months, focusing on behaviors indicative of ASD, such as lack of response to the name and absence of symbolic games. International studies, such as the one by Robins et al. (2014), have validated its effectiveness in various contexts. In Brazil, M-CHAT has been applied in primary care services, although there are challenges related to the training of professionals and the interpretation of results (Paula et al., 2011).

ADOS-2

ADOS-2 is widely considered the gold standard for ASD assessment. It covers a wide age range and developmental levels, assessing social interaction, communication, and repetitive behaviors. Its application requires specific training and, due to the cost, its use in Brazil is limited to specialized centers. Santos et al. (2021) highlight the importance of expanding access to tools such as ADOS-2 in underserved regions. Challenges in Diagnosis in Adults

Diagnosis in adults is often delayed, due to the lack of tools developed specifically for this age group and the stigma associated with ASD. Many adults develop compensatory strategies that mask symptoms, making diagnosis difficult. Tools such as RAADS-R have been used internationally, but their application still faces cultural and methodological limitations (Lever & Geurts, 2016).

In Brazil, the diagnosis in adults is underestimated. Studies, such as those by Silveira et al. (2020), show that many individuals only seek evaluation after identifying symptoms in their children. Barriers such as lack of awareness and limited access to specialists aggravate this reality.

INTERNATIONAL AND BRAZILIAN UPDATES

Internationally, technological advances have contributed to early diagnosis, including the use of artificial intelligence and behavior analysis algorithms. Thabtah (2019) highlights that these approaches can complement traditional methods, despite ethical and logistical challenges.

In Brazil, initiatives such as 'TEAcolhida' in Santa Catarina have promoted early screening in basic health units. Although promising, such initiatives need to be expanded to less developed regions, ensuring equity in access to diagnostic services. Early and late diagnosis of ASD faces significant challenges, both in Brazil and internationally. Tools such as M-CHAT and ADOS-2 are crucial, but their application must be accompanied by professional training and public policies that guarantee universal access. Diagnosis in adults remains an area in need of

attention, requiring further research and strategies adapted to this population.

SOCIALIZATION AND INSERTION IN THE WORLD OF WORK

The socialization and insertion of people with Autism Spectrum Disorder (ASD) in the labor market represent complex challenges, but essential for inclusion and respect for diversity. This document addresses the main challenges faced in social and professional settings, inclusion programs, and the role of families and communities in support, with an emphasis on international and Brazilian updates. The efforts of entities such as Sebrae and other organizations of the S System in stimulating training and entrepreneurship for people with ASD are also highlighted.

CHALLENGES FACED IN SOCIAL AND PROFESSIONAL SETTINGS

Barriers faced by people with ASD in the workplace include a lack of understanding of their specific needs, biases, and non-inclusive work practices. Internationally, studies such as that of Scott et al. (2018) show that only about 20% of adults with ASD are competitively employed, even when they have adequate skills and qualifications.

In Brazil, these challenges are amplified by gaps in the training of employers and co-workers. According to data from the International Labor Organization (ILO), the lack of inclusive policies and the absence of training on ASD are the main obstacles to inclusion in the formal market.

INCLUSION PROGRAMMES AND ADAPTATIONS IN THE LABOUR MARKET

Programs aimed at the inclusion of people with ASD have proven effective in reducing barriers and promoting diversity in the workplace. In the United States, initiatives such as Microsoft's 'Autism at Work' and SAP's program for hiring individuals on the autism spectrum demonstrate that simple adaptations, such as adjustments to the work environment and the selection process, can significantly increase inclusion (Austin & Pisano, 2017).

In Brazil, institutions such as Sebrae play an important role in offering training and promoting entrepreneurship for people with ASD. In addition, other entities of the S System, such as Senai and Senac, have developed courses and workshops aimed at professional qualification, with emphasis on partnerships with companies that already adopt inclusive practices. The Brazilian Inclusion Law (Law No. 13,146/2015) also reinforces the obligation of inclusive policies, requiring companies to adapt their environments and processes.

THE ROLE OF FAMILIES AND COMMUNITIES IN SUPPORT

Families and communities play a crucial role in supporting the professional integration of people with ASD. Internationally, support networks, such as the 'Autism Society', have promoted awareness campaigns and support groups for families and employers. These initiatives help create a robust support network, reducing isolation and promoting autonomy.

In Brazil, organizations such as AMA (Association of Friends of the Autistic) and Instituto Incluir have worked to strengthen the role of families in building professional trajectories for individuals with ASD. In addition, community programs aimed at stimulating entrepreneurship, such as those developed by Sebrae, have encouraged the development of skills and the creation of opportunities for self-employment.

At the international level, the promotion of the inclusion of people with ASD in the labor market has been highlighted in documents such as the UN Convention on the Rights of Persons with Disabilities, which emphasizes equal opportunities and the need for accessible and inclusive environments. In Brazil, initiatives such as the 'TEAcolhida' project, in states such as Santa Catarina, have promoted specific actions for the training of individuals with ASD, including partnerships with local companies.

In addition, the growing use of assistive technologies has been an important differential. Digital tools, such as organization and communication applications, are increasingly integrated into professional training programs, making it easier for people with ASD to adapt to the challenges of the job market.

The inclusion of people with ASD in the labor market is an ongoing process that requires coordinated efforts between families, communities, employers, and governments. Training initiatives, such as those promoted by Sebrae and other entities of the S System, are essential to open new opportunities and reduce inequalities. There is still much to be done to ensure that individuals with ASD can fully participate in professional life, but recent advances show that inclusion is possible and beneficial for all.

LEGISLATION AND RIGHTS OF PEOPLE WITH ASD

The legislation and rights of people with Autism Spectrum Disorder (ASD) have evolved significantly, both internationally and in Brazil, with the aim of ensuring inclusion, accessibility and quality of life. This document presents an analysis of the main Brazilian laws, such as Law No. 12,764/2012, and international updates on the subject, in addition to discussing assured benefits and the importance of public and private awareness. The public policies adopted by Brazilian states and municipalities and the innovations necessary to expand the rights of people

with ASD are also emphasized.

ANALYSIS OF INCLUSION LAWS IN BRAZIL (LAW NO. 12,764/2012)

Law No. 12,764/2012, known as the Berenice Piana Law, is a milestone in the protection of the rights of people with ASD in Brazil. It recognizes autism as a disability for all legal purposes, ensuring access to health, education and social assistance policies. Among its main advances are the obligation for public and private schools to accept students with ASD, the creation of specialized care centers and the guarantee of multidisciplinary care in the Unified Health System (SUS).

Although the law represents a major advance, its implementation faces significant challenges, such as the lack of financial and human resources to meet the specific demands of the population with ASD. Studies such as that of Ribeiro et al. (2020) point to regional disparities in compliance with the law, with states in the North and Northeast presenting greater difficulties in implementing inclusive policies.

BENEFITS AND RIGHTS GUARANTEED TO PEOPLE WITH ASD

In addition to the rights guaranteed by Law No. 12,764/2012, other Brazilian legislation expands the benefits for people with ASD. The Statute of Persons with Disabilities (Law No. 13,146/2015) reinforces the right to accessibility, health, education and social inclusion. The National Policy for the Protection of the Rights of Persons with Autism Spectrum Disorder also ensures tax exemption on the purchase of adapted vehicles, preferential service in public and private services and the granting of the Continuous Benefit (BPC) for low-income families.

In the international context, the UN Convention on the Rights of Persons with Disabilities, ratified by Brazil in 2008, establishes guidelines to ensure equal opportunities and non-discrimination for people with disabilities, including those on the autism spectrum. These regulations have directly influenced Brazilian public policies.

THE IMPORTANCE OF PUBLIC AND PRIVATE AWARENESS

Awareness is essential for the effective inclusion of people with ASD in society. National campaigns, such as Abril Azul, have promoted greater visibility on autism, encouraging governments, companies and society to adopt inclusive practices. The private sector also plays an important role in implementing affirmative actions, such as inclusion programs in the labor market and the adaptation of products and services to meet the specific needs of this population.

States such as São Paulo and Santa Catarina have implemented innovative policies,

such as the 'TEAcolhida Project', which offers integrated support to families and professional training. Municipalities such as Recife and Curitiba have invested in local school inclusion programs and centers specialized in ASD care.

NECESSARY UPDATES AND INNOVATIONS

Despite legislative and political advances, there are still significant gaps in the inclusion of people with ASD in Brazil. One of the main innovations needed is the creation of a national database on autism, which allows for the effective monitoring of public policies. In addition, it is essential to expand the training of professionals in the areas of health, education and social assistance to meet the specificities of ASD.

Internationally, countries such as Canada and Australia have led initiatives in the creation of integrated policies that involve health, education, and inclusion in the labor market. Brazil can benefit from adapting these experiences to its local reality, promoting greater articulation between the different levels of government and civil society.

The legislation and the rights of people with ASD represent important advances, but they are still insufficient to ensure the full inclusion of this population in Brazilian society. It is necessary to expand public and private awareness, strengthen public policies at the state and municipal levels, and seek innovations that meet the specific demands of people with ASD. Collaboration between governments, private entities, and civil society is essential to achieve a more just and inclusive society.

CONCLUSION

Autism Spectrum Disorder (ASD) is a complex and multifaceted condition that continues to challenge science, medicine, and public policy at the global and local levels. Throughout this article, essential topics for understanding ASD were addressed, such as its historical discovery, neurobiological bases, symptoms, intervention processes, genetic aspects, diagnosis, social inclusion, and legislation. Each of these points highlights both the advances achieved and the gaps that still need to be filled to ensure a better quality of life for people with ASD.

The understanding of ASD has evolved considerably from the pioneering descriptions of Leo Kanner and Hans Asperger, through careful revisions in diagnostic manuals, such as the DSM and ICD, to the present day. However, the variability of symptoms within the autism spectrum requires increasingly personalized and integrated approaches, both for diagnosis and intervention. In this sense, tools such as M-CHAT, ADOS-2 and other screening instruments have been fundamental for early diagnosis, which has been proven to improve therapeutic

outcomes and patients' prognosis.

Advances in the neurobiology and genetics of ASD have shed light on the mechanisms underlying the disorder, allowing the identification of neurodevelopmental alterations, synaptic connections, and genetic mutations that contribute to its manifestation. However, the interaction between genetic and environmental factors is still an open field that requires further study. Thus, it is imperative that the scientific community continues to invest in robust research that explores everything from the biological underpinnings of ASD to its psychosocial implications.

One of the main challenges highlighted in the article was the social and professional inclusion of people with ASD. Insertion in the labor market and socialization are complex issues, which require coordinated efforts between families, schools, companies and governments. Although initiatives such as the "TEAcolhida Project" in Santa Catarina and programs of the S System, such as those promoted by Sebrae, are positive examples, there is still much to be done to create a truly inclusive and accessible environment.

From a legislative point of view, Law No. 12,764/2012 represents an important milestone in Brazil, by guaranteeing fundamental rights to people with ASD. However, its uneven implementation in different regions of the country demonstrates the need for greater articulation between states and municipalities, as well as the strengthening of public policies that ensure accessibility and adequate support for families. The awareness of society and the commitment of the private sector are also indispensable for this legislation to become effective in practice.

Given the panorama presented, it is evident that ASD is not just a health or education issue, but a broad social challenge that demands a multidisciplinary and intersectoral approach. To this end, further studies and scientific work are essential. In addition to deepening the understanding of the specificities of ASD, these studies can support the creation of new public policies and intervention programs that meet the needs of people with autism and their families.

Finally, it is important to emphasize that the fight for a more inclusive and equitable society must be continuous. The creation of comprehensive public policies, the strengthening of community support networks, the training of specialized professionals and the promotion of social awareness are fundamental steps on this path. Only with joint efforts, involving governments, research institutions, non-governmental organizations, and civil society, will it be possible to build a future in which people with ASD can reach their full potential, living with dignity, respect, and quality of life.

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