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Unveiling the histological, pharmacological, and speech-language pathology dimensions of the Disorder Autism Spectrum Disorder (ASD)

Unraveling the histological, pharmacological, and speech-language dimensions of autism spectrum disorder (ASD)

Pablo Rildo da Silva Feitosa – Afya University Center, rildopablo@gmail.com
Valéria de Sousa Pereira – Afya University Center, valeriasoper4@gmail.com
Ester Lopes Pereira – Faculty of Technology of Piauí/ Faculty of Higher Education of Piauí (FATEPI/FAESPI), fonoesterlopes@gmail.com
Maria do Perpétuo Socorro Oliveira Leão – Afya University Center, felmarsoc@gmail.com
Cleane Rodrigues de Sousa Gomes – Afya University Center, cleane.rodrigues9403@gmail.com
Cristhiane Brito Sousa – FATEPI/FAESPI, annesousalife1@gmail.com
Iolanda Maria Araujo Silva – Afya University Center, iolandaaraujo95@hotmail.com
Jessiane Pereira da Silva – Afya University Center, jessianesilva4@gmail.com
Vanessa Maria Oliveira Viana – Federal University of Piauí, vanessamaolivi@gmail.com
Socorro Mafalda Pires da Silva – Polytechnic Institute, socorromafalda@gmail.com
Antonio Jalson Cardoso Magalhães – Afya University Center, antoniojalsoncm@gmail.com
Railson Pereira Souza – Federal University of Piauí, railson.souza@ufpi.edu.br

Summary

Autism Spectrum Disorder (ASD) is a complex neurodevelopmental condition characterized by deficits in communication, repetitive behaviors, and restricted patterns of interests. This study aimed to analyze, through an integrative review, the current evidence on the histological, pharmacological, and speech-language pathology dimensions related to ASD.

Fifteen scientific articles published between 2020 and April 2025 in the PubMed, Scopus, and Web of Science databases were selected. The findings revealed significant morphological alterations in the brains of individuals with ASD, advances in pharmacogenomics, and the relevance of early and individualized speech-language therapy intervention. The integrated analysis of these areas reinforces the importance of interdisciplinary and personalized therapeutic approaches, aiming for greater effectiveness in the treatment and social inclusion of people with autism. The study also highlights the need for continuous professional training and public policies focused on comprehensive care and the reduction of social stigma.

Keywords: Autism Spectrum Disorder, Histology, Clinical Pharmacology, Speech Therapy

Abstract

Autism Spectrum Disorder (ASD) is a complex neurodevelopmental condition characterized by communication deficits, repetitive behaviors, and restricted interests. This study aimed to analyze, through an integrative review, current evidence regarding the histological, pharmacological, and speech-language pathology dimensions of ASD. A total of 15 scientific articles published between 2020 and April 2025 were selected from PubMed, Scopus, and Web of Science databases. The findings revealed significant morphological brain alterations in individuals with ASD, advancements in pharmacogenomics, and the importance of early and individualized speech-language therapy. The integrated analysis of these fields highlights the need for interdisciplinary and personalized therapeutic approaches to enhance treatment effectiveness and promote social inclusion for people with autism. The study also emphasizes the importance of continuous professional training and the development of public policies aimed at comprehensive care and stigma reduction.

Keywords: Autism Spectrum Disorder, Histology, Clinical Pharmacology, Speech-Language Pathology.

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1. Introduction

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition.
characterized by persistent deficits in social communication and by restricted and repetitive patterns of behavior. The term "spectrum" is used to represent the wide variety of manifestations.
clinical difficulties, ranging from mild difficulties in social interaction to severe impairments in Language and adaptive behavior (LAMANNA *et* al., 2024). The prevalence of ASD is growing, with current estimates indicating that about 1 in 100 children are affected, with greater The incidence is higher in males. The diagnosis of ASD is clinical and follows the criteria of the Manual. Diagnostic and Statistical Manual of Mental Disorders – DSM-5, considering the early onset of symptoms (AISHWORIYA *et* al., 2022).

The main characteristics of autism include difficulties in social interaction, in Verbal and nonverbal communication, as well as restricted interests and repetitive behaviors. Individuals with ASD often exhibit delays in language development.
difficulty maintaining eye contact, resistance to changes in routine, and motor stereotypies, such as rocking the body or clapping hands (GORA *et* al., 2024). Sensory changes, such as Hypersensitivity to sounds, lights, or textures is also common. Such manifestations require... Specific and individualized therapeutic interventions, especially during early childhood, critical phase of brain development (CHUNG *et* al., 2020).

The development of ASD (Autism Spectrum Disorder) is multifactorial, being influenced by predisposition. Genetic and epigenetic factors, as well as environmental factors, play a role. Recent studies indicate that alterations Neurogenesis, the reduction of synaptic connections, and neuroplasticity are implicated in the genesis. of autism (DEL'OSSO *et* al., 2024). Furthermore, evidence shows abnormal activation of pathways inflammatory, imbalance between excitatory neurotransmitters (such as glutamate) and inhibitory neurotransmitters (such as GABA), and glial cell dysfunction, which contributes to functional changes and structural changes in the brains of individuals with ASD (HYMAN *et* al., 2020).

Among the risk factors associated with autism, a positive family history stands out. specific genetic mutations, advanced parental age, maternal infections, prenatal exposure to toxic substances and obstetric complications (HUANG *et* al., 2023). In the histological aspect, Research shows that the nerve tissue of people with ASD exhibits alterations such as Disorganization of the cortical layer, increased brain volume in certain regions, and synaptogenesis. atypical. There are also failures in neuronal migration and in the differentiation of neural progenitor cells. especially in the prefrontal cortex, a region crucial for social skills and language. (FERNANDES *et* al., 2020).

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From a pharmacological point of view, the treatment of autism is symptomatic and varies according to the severity. In mild cases, antioxidants and inflammation modulators, such as... may be used. sulforaphane and N-acetylcysteine. In moderate to severe cases, they are frequently prescribed. atypical antipsychotics, such as risperidone and aripiprazole, which act on dopaminergic receptors and serotonergic, reducing irritability and aggressiveness (ZHUANG *et* al., 2024). Other Substances such as bumetanide and trofinetide have been studied for their ability to modulate It activates ion channels and promotes neurochemical balance, offering a therapeutic alternative. promising (AISHWORIYA *et* al., 2022).

Speech therapy intervention is essential in the multidisciplinary therapeutic plan for ASD (Autism Spectrum Disorder). working to promote language, communication, and social skills. The work of Speech therapy can be carried out through programs such as Behavior Analysis. Applied Behavior Analysis (ABA) and the Denver Model, focusing on early and individualized stimulation of language (ZHUANG *et* al., 2024). Evidence shows that the association between speech therapy and Behavioral strategies enhance results, significantly improving the... communicative functionality of the individual with ASD. In addition, pharmacological therapies, such as Experimental use of oxytocin has been evaluated as an adjunct to speech therapy intervention. (CHUNG *et* al., 2024).

In this context, the present study aims to analyze the histological dimensions, Pharmacological and speech therapy approaches to Autism Spectrum Disorder (ASD), with emphasis on Understanding the mechanisms underlying its development and clinical manifestations.

2. Material and Method

2.1 Ethical aspects

Regarding the ethical aspects of the research, it is worth highlighting, due to its scientific nature, the Integrative review (IR), which eliminates the need to submit the study to a Research Ethics Committee.

2.2 Drawing

This study adopted an integrative review, characterized by gathering, analyzing, and synthesizing the... results of relevant research on the topic “Unveiling the histological dimensions, pharmacological and speech therapy approaches to Autism Spectrum Disorder (ASD), which allowed for a A comprehensive understanding of the phenomenon under study. RI enables the integration of findings from studies with... different methodological designs, providing support for informed clinical decisions and contributing to the improvement of professional practices in the health field. Starting from

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By combining multiple sources of evidence, IR allowed for the formulation of conclusions.
generalizable, helping to reduce uncertainties related to therapeutic recommendations and
enabling the identification of more effective and cost-effective interventions (Whittemore; Knafl, 2005;
Souza; Silva; Carvalho, 2010).

2.3 Population, Inclusion and Exclusion Criteria

The execution of this RI involved several methodological steps that ensured rigor.
The scientific basis of the study. Initially, a central hypothesis was defined: that the stigma associated with
Autism Spectrum Disorder (ASD) continues to significantly impact the well-being of these individuals.
individuals and their families, especially as a result of misinformation and lack of preparedness.
health professionals and society in general. (Souza; Silva; Carvalho, 2010; Whittemore; Knafl,
2005). From this, the objectives of the review and the eligibility criteria for the were established.
selection of studies and the categories of information to be extracted from the selected articles. In
Next, the findings were analyzed and discussed, culminating in a concise presentation of the...
results, according to the methodological guidelines for integrative reviews applied to the field of
Autism Spectrum Disorder (ASD).

For the selection of studies, the bibliographic search was carried out in widely used databases.
recognized for their credibility and scope in the health field, namely: *Scopus, PubMed* (via
MEDLINE) and *Web of Science.* The choice of these platforms was justified by their relevance.
scientific and through the inclusion of high-impact journals with publications specializing in autism
and related areas.

The inclusion criteria adopted were: articles available in Portuguese, English, or Spanish;
publications with available abstracts; time frame between 2020 and April 2025; and utilization
Combined terms of the following: *Autism Spectrum Disorder, Histology, Clinical Pharmacology*
and *Speech-Language Pathology.* To maintain a relatively broad time frame, the decision was made to
a more recent and restricted selection, with the aim of prioritizing updated evidence aligned with
Recent advances in the histological, pharmacological, and speech-language pathology areas of ASD.

As exclusion criteria, the following were disregarded: publications that do not fit within the...
scientific article format (e.g., editorials, letters to the editor, reviews); and studies whose scope
The thematic section did not directly address ASD in the aspects defined by the guiding question, even though
They mentioned it only peripherally. This careful selection ensured relevance and consistency.
from the data analyzed in the review, strengthening the validity of the findings on interventions and
Clinical characteristics in the context of ASD (Table 1).

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Table 1 – Advanced search strategy applied to the PubMed/Medline database, combining MeSH terms and Boolean operators.

DATA BASES	SEARCH STRATEGY
Pubmed/ Medline	(("autism spectrum disorder"[MeSH Terms] OR ("autism"[All Fields] AND "spectrum"[All Fields] AND "disorder"[All Fields]) OR "autism spectrum disorder"[All Fields]) AND ("pharmacology, clinical"[MeSH Terms] OR ("pharmacology"[All Fields] AND "clinical"[All Fields]) OR "clinical pharmacology"[All Fields] OR "pharmacology clinical"[All Fields])) OR ("anatomy and histology"[MeSH Subheading] OR ("anatomy"[All Fields] AND "histology"[All Fields]) OR "anatomy and histology"[All Fields] OR "histology"[All Fields] OR "histology"[MeSH Terms] OR "histologies"[All Fields])) AND ("speech language pathology"[MeSH Terms] OR ("speech language"[All Fields] AND "pathology"[All Fields]) OR "speech language pathology"[All Fields] OR ("speech"[All Fields] AND "language"[All Fields] AND "pathology"[All Fields]) OR "speech language pathology"[All Fields])
Scopus	ALL ("autism spectrum disorder") AND ALL ("Pharmacology, Clinical") OR ALL ("Histology") OR ALL ("Speech-Language Pathology")
Web of Science	(((TS=("autism spectrum disorder")) AND TS=("Pharmacology, Clinical")) OR TS=(Histology)) OR TS=("Speech-Language Pathology')

2.4 Study Protocol

Data collection took place in April 2025, simultaneously, in the *Scopus* databases . *PubMed* (via *MEDLINE)* and *Web of Science,* respecting the previously established inclusion criteria. defined. To mitigate selection biases and provide greater reliability to the analysis, the screening was conducted independently by two researchers (Moher *et al.,* 2009; Whittemore and Knafl, (2005). Of the total 2,037 records identified, 2 were removed due to duplication. Of the 2,035 Of the remaining articles, 77 were excluded because they were not scientific articles (editorials or brief communications) and 1,904 were rejected for not meeting the eligibility criteria. Of the 54 resulting articles, 29 were... 10 were discarded due to the time frame and 10 due to the study population, totaling the final sample. (Figure 1).

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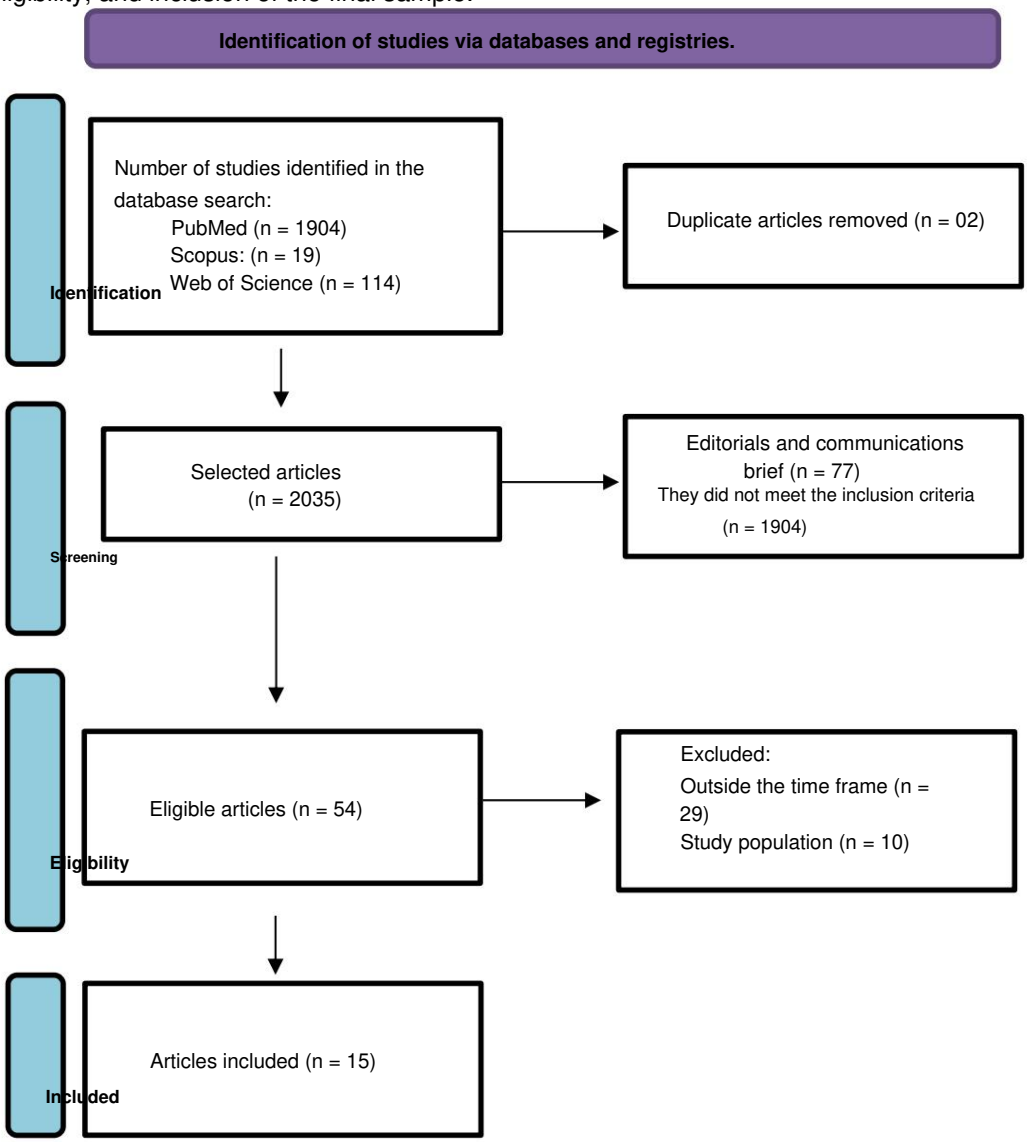
Figure 1 - Flowchart of the study selection process (PRISMA), detailing the steps of identification, screening, eligibility, and inclusion of the final sample.



The remaining 15 studies were subjected to a detailed evaluation using a a structured instrument for data extraction and analysis, adapted from validated models in scientific literature. During this stage, items not relevant to the scope of this review were excluded, while retaining those related to the identification of the publication and the objectives of the study. to the methods used and the main results. The standardization of the instrument allowed a effective systematization of the critical reading of articles and the production of an analysis consistent with the proposed revision (Souza; Silva; Carvalho, 2010).

2.5 Data Analysis

The analysis of the data obtained was conducted in a descriptive manner, based on information.

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organized using a standardized data collection instrument, which allowed for the evaluation of consistency, the relevance and applicability of the selected studies (Whittemore; Knafl, 2005; Souza; Silva; (Carvalho, 2010). This approach made it possible to identify trends and patterns in the findings of publications, contributing to a better understanding of clinical, therapeutic and social aspects.

Based on a complete reading of the 15 eligible articles, a... qualitative analysis, focusing on the elements that influence clinical management and practices speech-language pathology and histological examinations, and the pharmacological strategies described to mitigate the effects of Autism Spectrum Disorder (ASD) in different contexts. This analysis allowed for the integration of evidence from various sources. approaches, broadening the understanding of the challenges faced by people with disorder autism spectrum and their families, as well as possible interventions aimed at promoting well-being. being and the inclusion of these people.

3. Results and Discussion

A synthesis of the studies selected in this integrative review is presented below, with the The objective is to organize and systematize the main information about histological dimensions. Pharmacological and speech therapy approaches to Autism Spectrum Disorder (ASD). The presentation in The chart format allows for a clear and comparative visualization of the findings, encompassing various aspects. such as authorship, year of publication, objectives, methodology used, and main results. This The organization fosters critical analysis and the identification of patterns, as well as contributions and gaps in recent scientific literature (Table 2).

Table 2 – Distribution of articles by authors, year of publication, objectives, method and findings. Teresina, Piauí, Brazil, 2025.

Author (Year)	Objective	Method:	Findings
Bertelsen *et al.*	Investigating patterns of (2021) Brain connectivity in different subtypes of ASD.	Functional neuroimaging analysis.	They identified distinct neural circuits between subtypes, such as those for communication and repetitive behaviors .
Fang *et al.* (2023)	To identify the relationship between genetic mutations and the symptoms of ASD (Autism Spectrum Disorder).	Genetic case study.	Mutation in the ANK3 gene associated with in node developmental delays neuropsychomotor skills.
Ghasemi *et al.* (2025)	To explore correlations between rare mutations and cognitive disorders in boys with ASD.	Clinical-genetic study.	Hippocampal atrophy and mutations were associated with cognitive and behavioral deficits.
Den Hoed & Fisher (2020)	To investigate the links between genetic alterations and and speech disorders.	Genetic of literature review.	They highlighted that specific mutations affect articulation and language, reinforcing the need for intervention. early.
Pereira *et al.* (2020)	To compare phonological errors between bilingual and monolingual children with ASD.	Clinical study with phonological analysis.	They concluded that speech therapy strategies should consider the child's linguistic context.

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Stroganova *et al.* (2020)	To evaluate neuromagnetic answers in sensitivity in children with ASD.	Neuroimaging study using MEG.	Deficits in sustained response in the left hemisphere, suggesting auditory brain abnormalities.
Sanjeevan *et al.* (2020)	Exploring procedural memory structures and the Language in children with ASD and ADHD.	Study with magnetic resonance imaging and neuropsychological tests you.	Changes in memory networks directly impact language.
Elkhateeb *et al.* (2025)	To expand the clinical and genetic spectrum of neurodevelopmental disorders associated with TAOK1 and TAOK2.	Study multicenter with mutation analysis.	They identified new genetic variants linked to ASD, expanding the differential diagnosis.
Crawshaw (2025)	Discussing the implications of telling autistic people that brains are your different.	Study of ethical and psychological approach.	He highlighted the negative psychological impact of stigmatizing biomedical language.
Granadillo *et al.* (2020)	To characterize the 2q13 deletion syndrome clinically and molecularly .	Genetic and clinical study.	They confirmed an association with ASD, with specific morphological and cognitive traits.
Medvedeva *et al.* (2019)	To assess the impact of the mutation in the FOXP2 gene on vocalization and the mouse behavior. of	Experimental study with animals.	The mutation impairs vocalization and suggests parallels with human speech disorders.
Myers *et al.* (2020)	Assess the impact of 12q12 duplications in neuropsychological development.	Genetic study with morphological analysis.	Variable results in carriers suggest a relationship with the autism spectrum.
Wallace *et al.* (2020)	To investigate the relationship between cortical thickness and eating disorder traits in ASD.	Neuroimaging study.	They identified changes in regions associated with food perception, suggesting comorbidities.
Xie *et al.* (2020)	To study the intrinsic connectivity of the medial frontal cortex.	Meta-analysis and functional study with fMRI.	The functional architecture of this area is related to behavioral aspects of ASD (Autism Spectrum Disorder).
Zhou *et al.* (2023)	To analyze the corpus callosum in children with high-risk ASD.	Study using DTI (diffusion tensor imaging).	Significant changes were observed in the corpus callosum, associated with communication deficits.

Source: Authors, 2025.

After careful screening, based on well-defined criteria, 15 scientific studies were selected to compose this integrative review. All the articles analyzed were published between 2020 and April 2025 and directly addressed histological and pharmacological aspects. and speech therapy related to Autism Spectrum Disorder (ASD).

The methodological diversity among the studies allowed for a broader analysis and enriching the proposed theme. In the field of histology, the reviewed studies contributed

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valuable for understanding the structural characteristics of the brains of people with ASD. It was
It is possible to observe morphological changes, such as differences in the corpus callosum, and atrophy in certain regions.
Specific characteristics and asymmetries in the activation of cortical areas are frequently found in investigations.

These changes, which are being increasingly mapped, help to explain some of the
Typical behaviors within the spectrum, such as difficulty with emotional regulation and communication.
social. An example of this is the study by Bertelsen *et al.* (2021), which analyzed connectivity patterns.
cerebral subtypes within the spectrum indicate distinct neural circuits among individuals with
Behaviors that are more focused on communication and those with more repetitive traits. Such
These discoveries contribute directly to a more accurate understanding of ASD and open up new opportunities.
for more accurate and personalized diagnoses in the future.

With regard to clinical pharmacology, studies point to significant progress.
In the search for more targeted treatments with fewer side effects. Based on the analysis
Based on genetics and an understanding of the neurochemical particularities of ASD, some research has been...
proposing the use of drugs based on specific genetic variants. For example, Fang *et*
al. (2023) identified a mutation in the ANK3 gene in patients with developmental delay.
neuropsychomotor, suggesting a promising path for treatments that consider the profile.
The genetic makeup of each individual. This line of research, still expanding, tends to contribute to
a more individualized practice and less dependent on generic protocols that often do not
They meet the real needs of patients.

Furthermore, Ghasemi *et al.* (2025) broadened the scope of analysis by relating changes
neurological to cognitive disorders in boys with rare mutations, reinforcing the idea that
Understanding the genetic and morphological components can be crucial in choosing...
More effective pharmacological interventions. The field of speech therapy also stood out among the
The studies reviewed showed that appropriate therapeutic follow-up can have
significant impact on language development and communication in children with ASD.

The study by Den Hoed & Fisher (2020), for example, highlighted the relationship between changes
specific genetic and articulation difficulties, reinforcing the role of speech therapy intervention.
early. Pereira *et al.* (2020), in turn, investigated phonological patterns in bilingual children and
monolingual individuals with ASD, showing that adaptations in the therapeutic method are fundamental for
to achieve better results.

This reinforces the importance of a sensitive and individualized approach on the part of professionals.
from the area, which should consider not only the disorder itself, but also the social context and
linguistic development of each child. In general, studies have shown that the work of the speech therapist
It goes beyond speech rehabilitation: it also involves strategies that promote social interaction,

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Expression of feelings and strengthening of self-esteem in people with spectrum disorder autistic.

The results of this review allow us to affirm that the understanding of ASD has evolved. significantly in recent years, especially when considering the dialogue between different areas. of knowledge. The integration between histological, pharmacological, and speech-language pathology data reveals a scenario in which each discovery contributes to a broader, more humane and effective approach in Care for people with autism.

In the field of histology, studies reinforce the understanding that ASD cannot be treated. as a single neurological profile. The structural changes observed in the brains of people with Autism Spectrum Disorders (ASDs) vary according to the subtypes of the spectrum, which has direct implications for behavior, in cognition and response to treatments. By recognizing this diversity, a path is opened to More assertive clinical approaches that respect the particularities of each individual.

Neuroimaging and morphological studies, in addition to deepening the understanding of Disorders also offer tools that can complement the diagnostic assessment. That is particularly relevant in cases where behavioral criteria are not sufficient for To make a diagnosis with certainty. In pharmacology, the review showed that we are still in The scientific process of maturation regarding the personalization of treatments.

Despite recent advances, the medications used in the management of ASD are still, in In many cases, prescriptions are made in a generalized way, which can reduce the effectiveness of the treatment and increasing the risk of adverse effects. However, studies that combine genetic and clinical data They point to a new perspective: pharmacogenomics. From this, it is expected that, soon, the healthcare professionals can prescribe medications based on a patient's genetic profile. increasing the chances of therapeutic success.

The role of speech therapy, in turn, proves to be one of the most important in the process. inclusion of people with ASD. Communication is often the main barrier faced by these people, and it is through appropriate strategies that autonomy can be promoted, improving the social interaction and facilitating participation in school, family, and community environments. A The literature reviewed reinforces that the role of the speech-language pathologist goes beyond the technical aspects of language. It also plays a role in building relationships, strengthening self-esteem, and in mediation between the child and their environment. This requires, however, ongoing training and sensitivity. cultural and social aspects on the part of the professionals.

Despite the progress identified, the review also reveals persistent challenges. One of them It is the lack of preparedness, both on the part of society and some healthcare professionals, to deal with the Multiple demands of autism. Many of the studies analyzed highlighted the impact of prejudice.

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and misinformation in the lives of families, reinforcing the need to invest in education,
Awareness and public policies for inclusion. Furthermore, most research still...
It focuses on childhood, leaving out an important segment of the population: adolescents and adults.
with ASD. This gap indicates that there is a long way to go in order to improve autism care.
may it, in fact, be integral throughout one's entire life.

Final Considerations

This study sought to deepen the understanding of Autism Spectrum Disorder (ASD) by
through an integrative analysis of the most important histological, pharmacological, and speech-language pathology evidence
Recent findings indicate that ASD is a multifactorial and heterogeneous disorder, whose
Complexity demands interdisciplinary and personalized approaches. Histological investigations
They revealed structural brain changes that help explain many of the clinical manifestations.
observed, while advances in pharmacology point to the urgent need for treatments.
Individualized treatments, based on each patient's genetic and neurochemical profiles.

In the field of speech-language pathology, the importance of early, adapted interventions stands out.
to the child's social and linguistic context, reinforcing the speech therapist's role as a facilitator of
Communication, socialization, and inclusion. The integration between these three areas of knowledge.
This demonstrates that the effectiveness of interventions depends on a sensitive and comprehensive approach, which
Consider both the biological and psychosocial dimensions of the individual with ASD.

Finally, although the scientific advances are remarkable, there are still important gaps to be filled.
completed, especially with regard to monitoring adolescents and adults with ASD,
to the training of professionals and the overcoming of social stigma. Therefore, this study reinforces the
the need for continuous investment in research, training, and public policies that guarantee the
comprehensive care, respect for differences, and the promotion of quality of life for people with
autism spectrum disorder and their families.

References

AISHWORIYA, R; VALICA, T; HAGERMAN, R; RESTREPO, B. An update on the psychopharmacological treatment of autism spectrum disorder. **Neurotherapeutics,** v.19, n1, 2022.

BERTELSEN, N *et al.* Imbalanced social-communicative and restricted repetitive behavior subtypes of autism spectrum disorder exhibit different neural circuitry—Communications **Biology,** v.4, n.1, p.574, 2021.

CHUNG, KM; CHUNG, E; LEE, H. Behavioral Interventions for Autism Spectrum Disorder: A Brief Review and Guidelines with a Specific Focus on Applied Behavior Analysis. J Korean **Acad Child**

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Machine Translated by Google

Year VII, v.1 2026 | Submission: April 15, 2026 | Accepted: April 19, 2026 | Publication: April 30, 2026

Adolesc Psychiatry, v. 35, n.1, 2024.

CRAWSHAW, D. Should we continue to tell autistic people that their brains are different? **Psychological Reports,** v.128, n.3, p.1315–1355, 2025.

DELL'OSSO, L. *et al.* Available Treatments for Autism Spectrum Disorder: From Old Strategies to New Options. **Pharmaceuticals,** v.18, n. 3, 2025.
DEN HOED, J. & FISHER, SE Genetic pathways involved in human speech disorders—Current **Opinion in Genetics & Development,** v.65, p.103–111, 2020.

ELKHATEEB, N *et. al.* Expanding the phenotype and genotype spectrum of TAOK1 neurodevelopmental disorder and delineating neurodevelopmental disorder. **Genetics in Medicine,** v.27, n.3, p.101–348, 2025.

FANG, X; FEE, T; DAVIS, J; STOLERMAN, E. S & CAYLOR, RC A novel variant in a patient with autism spectrum disorder and neurodevelopmental delay. **Cold Spring Harbor Molecular Case Studies,** v.9, n.3, 2023.

GHASEMI, MR *et al.* Novel digital anomalies, hippocampal atrophy, and mutations expand the genotypic and phenotypic spectra of the Houge type of X-linked syndromic intellectual developmental disorder—American **Journal of Medical Genetics Part** A, v.197, n.5, 2025.

GORA, C. *et al.* Deciphering the heterogeneity of autism: a molecular stratification approach in four murine models. **Transl Psychiatry,** v.14, n.4, p.16, 2024.

GRANADILLO, JL *et al.* The deletion syndrome: Clinical and molecular characterization. **Journal of Medical Genetics,** v.57, n.10, p.717–724, 2020.

HUANG, M; IQ, Q; XU, T. Targeting deficiency and paresthesia in autism spectrum disorder: A brief review. **Front Mol Neurosci,** v.9, n.16, 2023.

HYMAN SL, LEVY SE, MYERS SM. Identification, Evaluation, and Management of Children with Autism Spectrum Disorder. **Pediatrics,** v.145, n.1, 2020.

LAMANNA, J; MELDOLESI, J. Autism Spectrum Disorder: Brain Areas Involved, Neurobiological Mechanisms, Diagnoses and Therapies. **Int J Mol Sci,** v. 25, n.4, 2024.

MEDVEDEVA, VP *et al.* Effects of disruption in the cortex on mouse ultrasonic vocalization and behavior—Human **Molecular Genetics,** v.28, n.5, p.701–717, 2019.

MOHER, D *et al.* Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. **PLoS Medicine,** v.6, n.7, 2009.

MYERS, L *et al.* Variable neurodevelopmental and morphological phenotypes of carriers with 12q12 duplications —Molecular **Genetics & Genomic Medicine,** v.8, n.1, 2020.

PEREIRA, E. T *et al.* Characterization of phonological errors in bilingual and monolingual children— CoDAS, v.32, n.6, 2020.

SANJEEVAN, T *et al.* **Exploring the neural structures underlying the procedural memory**

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network as predictors of language ability in children and adolescents with autism spectrum disorder and attention deficit hyperactivity disorder. Frontiers in Human Neuroscience, 14, 2020.

SOUZA, MT, SILVA, MD, & CARVALHO, R. Integrative review: what it is and how to do it. **Einstein (São Paulo),** v.8, n.1, p.102–106, 2010.

STROGANOVA, T. A *et al.* **Left hemispheric deficit in the sustained neuromagnetic response to periodic click trains in children with ASD.** Molecular Autism, 11, 100, 2020.

WALLACE, G. L *et al.* Subclinical eating disorder traits are correlated with cortical thickness in regions associated with food reward and perception. **Brain Imaging and Behavior,** v.14, n.2, p.346–352, 2020.

WHITTEMORE, R., & KNAFL, K. The integrative review: Updated methodology. **Journal of Advanced Nursing,** v.52, n.5, p.546–553, 2005.

XIE, Y *et al.* Functional architecture of the human medial frontal cortex revealed by intrinsic functional connectivity and meta-analysis. **Cell Reports,** v.32, n.11, 2020.

ZHOU, TC *et al.* Diffusion tensor imaging analysis of the corpus callosum in children with high-risk autism spectrum disorder—Technology **and Health Care,** v.31, n.4, p.1451–1456, 2023.

ZHUANG H, *et al.* autism spectrum disorder: pathogenesis, biomarker, and intervention therapy. **MedComm,** v.5, n.3, 2024.

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