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TRAINING ON AUTISM SPECTRUM DISORDER FOR ACADEMICS AND HEALTH AND EDUCATION PROFESSIONALS: EXPERIENCE IN THE BRAZILIAN AMAZON

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ABSTRACT

Introduction: Autism Spectrum Disorder (ASD) is a condition that affects the neurological development of the individual and is characterized by the presence of deficits in social communication and the existence of repetitive and stereotyped movements, whether motor or speech. Although this clinical condition has been widely researched and disseminated, it remains largely unknown to professionals involved in screening, multidisciplinary follow-up, and related areas, such as health and education. Therefore, in a local context, we sought to hold a course on the subject for the aforementioned audience. Objective: To report experience on a training course on ASD for academics and health and education professionals. Experience Report: The training course was promoted with the premise of improving the knowledge of the target audience in order to improve the service to autistic people. The training was structured in ten meetings over three months and taught by professionals from different areas and with experience in caring for people with ASD. Each meeting lasted three hours and was attended by professionals specialized in the chosen themes. A total of 3,012 individuals from ten Brazilian states were registered. Discussion:

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The course addressed autism in the context of two important sectors for the detection and support of this condition. In addition, it excelled in the exposure of the theme from an interdisciplinary and integral perspective, observing the autistic in the stages of life. It is considered that the training was a success when observing the number of participants and the engagement obtained in the meetings. In addition to the spectators, there were benefits to the organizers, from the improvement of technical and humanistic skills necessary in professional practice. Final Considerations: With the success obtained, it is necessary to apply the course in other states of Brazil from the context of the primordiality of obtaining knowledge about ASD.

Keywords: Comprehensive Health Care. Inclusive Education. Professional Education in Public Health. Continuing Education. Autism Spectrum Disorder.

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INTRODUCTION

Autism Spectrum Disorder (ASD) is an innate condition that affects the neurological development of individuals, being marked by repercussions on various systems of the human body. The main characteristics of individuals with ASD are the deficit in social communication and, consequently, in the development of interpersonal relationships, as well as the presence of repetitive and stereotyped behaviors from changes in the motor system. Not only that, but also limitations in the sensory system may be present, which leads to reactions of aversion or stimulus to contact with objects and substances (Cunha *et al.*, 2022; Lima *et al.*, 2024).

Although innate, children with ASD usually show noticeable manifestations of developmental delay from the second year of life, such as difficulty with speech, limitations in social interaction, walking and other body movements, in addition to reduced contact with the family. However, there are studies that show the appearance of warning signs as early as 6 months of life. Therefore, its screening should occur in early childhood within Primary Health Care (PHC) so that the diagnosis can be established in a timely manner (Girianelli *et al.*, 2023).

In seven decades, ASD has ceased to be a rare disorder with a restricted standard of definition and has become the central theme of scientific research, which has contributed to a considerable evolution of information about its characteristics. From this, there was also a growing increase in the number of diagnoses around the world (Bianchi; Abram, 2023; Medina *et al.*, 2024). Globally, it is estimated that 1 in 160 individuals has ASD, being present in about 1% of the population. In terms of gender, there is an exponential presence in males since ASD is 4 times more prevalent in this population (Clementele *et al.*, 2024; Paiva *et al.*, 2024).

The Centers for Disease Control and Prevention (CDC) estimates that 1 in 36 children is on the spectrum, making up about 8% of the U.S. child population (Andrade *et al.*, 2024). In Brazil, there are no official prevalence figures, but an estimated 2 million autistic people with reports are estimated (Dias *et al.*, 2021; Romeo; Rossit, 2022).

These studies, in addition to contributing to the improvement of ASD diagnoses, have also encouraged the creation of legislation aimed at the autistic community around the world. In Brazil, the protection of the rights of people with ASD is guaranteed by Law No. 12,764/2012, called the Berenice Piana Law, which aims to ensure comprehensive attention to the health needs of people with ASD. Such legislation includes in its precepts

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the effectiveness of early diagnosis, multiprofessional care, access to medicines, education, and social assistance in the country (Brasil, 2012).

Despite this important legal advance and the increase in the number of scientific studies on neurodevelopment (Dias *et al.*, 2021; Romeo; Rossit, 2022), there are still obstacles about ASD in Brazil, given the transmission of incorrect information and the lack of encouragement for discussion on the topic in the spheres of society. This event has repercussions on erroneous ideas and fallacies that encourage prejudice and, consequently, socio-spatial segregation, which contributes to the mitigation of access to civil rights for this population (Shaw; Leandro; Oliveira, 2021).

In addition to the distorted information that reverberates in the social environment, there is still the context of difficulties in screening, diagnosing, and monitoring this condition in the health area (Simão *et al.*, 2023). Considering that PHC is the main gateway to the Unified Health System (SUS), it is clear that the professionals of this network must be properly trained to be able to identify the first signs of ASD and, thus, offer quality and humanized care, accompanying the child during his development; and supporting the family (Campos *et al.*, 2021). However, the reality of PHC diverges from this prerogative, being marked by insufficient training and lack of information about ASD. Certainly, such situations make it difficult to diagnose this disorder early in the context of PHC (Xavier *et al.*, 2021).

This difficulty is also observed in the school context since education professionals face problems in the multidisciplinary monitoring of children diagnosed with ASD and in the creation of strategies for the interaction of autistic people with other students. Not only that, but there is also a prominent elaboration of social representations of neuroatypical patients by teachers based on popular beliefs, which contribute to the perpetuation of the problem in the classrooms (Paiva *et al.*, 2024; Saints; Teixeira; Bringel, 2023; Weizenmann; Pezzi; Zanon, 2020).

Considering that there are about 636 thousand autistic students in the country, according to the 2023 Brazilian Demographic Census, and policies that ensure the rights of these students in schools (Brasil, 2023; Fonseca, 2024), it is noted that this reality needs to be changed in the Brazilian context. This must occur so that individuals diagnosed with ASD have their rights provided for by law effectively ensured through training of the institutions' faculty.

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In this sense, when reflecting on a viable solution to reach the heart of such problems, an extension project on ASD was developed, aiming to offer a virtual course on the subject for academics and health and education professionals, to qualify these individuals, disseminating information on the subject and, consequently, to change the panorama described above. During this training, information such as the concept, characteristics, and diagnosis of the disorder were taught, in addition to topics such as the rights of the autistic person and support for neuroatypical people in health, education, and other important areas for the development of such a population.

OBJECTIVE

Report on experience with virtual professional training on ASD promoted to academics and health and education professionals, carried out between November 2023 and February 2024.

EXPERIENCE REPORT

This is a descriptive study of the experience report type, developed from the extension project entitled "*Neuroatypical*", linked to the Federal University of Pará (UFPA). This project aimed to disseminate information about ASD to the community in general so that, consequently, there is effective social inclusion and guarantee of the rights of the autistic community, based on better instruction for professionals. This experience report refers to the promotion of an extension course on ASD for academics and professionals in the areas of health and education.

The course, entitled "*Neuroatypical: What You Need to Know About Autism Spectrum Disorder*", was developed to contemplate academics and health and education professionals in the municipality of Altamira, where the campus of the organizing committee of this action is located, with possible reverberation in the Xingu Region, which is composed of the aforementioned location and nine other municipalities, they are: Brasil Novo, Medicilândia, Anapu, Senador José Porfírio, Uruará, Vitória do Xingu, Porto de Moz, Placas and Pacajá. This region, located in the Southwest of Pará, is located in the interior of the Amazon, composed of other states present mainly in the North Region, such as Amapá and Tocantins.

The training took place from the use of Information and Communication Technologies (ICTs), with virtual meetings through the *YouTube* platform, which indexes

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videos and broadcasts, through the *StreamYard* application, which has the function of organizing the elements and guests of a live production, to reproduce in the aforementioned video base. Ten meetings took place, lasting three to four hours each, in two stages over three months: The first stage consisted of six meetings that took place between November 8 and December 4, 2023; The second stage took place between January 17 and February 7, 2024, with four events held. Each meeting consisted of one or two lectures, according to the extent of the theme and the time needs of each invited professional.

The planning of the course took place in the two months prior to its event, based on the structuring of the syllabus, according to the proposed workload, as well as the subsequent search for specialists in the themes to be worked on during the development of the course. The list of speakers was assembled with professionals from the Xingu region and municipalities in other areas of Pará, as well as from large urban centers, such as São Paulo, for example, in addition to integrating mediators from different regions of the country, covering individuals from the North, Northeast, Southeast and Midwest regions.

The syllabus was organized in order to contemplate the initial concepts of ASD – definition, prevalence, and risk factors – to themes such as multiprofessional action from the perspective of health and education. All the selected themes were curated by the invited professionals and the project's guiding professors so that there was cohesion and coherence during all stages of the event.

After the preparation of the activity plan, dissemination began through the project's profile on the social network *Instagram*. With information about the purpose of the program, workload, and schedule, the opening post for registration for the course was released on November 3, 2023. From the use of comment and sharing tools for other people, the number of subscribers quickly reached the proposed goal of one hundred people. During the five days made available for enrollment, 3,012 registrations were made, exceeding the objective considered by a wide margin. During this period, posts with space to express doubts were opened on the virtual profile so that interested parties could send questions about the course.

The meetings took place based on the following structure: days before the event, information on the theme and the professionals involved was made available, as well as the summary of each speaker's curriculum in posts on *Instagram*. On the day of the activity, the *access link* was sent in groups through the *WhatsApp* application, organized

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with the project members and course participants. At the beginning, a form was made available to count attendance, as well as at the end of the meeting. After filling it out, the program began with the presentation of the specialists by the extension organization. Then, the guests held their content presentations and, at the end, answered questions sent in question forms made available by the event's production. Materials were also sent, such as articles and virtual books, for autonomous study by the participants in the period between the meetings.

The ten meetings (**Table 1)** were successful, according to the plan outlined. The first meeting, held on November 8, 2023, took place with the theme "Introduction to Autism Spectrum Disorder", taught by a neuropsychiatrist. Topics such as the definition of the condition, risk factors, history and evolution of studies on the subject, comorbidities, important characteristics, and clinical investigation constituted the content of the specialist's presentation. The second meeting, which took place on November 13 of the same year, was attended by two speakers: the first, who was a lawyer, addressed topics related to the rights of people with ASD in Brazil, also commenting on the interface between law and medicine in ASD; in the second moment, a guest psychologist brought an interactive approach to the theme "Support and Resource to Families with Neuroatypical Children".

The following week, two neuropediatricians were present at the third event, debating the themes "Diagnosis of ASD: Criteria and Early Detection" and "Therapeutic and Drug Intervention in ASD". The approach of both consisted of bringing to light the early identification of signs in health services, with a focus on childcare and the Child's Handbook, until the post-diagnosis process, emphasizing the role of the physician and the entire multidisciplinary health team in these stages. A week later, the fourth meeting took place with the presence of a physiotherapist working in PHC to discuss the theme "Management of ASD in Primary Health Care", further exploring the content addressed in the previous event, from the perspective of the primary level of the SUS.

Still in the axis of therapeutic interventions, the fifth meeting, held on November 29, brought a proposal for a round table with four professionals involved in the process of caring for autistic people, including an occupational therapist, a psychopedagogue, a neuropsychologist, and a speech therapist. Each specialist brought to the meeting the discussion of their role in the context of monitoring neuroatypicals, as well as reported their experiences and addressed the therapies carried out for the better development of children with ASD. At the end of the first stage, on December 4th, a family and community doctor,

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with experience in a Child Psychosocial Care Center, addressed the subjects "Management of ASD in Specialized Care" and "Comorbidities of ASD", highlighting the preponderant relevance of neuropsychiatric conditions and gastrointestinal disorders associated with autism.

The second stage began on January 17, 2024, with the presentation of the theme "Experiences and Perspectives on the Reality of the Population with ASD in the Xingu Region" by the activist and president of the TEAs Association of Xingu – an entity whose purpose is to fight for the rights of autistic people in the locality in question -, who brought her report not only as a supporter of the cause, but also as an atypical mother, in a conversation circle with questions asked by the participants. On January 31, the next meeting entered the field of education by addressing the theme "Inclusion and Support for Neuroatypical People in the School Context", with a guest teacher of Specialized Educational Service. That same day, a nutritionist specialized in Nutrition for Autistic People spoke about "The Management of Functional Feeding of People with ASD", with a demonstration of the food therapies carried out in clinical practice.

The penultimate meeting, which took place on February 5, was attended by two professionals from the State Coordination of Public Policies for Autism in Pará: the first – a lawyer specializing in ASD – addressed "Public Policies Aimed at the Population with ASD in Brazil and Pará"; and the second – occupational therapist – spoke about the ASD assessment instruments. Finally, on February 7th, the last meeting of the course was held, with the theme "The Adolescent and the Neuroatypical Adult: Perspectives, Development and Care". For this, an adolescent and adult psychiatrist were invited to discuss the topic, along with four people diagnosed with ASD to be interviewed: one adolescent, one young adult, and two middle-aged adults. Each one reported how the discovery of autism in their lives was, in addition to exposing how they deal with the condition in their current stages of life, bringing the perspective of those who experience ASD to the listening public, according to the questions asked by mediators and viewers.

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Table 1 – Course Information

No.	Title of the Lecture	Date of Realization	Professional Training and/or Area of Expertise of the Speakers	Number of Participants
01	Introduction to Autism Spectrum Disorder	November 08, 2023	Neuropsychiatrist	2.412
02	Rights of People with Autism Spectrum Disorder in Brazil	November 13, 2023	ASD Specialist Lawyer	1.935
03	Interface Between Law and Medicine in Autism Spectrum Disorder	November 13, 2023	ASD Specialist Lawyer	1.935
04	Support and Resource for Families with Neuroatypical Children	November 13, 2023	Psychologist	1.989
05	Diagnosis of Autism Spectrum Disorder: Criteria and Early Detection	November 20, 2023	Neuropediatrician	1.770
06	Therapeutic and Drug Intervention in Autism Spectrum Disorder	November 20, 2023	Neuropediatrician	1.770
07	Management of Autism Spectrum Disorder in Primary Health Care	November 27, 2023	Physiotherapist Master in Biosciences	1.729
08	Multidisciplinary Follow-up of Autism Spectrum Disorder	November 29, 2023	Occupational Therapist, Psychopedagogue, Speech Therapist, and Neuropsychologist	1.668
09	Management of Autism Spectrum Disorder in Specialized Care	December 04, 2023	Family and Community Physician working in Mental Health	1.459
10	Comorbidities of Autism Spectrum Disorder	December 04, 2023	Family and Community Physician working in Mental Health	1.457
11	Experience and Perspectives on the Reality of the Population with Autism Spectrum Disorder in the Xingu Region	January 17, 2024	Neuropsychopedagogue, Activist for the rights of people with ASD, and Mother of an atypical child	1.090
12	Inclusion and Support for Neuroatypical People in the School Context	January 31, 2024	Pedagogue Master in Inclusive Education and Teacher of Specialized Educational Service	998
13	The Management of Functional Feeding of People with Autism Spectrum Disorder	January 31, 2024	Nutritionist Specialist in Nutrition in Autism	995
14	Public Policies Aimed at the Population with Autism Spectrum Disorder	February 05, 2024	Lawyer, Mother of an atypical child and State Coordinator of Public Policies for Autism in Pará	1.093
15	Autism Spectrum Disorder Assessment Instruments	February 05, 2024	Occupational Therapist with residency in Mental Health, postgraduate in ASD in Intersectoral Contexts and Policy Advisor for Autism at the State Department of Public Health	976
16	The Adolescent and the Neuroatypical Adult: Perspectives, Development, and Care	February 07, 2024	Psychiatrist with residency in Child and Adolescent Psychiatry and four adolescents and adults with ASD	1.048

Source: Authors' Collection (2025)

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In summary, during the three months of the course, 16 topics about ASD were taught, with more than 20 speakers and guests (**Table 1**). Each meeting had an estimated 1,000 to 2,000 participants, with an average of about 1,520 listeners per lecture, totaling more than 46,000 views on the 10 videos on the *YouTube platform* (**Table 2**).

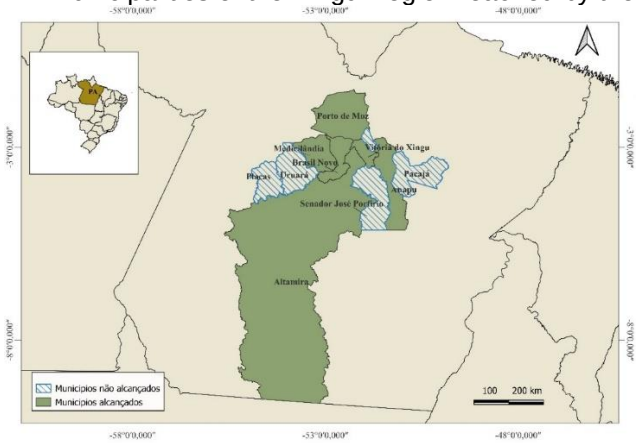
Table 2 – Views of the videos of the meetings (until February 3, 2025)

No.	Video Title	Number of Views
01	First Meeting - Introduction to Autism Spectrum Disorder (ASD)	7.700
02	Second Meeting - Rights of People with ASD in Brazil / Interface between Law and Medicine in ASD / Support and Appeal to Families with Neuroatypical Children	10.000
03	Third Meeting - ASD Diagnosis: Criteria and Early Detection / Therapeutic and Drug Intervention in ASD	4.900
04	Fourth Meeting: Management of ASD in Primary Health Care	3.600
05	Fifth Meeting: Multidisciplinary Monitoring of ASD	4.700
06	Sixth Meeting: Management of ASD in Specialized Care / Comorbidities of ASD	3.100
07	Seventh Meeting: Experience and Perspectives on the Reality of the Population with ASD in the Xingu Region	2.900
08	Eighth Meeting: Inclusion and Support for Neuroatypicals in the School Context / The Management of Functional Feeding of People with Autism Spectrum Disorder	3.100
09	Ninth Meeting: Public Policies Aimed at the Population with ASD / ASD Assessment Instruments	3.300
10	Tenth Meeting: The Adolescent and the Neuroatypical Adult: Perspectives, Development and Care	2.700
	Total of the Ten Meetings	**46.000**

Source: Authors' Collection (2025)

Of the 3,012 registered, 2,860 individuals came from Pará, reaching participants from 72 of the 144 municipalities in the state, including cities in the Xingu Region, which were Altamira, Brasil Novo, Medicilândia, Vitória do Xingu, Anapu and Porto de Moz, reaching 60% of the total locations in this region, which met the objective set by the project (**Figure 1**).

Figure 1 – Municipalities of the Xingu Region reached by the course



Source: Authors' Collection (2025)

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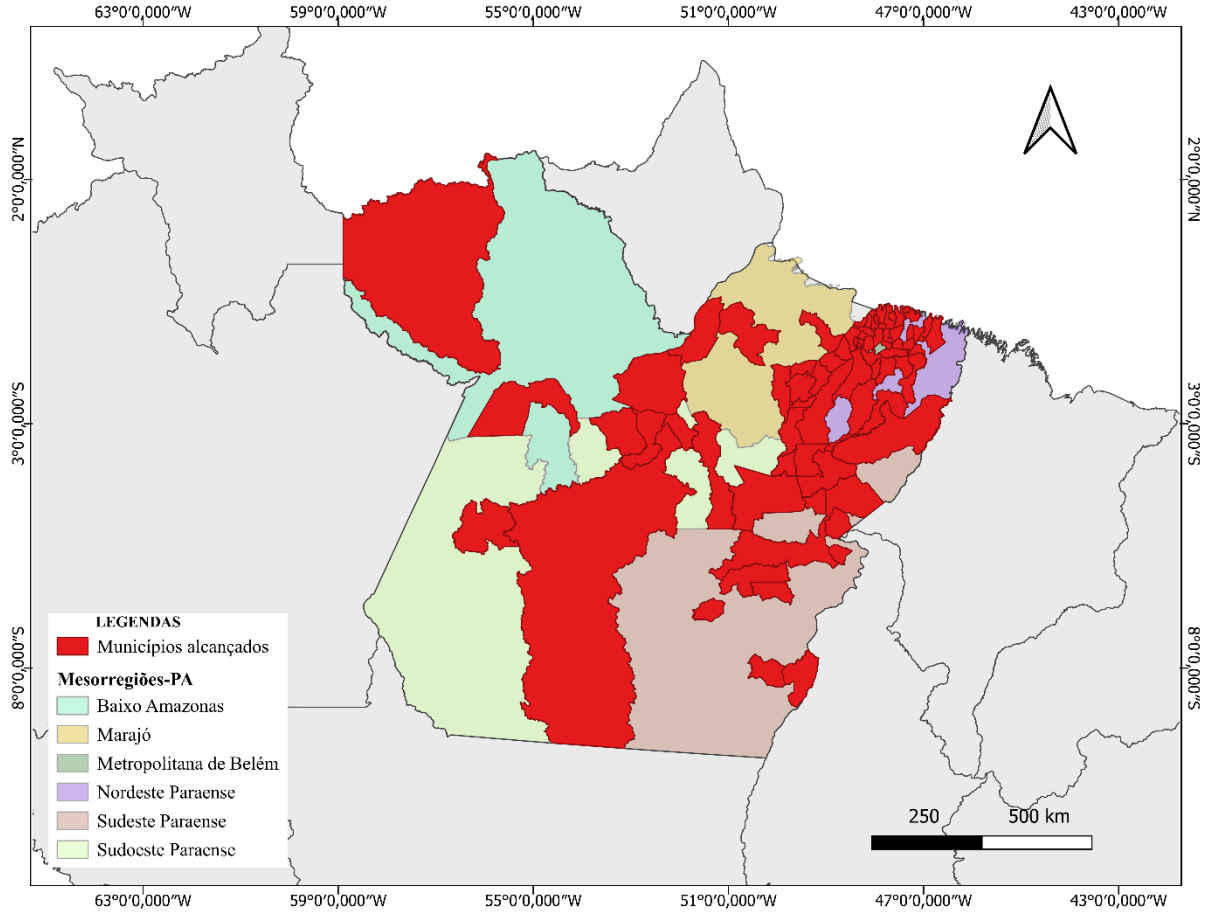
Nevertheless, participants from other locations in Pará (**Figure 2** and **Table 3**), from large centers, such as Belém, Marabá and Santarém, to inland locations, such as Capitão Poço, Gurupá and Irituia, were present at the course. Municipalities in the Marajó Region – such as Breves and Gurupá –, in the Metropolitan Region of Belém (Ananindeua, Marituba, Barcarena, among others), in the Northeast (Ipixuna do Pará, Abaetetuba, Baião, for example) and in the Southeast of Pará – Redenção and Tucuruí can be mentioned – stood out among those registered in the state in question. Nevertheless, cities in the Lower Amazon (Oriximiná and Santarém) were also present in the course.

Figure 2 – Municipalities in Pará reached by the extension course



Source: Authors' Collection (2025)

From the spatial analysis of the localities reached by the training in Pará (**Table 3),** it is inferred that all six mesoregions of the state were contemplated with the actions described. In numbers, two municipalities in the Lower Amazon had participants enrolled in the training, in addition to three in Marajó, nine in the Metropolitan Region of Belém and six in the Southwest of Pará. The most present regions, in absolute number of locations, were

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the Southeast of Pará, with individuals from 15 cities registered in the events; and the Northeast of Pará with 36 participating municipalities.

Table 3 – Municipalities Reached by the Course by Region

Region	Municipalities in the Region Reached		
Lower Amazon	Oriximiná	Santarém	
Marajó	Brief	Gurupá	Ponta de Pedras
Metropolitan of Belém	Ananindeua Barcarena Bethlehem	Bujaru Castanhal Marituba	Santa Bárbara do Pará Santa Isabel do Pará Santo Antônio do Tauá
Northeast Pará	Abaetetuba Acará Baião Beautiful Bragança Cametá Capanema Captain Well Necklaces Concordia of Pará Curuçá Igarapé-Açu	Igarapé-Miri Ipixuna do Pará Irituia Ajuru Lemon Tree Magalhães Barata Maracanã Marapanim Mocajuba Moju Oeiras do Pará Ourém Manatee	Salinópolis Santa Maria do Pará São Caetano de Odivelas São Domingos do Capim São Francisco do Pará São João da Ponta São João de Pirabas São Miguel do Guamá Upland Tomé-Açu Tracuateua Porthole
Southeast Pará	Bom Jesus do Tocantins Breu Branco Canaã dos Carajás Conceição do Araguaia Goianésia do Pará	Jacundá Marabá New Repartimento Paragominas Parauapebas	Redemption Rondon do Pará São Domingos do Araguaia Tucuman Tucuruí
Southwest Pará	Altamira Anapu	New Brazil Medicilândia	Port of Moz Victory of the Xingu

Source: Authors' Collection (2025)

Outside Pará, the course had registrations from three other states included in the Amazon, namely Amapá, Maranhão, and Tocantins (**Figure 3**). In addition to these, Bahia, Ceará, Piauí, Minas Gerais, São Paulo, and Rio Grande do Sul were places where people enrolled in the course.

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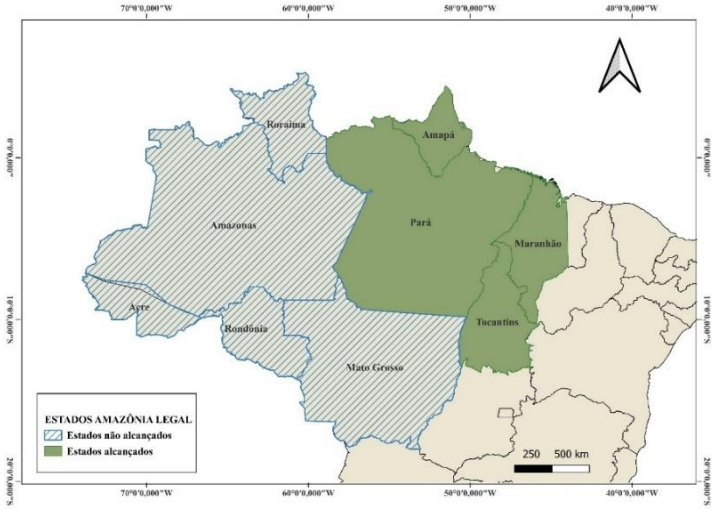
Figure 3 – Amazon states reached by the course



Source: Authors' Collection (2025)

Regarding the area of activity, there were numerous participants linked to the areas of health and education (**Table 4**). Among the health professionals' registrations, nursing workers – academics and graduates – were the most present, with 429 registrations. There were also registrations from the areas of Physiotherapy, Psychology, Physical Education, Medicine, Occupational Therapy, Social Work, and Pharmacy, all with between 100 and 300 registrations each. Individuals from the professions of Dentistry, Nutrition, Speech Therapy, and Biomedicine also participated in the course. In the area of education, students and graduates in Pedagogy formed the majority, with 676 participants. Undergraduate members of other degrees, such as Mathematics, Chemistry, and Letters, were also significantly among those enrolled.

Table 4 – Area of Expertise and/or Academic Training of the Course Enrollees

Area of Expertise and/or Academic Training	Quantity
Pedagogy	676
Nursing	429
Physiotherapy	297
Psychology	245
Physical education	174
Medicine	167
Occupational therapy	133
Social services	128
Pharmacy	114
Languages (Portuguese or English)	107
Dentistry	76
Nutrition	58
Speech therapy	53
Life Sciences	52
Mathematics	31
Geography	25
History	25

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Biomedicine	21
Natural Sciences	21
Other Areas	180
Total	**3.012**

Source: Authors' Collection (2025)

It is also noteworthy that the course was also publicized during the period of the meetings so that there was adherence throughout the training time, considering that there was a one-month interval between the first and second stages. A week in advance, the schedule of the next meeting was made available in WhatsApp groups. Publications with the theme of the lectures, date, time, and information of the professionals involved were made on the social network *Instagram* to reinforce the invitation and expand the dissemination to the followers of the project's account. In total, 20 posts were made on *Instagram* in the period prior to and during the classes (**Table 5**). During the three months of the course, from the registration period to the description of each meeting, more than 450,000 impressions were counted in all publications.

Table 5 – Reach obtained in the posts promoting the course

Number	Posted Made	Post Date	Reach (accounts)
01	Registration "Neuroatypical Course: What You Need to Know About ASD"	November 03, 2023	26.968
02	Course Opening: First Meeting – Introduction to ASD	November 07, 2023	5.987
03	Second Meeting – Rights of People with ASD in Brazil / Interface between Law and Medicine in ASD	November 13, 2023	4.469
04	Second Meeting – Support and Resources for Families with Neuroatypical Children	November 13, 2023	3.126
05	Third Meeting – ASD Diagnosis: Criteria and Early Detection	November 20, 2023	3.612
06	Third Meeting – Therapeutic and Drug Intervention in ASD	November 20, 2023	3.182
07	Fourth Meeting – Management of ASD in PHC	November 27, 2023	2.167
08	Fifth Meeting – Multidisciplinary Monitoring of ASD	November 29, 2023	2.863
09	Sixth Meeting – Management of ASD in Specialized Care / Comorbidities of ASD	December 04, 2023	2.178
10	Announcement of the Schedule of the Second Stage of the Course	January 09, 2024	4.097
11	Seventh Meeting – Experience and Perspectives on the Reality of the Population with ASD in Xingu	January 17, 2024	2.190
12	Eighth Meeting – Inclusion and Support for Neuroatypical People in the School Context	January 31, 2024	2.700
13	Eighth Meeting – The Management of Functional Nutrition of People with ASD	January 31, 2024	1.510

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14	Announcement of the Last Meetings "Final Stretch - Neuroatypical Course"	February 03, 2024	2.161
15	Ninth Meeting – Public Policies Aimed at the Population with ASD	February 04, 2024	6.543
16	Ninth Meeting – ASD Assessment Instruments	February 05, 2024	2.398
17	Announcement of the Ninth Meeting with the Two Themes Mentioned Together	February 05, 2024	2.434
18	Tenth Meeting – The Adolescent and the Neuroatypical Adult: Perspective, Development, and Care (Speaker's Announcement)	February 07, 2024	1.679
19	Tenth Meeting – The Adolescent and the Neuroatypical Adult: Perspective, Development, and Care (Announcement of Interview Guests)	February 07, 2024	2.132
20	Acknowledgment to Participants and Course Statistics	February 15, 2024	1.890
	Average		**4.214**

Source: Authors' Collection, via Instagram (2025)

DISCUSSION

With the promotion of the course on ASD, expressive results were observed in terms of the target audience, given the reach obtained both in territorial extension, going beyond the borders of Pará and the Brazilian Amazon, and in the areas of activity, by achieving a preponderant audience in the context of health and education. In numbers, there is a prevalence of participation of the population of Pará, concomitant with a notable appearance of registrants from other states of the Amazon, which includes Amapá, Maranhão, and Tocantins.

In the context of the Amazon, the training promoted became even more relevant when observing the historical, health, and sociodemographic panorama of the region. This location presents significant challenges in accessing basic services, such as health and education, due to the lack of infrastructure and the insufficient supply of qualification for professionals. In addition, the low demographic density, resulting from the few efforts in the region in past centuries, combined with the large territorial extension, also hinder this process, especially in the interior municipalities and in rural areas, in which the situation in question becomes even more preponderant, due to the agglomeration of investments in the capitals and large cities, reinforcing the socio-spatial disparity that also exists within the territory itself (Lima *et al.*, 2025).

The region, considered to have the lowest life expectancy in the country, has divergent social indicators, motivated by the unbridled growth of demography and the local

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economy, coexisting with the concentration of income and scarcity of resources for a large part of the population (Garnelo, 2019). The difficulties of access are reverberated in health care, in a space in which professionals need training, especially considering the Amazonian context in question. This need also extends to the educational sphere, given the obstacles to access and promotion of basic education existing in the locality in vogue, which are more apparent when highlighting the context of population diversity existing in the Amazonian lands (Sousa; Colares, 2022).

It is also known that the panorama of the Amazon mentioned also reflects the reality of Pará. This state has among its six mesoregions (Marajó, Metropolitan Belém, Lower Amazonas, Northeast, Southwest and Southeast Pará) the social, sanitary and economic inequalities present, especially in the Marajó Region, which lacks infrastructure and suffers from difficulties in promoting the basic rights of the inhabitants effectively (Carneiro *et al.*, 2018). In summary, as shown in **Table 3**, there were participants from all these regions, which equalized the scope of the training in an equitable way, providing knowledge in a well-distributed way in this state.

With this, it is considered that by transmitting the meetings to all the mesoregions of Pará and several states in the Amazon, it was possible to generate opportunities for improving health and education practices in these areas, based on empowering the interlocutors with knowledge derived from scientific and empirical research. Consequently, these participants will be better prepared to face local difficulties in relation to the care of autistic people, which are notoriously more expressive when they are aware of the context of state and regional inequality (Lima *et al.*, 2025). In addition, the information from the course can still be disseminated through the enrollees, who, therefore, become protagonists in the process of encouraging the social inclusion of people on the spectrum.

In this context, the role of the university in the development of the Amazon is highlighted from the perspective of the plurality of the peoples who inhabit it. The academy can, through incentive programs, provide opportunities for the insertion of academics and researchers in the scenario of change. With the proposition and execution of measures that promote knowledge, especially through extension, the reality not only of public health, but also of education and other civil spheres, can be improved, to consolidate solutions to current problems, such as the historical, social and economic obstacles that exist in the context of the feasibility of full citizenship and basic rights (Monteiro; Silva, 2024).

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University extension, in turn, proposes the interdisciplinary promotion of education to generate a positive impact and establish bilateral relations between social spheres. In this sense, it is responsible for promoting the approximation between the academic community and society, which can bring direct benefits to both involved. From the interactions developed by the exchange of knowledge and actions, the university is able to improve the teaching-learning practices developed in the institution, just as society receives useful knowledge from academia that also demystifies social segregation (Pinheiro; Narciso, 2022).

In the field of health, developing extension actions related not only to the health-disease process but also to the integrality of the human being within the biopsychosocial context is of great importance. When carrying out a training action on ASD, it was sought to go beyond these objectives, with early detection, inclusion, and welcoming being keywords that guided the development of the action described above. In this context, there is also the prospect of the high recurrence of children with developmental alterations and the need for effective preparation of public health professionals regarding the early detection and management of ASD, especially nurses and physicians, as they are the most responsible for such designations. In this sense, educational and updating actions become valuable tools for improving the work practices of this community (Souza *et al.*, 2024).

From this, it is understood that, as they are the first professionals to assist people with ASD, nurses and doctors must know about childcare services and perform them in all the child's consultations, even at times of investigation of temporary issues or acute infections. This activity, which should be alternated by the aforementioned professionals, consists of monitoring children, using instruments such as the Children's Handbook, by carrying out periodic consultations, in order to prevent diseases and detect conditions, such as ASD. Such situations are found based on the evaluation of factors such as growth, development, immunization and lifestyle habits, which must be recorded and monitored rigorously, considering the metrics recommended in scientific circles related to the physical and mental development of children (Leal; Olive tree; Pessoa, 2021; Teixeira *et al.*, 2023).

This practice is part of the holistic concept of health, which values the biopsychosocial view of the patient, observing their demands and factors that may not be related to the complaints, but which may be signs, for example, of ASD, such as delays in child development milestones (Silva; Saints; Vidal, 2024). However, there are still difficulties in the exercise of such practices in Brazilian offices, mainly motivated by lack of

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knowledge of the process and the evaluation of the child's neuropsychomotor development, as well as of the Child's Handbook, which is an important guiding instrument of the process (Barbosa; Pereira, 2022; Paro *et al.*, 2024).

Such difficulties can be observed from studies carried out in Brazil. In a survey to measure the level of knowledge of forty physicians and nurses about ASD in PHC in a municipality, it was found that, although the professionals had moderate knowledge about the characteristics of a neuroatypical child, they demonstrated difficulties in understanding the support and management of people with ASD within public health, from a multiprofessional perspective (Rezende *et al.*, 2020). The scenario described is an observed reality that needs changes, for this, within the course, meetings were structured focused on basic knowledge about ASD, concomitant with the discussion of topics such as diagnosis and support of this condition in PHC and Specialized Care, to also provide an understanding of the referral flow in the public network.

Also in this context, obstacles related to the theme were found in another study, in which the insufficient preparation of nursing professionals regarding ASD was reported. In this regard, a semi-structured interview was conducted with ten professionals: four nurses, one nursing technician, and five nursing assistants. All these workers reported feeling powerless and unprepared to work in the care of children with ASD, mainly due to the lack of knowledge and experience in the care directed to these children. The study also states that since their professional training, there have been no discussions on the subject, making it necessary, therefore, to stimulate this approach and the production of new studies on this disorder by these professionals, due to the great relevance of this theme in the current health scenario (Soeltl; Fernandes; Camillo, 2021).

Based on the panorama exposed above, added to the context of the Amazon, it was understood that the approach to this audience was of vital importance. To mitigate such difficulties, this study reached a large number of nursing students and trained nurses, which, based on the teachings learned in the lectures, can contribute to the improvement of care for autistic people in the daily routine of PHC and, nevertheless, also transmit such information to other professionals in their work establishments. It is also noted that other specialists involved in the process, such as physiotherapists, nutritionists, psychologists, occupational therapists, and dental surgeons, had the opportunity to understand the flow of care and the opportune moment of action according to the needs of the patients.

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In the field of education, it was possible, based on the multidisciplinary vision presented during the meetings, to reinforce the important role that the school can have, especially daycare centers and kindergartens, in the screening of signs indicative of ASD and the guidance of parents and guardians when identified, contributing to the health professionals involved in childcare, reinforcing the link between health and education (Camargo *et al.*, 2020; Branches; Silva, 2022; Silva, 2021).

Nevertheless, these professionals participate in the monitoring of autistic children by stimulating physical and social development in an individualized way and within the specificities of each infant through the elaboration of adapted curricular strategies. To this end, knowing the characteristics of ASD, as well as the associated comorbidities, from training, for example, such as the one carried out by the group, generates more security and ownership in the preparation and management of such activities, to effectively guarantee the rights of autistic people in the school context, provided for by the Brazilian Inclusion Law, number 13.146, of 2015 (Camargo *et al.*, 2020; Branches; Silva, 2022; Silva, 2021).

In this sense, the participation of professionals in the field of pedagogy was observed, most of whom work as teachers of children in early and second childhood, in daycare centers and early childhood schools. With approximately 22.44% of the registrations of individuals in the area in question, it is clear that such specialists, being the area most present in the course, in addition to being better trained to care for people with ASD, will contribute to the effective guarantee of the clauses described in the aforementioned legislation, to safeguard the autistic community from any negligence or attitude that may obstruct the integral development of such public.

It is also noteworthy that the course, in addition to addressing the importance of education and health in the development of people with ASD, reinforced the primordiality of the connection between these areas. Based on Singular Therapeutic Plans prepared by Specialized Care, in partnership with Family Health Strategies, this contact also involves several community agents, such as the family, social assistance, and places of conviviality, such as supermarkets, stores, and churches (Carvalho *et al.*, 2021).

Such construction is based on the performance of each area at all times of the life of the person with ASD, whether at school, in the home environment, or in public life. From the elaboration of strategies converging to the difficulties presented, it is possible to consolidate structured teaching and the use of effective therapeutic interventions, as well

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as the full guarantee of the rights of autistic people in the local community (Lacerda *et al.,* 2024; Lemos *et al.*, 2024).

Within the prerogatives of the course, the multidisciplinary approach to ASD has been consolidated as a way to expose the reality that must be experienced by diagnosed children. This is because the joint work of professionals such as doctors, nurses, physiotherapists, physical educators, speech therapists, occupational therapists and nutritionists is of fundamental importance for the effective development of the child, with the objective that, consequently, he can obtain autonomy and independence in adolescence and especially in adulthood (Araújo; Junior; Sousa, 2022).

For this, observing the point of view and performance of each type of health professional was necessary during the lectures, to allow the understanding of the role of other professions within the monitoring of autistic people, which should be integral, by observing all stages of the individual's life, and interdisciplinary, through the connection between the health team involved. From meetings aimed not only at diagnosis and support for autistic people in PHC but also for the multidisciplinary monitoring of people on the spectrum, it was possible to understand the importance of joint action by all sectors and the aforementioned professionals to exchange knowledge and information about each autistic individual.

From the perspective of the National Policy of Primary Care and the National Policy for the Protection of the Rights of Persons with ASD, the course sought to bring the integrality of care as a guiding element, since understanding the care to be provided according to the stages of life, from early childhood to adulthood and the elderly, It should be a goal pursued by health professionals. By presenting characteristics of people with ASD at different stages of the life cycle, the course provided an understanding of the specificities and singularities of human experience as the years go by, correlating with the sociocultural context present in the world and highlighting the approaches that should be considered in the support of an autistic person.

In addition to looking at the phases of the person with ASD, the extension course also sought to emphasize the importance of screening and early diagnosis of autism, preferably in the first years of the child's life, so that, in this way, sociobehavioral and physical sequelae are not generated. When not diagnosed early, autism goes unnoticed, becoming evident in adolescence and adulthood. In addition to social isolation, factors such as stereotypes and motor and sensory sensitivity generate a feeling of not belonging

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to society, which is aggravated by prejudice and misinformation about ASD in Brazil (Lobato; Martins, 2020; Marra *et al*., 2024).

In addition, autistic people in adolescence may suffer a behavioral decline, presenting setbacks in the development and maintenance of language and sociability skills. In addition, they may present symptoms of anxiety and depression related to self-knowledge of their difficulties and differences from neurotypical people. This situation is the opposite when autistic people are adequately stimulated, since, in the long term, they may be able to achieve a degree of self-sufficiency as adults, gaining independence and autonomy (Serbai; Priotto, 2021). Therefore, it is emphasized that, to have this stimulus, professionals must be aware of how to properly manage individuals with ASD in public health.

To have not only technical knowledge but also knowledge from reality, people with ASD, family members, and activists in the cause for guaranteeing the rights of autistic people were listed in the meetings. The difficulties in the various sectors mentioned above were reported from the perspective of each person involved, especially by the individuals on the spectrum, who solidified the contextualization arising from the moments of theoretical learning. This measure was premised on sensitizing listeners to also promote social mobilization in favor of this community, giving visibility to the movements of this group, as well as providing prominence to people who were once marginalized from the social context, being segregated and having their rights disrespected.

The impact of this course also extended to the medical students involved in the organization of the extension course, giving them the opportunity to improve essential skills for clinical practice and for the professional journey. Among them, there are technical skills, such as mastery of the use of graphic design and audiovisual transmission platforms; humanistic – decision-making, leadership, analytical thinking, collaboration, administration and management of actions; and communication, especially because they had contact with different public profiles from different locations in the state of Pará and the country, which required adaptations in the way verbal and non-verbal language was transmitted (Barboza *et al.*, 2024).

Nevertheless, the students still had the opportunity to recrudescence their learning on the subject in question, to better prepare them for the early identification of signs of ASD, as well as for the care of autistic people in health services when they graduate in the coming years. With this, an approximation is also generated between the medical school

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involved and the local health system, in addition to a positive impact for the community in the medium and long term related to these students, who will be able to offer welcoming, ethical and diversity-enhancing health care to local citizens (Santana *et al.*, 2021).

This learning gives the students involved not only the chance to demonstrate the knowledge inferred in the academy but also the opportunity to apply it in the community according to the context inserted, based on methodologies employed by the team. Thus, the relationship between the project's developer members and the target audience is considered bilateral, since, in addition to the proposition of activities for the professional community, there is the interlocution of knowledge and experiences of these professionals, building an amalgam of information deduced from science and empiricism, which is beneficial for both sides. The perception of the participants' contributions becomes, in this context, a skill exercised by the organization in order to value the collective process based on ethical principles and social co-responsibility (Barboza *et al.*, 2024; Santana *et al.*, 2021).

Depending on the benefits generated to the organization of the course, ICTs played a crucial role in the execution of the programmed ideas. This is because, in order to reach new audiences and encompass a larger number of participants, services such as social networks and transmission platforms were used by the organizers in order to generate thousands of views and registrations made virtually in the few days proposed for such registrations.

In addition to attenuating territorial distances, especially in Pará, which is the second largest state in geographic extension in Brazil, and in the Amazon, the use of ICTs was necessary to gain access in different places, democratizing and enabling education in municipalities where there is no such availability easily, nor are courses on this topic held. It is inferred, therefore, that the dozens of municipalities in Pará, as well as the states of the Amazon and other regions, were reached in large part by the merit of ICTs.

They also allowed a greater adhesion of the participants enrolled in the course, since, from the dissemination of the information of the meetings through *Instagram* and *WhatsApp*, the general public involved can follow the updates to have an exchange of ideas, which, therefore, structured the maintenance of these viewers in the three months of the course, there is a linearity in the reach of the posts, as shown in **Table 5**. This demonstrates the effectiveness of the strategies for using ICTs not only to attract users but also to keep them active throughout the training process.

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Furthermore, the structuring of the course based on the use of virtual learning spaces generated a greater availability of interaction and content to the participants, through chat applications and virtual storage, in addition to bringing a range of instruments that can be used outside the class period, such as study materials and a form for questions and suggestions about the course. All these resources aimed to ensure greater dynamism in the teaching-learning process, to the detriment of the traditional teaching model, bringing protagonism to those enrolled, based on the possibility of adding information to the content offered by the organizers and speakers (Andrade *et al*., 2020; Duque *et al*., 2023). This practice generated engagement among those involved, which, therefore, made the experience welcoming, motivational, and interactive.

From this perspective, it was observed that the format of the training generated great interest in the viewers when considering the answers to the forms made available and the interaction on the project's social networks. About 40 to 60 questions were asked in each meeting, with between 5 and 10 questions being filtered to be answered live in the broadcast and the remaining doubts later in an asynchronous moment. Agendas such as the flow of care for people with ASD in PHC and interdisciplinarity between areas were among the frequent questions in the three months of the course that took place. In addition, hundreds of messages were received weekly on *WhatsApp* and *Instagram* with questions and positive comments about the training.

FINAL CONSIDERATIONS

The course "*Neuroatypical: What You Need to Know About Autism Spectrum Disorder*" had a significant reach in Pará, the Amazon, and other regions of Brazil. With more than fifteen lectures and study moments, the training brought a multidisciplinary approach to ASD, so that there was an understanding of autism, especially in the context of health and education, and the role of each professional in the physical and social development of neuroatypicals, as well as in the effective inclusion of this community in the civil sphere. From the perspective of expert speakers and other members involved in this reality, it was possible to promote an expressive dissemination of knowledge to all those involved in the course, which, consequently, allowed the improvement of professional skills related to ASD of these individuals.

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