# The Role of Artificial Intelligence in Supporting Healthcare Professionals and Caregivers of Autistic Children

This analysis was prepared at the request of the Cyber Physical Systems Lab of the University of Calgary. For inquiries or further information regarding this document, please contact:

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# Introduction

Autism Spectrum Disorder (ASD) is a complex neurodevelopmental condition that manifests through difficulties in social interaction, communication challenges, and repetitive behaviors. The rising prevalence of autism has positioned it as a significant public health issue, demanding attention and innovation in its screening and treatment. Speech therapists, psychologists, behavioral therapists, occupational therapists, pediatricians, neurologists, and other specialists face a multitude of challenges in managing autism. Screening for autism requires the interpretation of a wide spectrum of symptoms, which can vary greatly from one individual to another. This variability often leads to contradictory screenings and complicates the development of consistent treatment plans.

Moreover, maintaining continuity and consistency in treatment is another significant hurdle. Different practitioners may adopt varying approaches, and the transition of knowledge and treatment plans between multiple caregivers or specialists can be fraught with inefficiencies. Accessing previous screening and treatment records is often cumbersome, as these records are frequently scattered across different systems and formats. This lack of an integrated platform that is able to collect data and provide insights to the treatment team hampers the ability to provide cohesive and informed care, potentially affecting the outcomes for individuals with autism.

Artificial Intelligence (AI) offers a promising solution to these challenges. AI can revolutionize the field of autism care by providing advanced tools for screening and treatment. It has the potential to standardize screening procedures, ensuring more consistent and accurate evaluations. AI-driven systems can also streamline treatment processes, facilitating better communication between sessions (with different health experts involved in the treatment) and among different practitioners. Personalized treatment plans generated by AI can be continuously monitored and adjusted based on real-time data, thereby enhancing the overall quality of care.

However, the integration of AI in such a sensitive area of healthcare necessitates careful consideration of the perspectives of those directly involved in the care of autistic individuals. Understanding the concerns, expectations, and readiness of specialists and caregivers to embrace AI technology is crucial. To this end, it is imperative to gather direct feedback from these stakeholders to inform the development and implementation of AI tools in autism care.

In light of these considerations, we designed and conducted comprehensive surveys targeting both specialists and caregivers of autistic children. These surveys aimed to capture their insights on the current challenges in autism care, their familiarity with AI, and their openness to integrating AI into screening and treatment processes. By addressing these insights, the development of AI tools can be better tailored to meet the practical needs and expectations of those involved in autism care, ultimately leading to improved outcomes for individuals with autism.

# Objectives

The objectives of this study are multi-faceted, aiming to provide a thorough understanding of the current landscape of autism care and the potential for AI integration. The detailed objectives are as follows:

1. **Identify Current Challenges in Autism Diagnosis and Treatment:**
    - Investigate the specific difficulties healthcare professionals and caregivers face in diagnosing autism, including variability in symptom presentation and the use of different diagnostic tools.
    - Explore the challenges in treatment consistency, particularly how different therapy approaches and practitioner variability impact the continuity of care.
    - Examine the issues related to knowledge transfer between practitioners, focusing on how the lack of standardized documentation and communication affects treatment outcomes.
2. **Assess the Accessibility and Integration of Treatment Records:**
    - Analyze the current methods used by healthcare professionals and caregivers to track and access treatment histories, including electronic health records (EHRs), paper records, and personal notes.
    - Identify the barriers to accessing comprehensive and integrated treatment records, such as fragmented data systems and inconsistent documentation practices.
    - Determine the specific improvements needed to enhance the accessibility and integration of treatment records for more effective care coordination.
3. **Evaluate the Familiarity and Perceptions of AI Among Stakeholders:**
    - Measure the level of familiarity with AI technologies among healthcare professionals and caregivers.

- Gather insights into the perceived benefits of AI in autism care, including potential improvements in diagnostic accuracy, treatment personalization, and continuity of care.
- Identify the primary concerns stakeholders have regarding the use of AI, such as data privacy, reliability of AI recommendations, and ethical considerations.

4. **Understand Stakeholder Appetite for AI Integration:**

- Determine the willingness of healthcare professionals and caregivers to adopt AI-driven tools in their practices.
- Explore the specific features and functionalities that stakeholders value in an AI platform, such as real-time monitoring, enhanced data visualization, and customizable treatment plans.
- Assess the overall interest in and readiness for incorporating AI into everyday diagnostic and treatment processes for autism.

5. **Design and Implement Comprehensive Surveys:**

- Develop detailed surveys tailored to capture the unique perspectives of both healthcare professionals and caregivers, ensuring a broad range of relevant topics are covered.
- Ensure the survey design is robust and capable of yielding high-quality data, including measures to validate responses and exclude incomplete or inconsistent submissions.
- Employ effective communication strategies to reach a diverse participant pool, leveraging professional networks, autism support groups, and online communities.

6. **Analyze and Present Survey Results:**

- Conduct a thorough analysis of the survey data, employing statistical methods to identify key trends, correlations, and insights.
- Use visual aids, such as pie charts, bar graphs, and correlation matrices, to clearly present the findings and facilitate easy interpretation.
- Provide detailed summaries of the results, highlighting the main challenges, benefits, and concerns related to AI in autism care as reported by the participants.

7. **Formulate Recommendations for AI Integration:**

- Based on the survey results, develop actionable recommendations for integrating AI into autism care, addressing the specific needs and concerns of healthcare professionals and caregivers.
- Highlight the potential impact of AI on improving diagnostic accuracy, treatment consistency, and overall care quality.
- Suggest strategies for overcoming the identified barriers to AI adoption, including enhancements in data privacy, reliability, and ethical considerations.

By achieving these objectives, the study aims to pave the way for more efficient, consistent, and personalized autism care, leveraging the innovative capabilities of AI while addressing the concerns and expectations of those directly involved in the care of autistic individuals.

# Methodology

1. **Survey Design and Development:**

The study employed two distinct surveys to capture the perspectives of healthcare professionals and caregivers regarding the use of AI in autism care. The design process involved several stages to ensure the comprehensiveness and relevance of the surveys:

- **Literature Review:** Conducted an extensive review of existing research on autism diagnosis and treatment challenges, as well as the application of AI in healthcare. This helped identify key areas of interest and concern that needed to be addressed in the surveys.
- **Expert Consultation:** Engaged with experts in autism care, including pediatricians, speech language pathologist, behavioural therapist, occupational therapist, and AI specialists, to refine the survey questions. This ensured that the questions were relevant, clear, and capable of capturing the necessary insights.
- **Pilot Testing:** Conducted pilot tests with a small group of healthcare professionals and caregivers to identify any ambiguities or issues with the survey questions. Feedback from the pilot tests was used to make necessary adjustments before the final deployment.

2. **Participant Recruitment:**

- **Target Population:** The surveys targeted two main groups: healthcare professionals involved in diagnosing and treating autism (including pediatricians, pediatricians, speech language pathologist, behavioural therapist, occupational therapist) and caregivers of autistic children (including parents, guardians, and professional caregivers).
- **Sample Size:** Based on the expected response rate and the need for statistical significance, the target sample size was set at 200 participants for the caregiver survey

and 50 participants for the professional survey. This sample size was determined using standard statistical methods to ensure the results would be representative and robust.

- **Recruitment Channels:** Participants were recruited through various channels, including: professional networks and associations for healthcare professionals, autism support groups and online communities for caregivers, social media platforms and email invitations to reach a broader audience.

3. **Survey Administration:**

- **Online Platform**: The surveys were administered online using a secure survey platform to facilitate ease of access and participation. This also ensured that data collection was efficient, and responses could be easily tracked and analyzed.
- **Informed Consent**: Participants were provided with detailed information about the study's purpose, the voluntary nature of their participation, and assurances of confidentiality and data privacy. Informed consent was obtained from all participants before they began the survey.
- **Survey Duration:** Each survey was designed to be completed in approximately 15-20 minutes, balancing the need for comprehensive data collection with the participants' time constraints.

4. **Data Collection and Validation:**

- **Response Monitoring:** The survey responses were monitored continuously to ensure a steady flow of participation and to address any technical issues promptly.
- **Data Validation:** Rigorous data validation procedures were implemented to ensure the quality and reliability of the collected data. This included excluding incomplete responses, identifying and removing inconsistent or contradictory answers and verifying the demographic information to ensure the responses were from the target population.

5. **Data Analysis:**

- **Quantitative Analysis:** Statistical analysis was performed on the quantitative data to identify trends, correlations, and key insights. Descriptive statistics, cross-tabulations, and correlation analyses were used to summarize and interpret the data.
- **Qualitative Analysis**: Open-ended responses were analyzed using qualitative methods to identify common themes and insights. This involved coding the responses and categorizing them into meaningful themes to understand the underlying sentiments and concerns of the participants.

6. **Data Visualization:**

- **Graphs and Charts:** Various visual aids, including bar charts, pie charts, and correlation matrices, were created to present the findings in a clear and accessible manner. These visuals helped to illustrate key points and make the data more understandable.
- **Tables and Summaries**: Detailed tables and summaries were provided to highlight the main findings and correlations. These summaries were used to support the analysis and conclusions drawn from the study.

# Surveys

### 1. Survey 1: Healthcare Professionals

This survey aimed to gather insights from healthcare professionals involved in treating autism. The primary focus was on understanding the challenges they face, their familiarity with AI, and their perceptions of its potential benefits and concerns. The survey included questions about their diagnostic and treatment practices, the consistency of care, and the accessibility of treatment records. Additionally, it explored their views on how AI could improve autism care and the specific features they would value in an AI platform.

## Section 1: Background Information

1. What is your primary role in diagnosing and treating autism?

- ☐ Pediatrician
- ☐ Behavioral Therapist
- ☐ Occupational Therapist
- ☐ Speech Language Pathologist
- ☐ Other (please specify)

2. How many years of experience do you have in this field?

- ☐ Less than 1 year
- ☐ 1-5 years
- ☐ 5-10 years
- ☐ More than 10 years

3. What types of autism spectrum disorders (ASD) do you primarily work with? (Select all that apply)

- ☐ Asperger Syndrome
- ☐ Childhood Disintegrative Disorder
- ☐ Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS)
- ☐ Autistic Disorder
- ☐ Other (please specify)

4. What settings do you primarily work in? (Select all that apply)

- ☐ Private practice
- ☐ Hospital
- ☐ School
- ☐ Community center
- ☐ Other (please specify)

## Section 2: Diagnostic Practices and Challenges

5. What diagnostic tools do you currently use for autism? (Select all that apply)

- ☐ Standardized tests
- ☐ Behavioral observations
- ☐ Parental interviews
- ☐ Genetic testing
- ☐ Other (please specify)

6. How often do you encounter contradictory diagnoses in your practice?

- ☐ Very often
- ☐ Often
- ☐ Sometimes
- ☐ Rarely
- ☐ Never

7. What do you believe are the main causes of contradictory diagnoses? (Select all that apply)

- ☐ Variability in symptom presentation
- ☐ Lack of standardized diagnostic criteria
- ☐ Differences in practitioner training and experience
- ☐ Insufficient data sharing between practitioners
- ☐ Other (please specify)

8. How confident are you in your current diagnostic tools?

- ☐ Very confident
- ☐ Somewhat confident
- ☐ Neutral
- ☐ Somewhat unconfident
- ☐ Very unconfident

## Section 3: Treatment Practices and Challenges

9. What treatment methods do you use most frequently for autism? (Select all that apply)

- Behavioral therapy
- Speech therapy
- Occupational therapy
- Medication
- Other (please specify)

10. What are the main challenges you face in connecting different treatment sessions? (Select all that apply)

- Consistency in therapy approaches
- Tracking patient progress
- Communication between sessions
- Access to previous treatment history
- Other (please specify)

11. How do you currently access previous treatment history? (Select all that apply)

- Electronic health records (EHR)
- Paper records
- Direct communication with previous practitioners
- Parental reports
- Other (please specify)

12. How effective are your current methods in accessing previous treatment history?

- Very effective
- Somewhat effective
- Neutral
- Somewhat ineffective
- Very ineffective

13. What improvements would you like to see in accessing previous treatment history? (Select all that apply)

- Better integration of records
- More detailed documentation
- Easier access to electronic records
- Standardized reporting formats
- Other (please specify)

14. How often do you face challenges in maintaining treatment consistency between sessions?

- Very often
- Often
- Sometimes

- Rarely
- Never

15. What are the primary reasons for inconsistency in treatment between sessions? (Select all that apply)

- Variability in child's condition
- Different practitioners or therapists
- Changes in treatment plans
- Parental involvement
- Other (please specify)

## Section 4: AI-Specific Questions

16. How familiar are you with AI and its applications in healthcare?

- Very familiar
- Somewhat familiar
- Neutral
- Somewhat unfamiliar
- Very unfamiliar

17. What potential benefits do you see in using AI for diagnosing autism? (Select all that apply)

- Increased diagnostic accuracy
- Faster diagnosis
- Consistency in evaluations
- Enhanced data analysis
- Other (please specify)

18. What potential benefits do you see in using AI for treating autism? (Select all that apply)

- Personalized treatment plans
- Continuous monitoring and adjustment
- Objective progress measurement
- Improved communication between sessions
- Other (please specify)

19. What concerns do you have about using AI in diagnosing autism? (Select all that apply)

- Data privacy and security
- Reliability of AI predictions
- Ethical considerations
- Over-reliance on technology
- Other (please specify)

20. What concerns do you have about using AI in treating autism? (Select all that apply)

- Lack of human touch
- Potential errors
- Acceptance by families
- Dependency on technology
- Other (please specify)

21. How confident are you in the accuracy of AI-driven diagnostic tools?

- Very confident
- Somewhat confident
- Neutral
- Somewhat unconfident
- Very unconfident

22. How confident are you in the efficacy of AI-driven treatment plans?

- Very confident
- Somewhat confident
- Neutral
- Somewhat unconfident
- Very unconfident

23. In what areas do you think AI should not interfere in autism diagnosis and treatment? (Select all that apply)

- Initial diagnosis
- Behavioral observations
- Therapy sessions
- Parental interactions
- Other (please specify)

24. What limitations do you see in the current AI technologies for autism? (Select all that apply)

- Insufficient training data
- Bias in AI models
- Lack of transparency in AI decisions
- Limited scope of applications
- Other (please specify)

25. What are the main concerns with AI that need to be addressed to gain your confidence? (Select all that apply)

- Data security and privacy
- Transparency in AI decision-making
- Ethical use of AI

- Effectiveness in real-world settings
- Other (please specify)

## Section 5: Opinions on Technology

26. How do you think children with autism respond to technology in their treatment?

- Very positively
- Positively
- Neutrally
- Negatively
- Very negatively

27. How do you think families of children with autism respond to the use of technology in treatment?

- Very positively
- Positively
- Neutrally
- Negatively
- Very negatively

28. What positive feedback have you heard about the use of technology in autism treatment? (Select all that apply)

- Improved engagement
- Better tracking of progress
- Enhanced communication with practitioners
- Other (please specify)

29. What negative feedback have you heard about the use of technology in autism treatment? (Select all that apply)

- Over-reliance on devices
- Concerns about data privacy
- Lack of personal interaction
- Other (please specify)

30. How likely are you to recommend the use of AI-driven tools to your colleagues?

- Very likely
- Likely
- Neutral
- Unlikely
- Very unlikely

31. What features would you like to see in an AI platform for diagnosing and treating autism? (Select all that apply)

- ☐ Enhanced data integration
- ☐ Real-time monitoring and alerts
- ☐ Customizable treatment plans
- ☐ Improved data visualization
- ☐ Other (please specify)

32. What aspects of your current practices do you think could be improved by AI? (Select all that apply)

- ☐ Diagnostic accuracy
- ☐ Treatment consistency
- ☐ Progress tracking
- ☐ Communication with families
- ☐ Other (please specify)

33. What are your top three concerns about using AI in your practice? (Select all that apply)

- ☐ Data privacy
- ☐ Ethical considerations
- ☐ Reliability
- ☐ Over-reliance on technology
- ☐ Other (please specify)

# Open-Ended Questions

34. Please describe any specific instances where you faced challenges in accessing previous treatment history and how it impacted the treatment process.

35. In your opinion, how can AI help in bridging the gaps between different treatment sessions?

36. What suggestions do you have for improving the integration of AI in autism diagnosis and treatment?

37. Can you provide examples of how technology has positively impacted your practice in treating autism?

38. What are the main obstacles you see in the adoption of AI in your field?

39. How do you ensure the consistency of treatment when different practitioners are involved?

40. What additional support or training would you need to effectively use AI tools in your practice?

41. Any additional comments or suggestions?

### 2. Survey 2: Caregivers

This survey targeted caregivers of autistic children, including parents and professional caregivers. The objective was to capture their experiences and challenges in caring for children with autism, their familiarity with AI, and their openness to its integration in autism care. The survey addressed topics such as communication difficulties, access to support services, and the consistency of therapy sessions. It also sought to understand their concerns about data privacy and the reliability of AI recommendations, as well as their interest in using AI-driven tools to enhance the treatment and daily activities of autistic children.

These surveys provide a comprehensive view of the current state of autism care from the perspectives of those directly involved, highlighting the challenges and potential solutions offered by AI technology.

## Section 1: Background Information

1. What is your relationship to the child with autism?

- Parent
- Caregiver
- Teacher
- Therapist
- Other (please specify)

2. How long have you been involved in the care of a child with autism?

- Less than 1 year
- 1-3 years
- 3-5 years
- More than 5 years

3. What is the age of the child you care for?

- 0-3 years
- 4-7 years
- 8-12 years
- 13-18 years
- Over 18 years

4. What type of autism spectrum disorder has the child been diagnosed with?

- Asperger Syndrome

- Childhood Disintegrative Disorder
- Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS)
- Autistic Disorder
- Other (please specify)

## Section 2: Challenges in Care and Treatment

5. What are the main challenges you face in caring for a child with autism? (Select all that apply)

- Communication difficulties
- Behavioral issues
- Social interaction challenges
- Sensory sensitivities
- Access to services and resources
- Other (please specify)

6. How do you rate the availability of support services for children with autism in your area?

- Excellent
- Good
- Fair
- Poor
- Very poor

7. What types of therapies or interventions have you found most beneficial? (Select all that apply)

- Behavioral therapy
- Speech therapy
- Occupational therapy
- Social skills training
- Medication
- Other (please specify)

8. How consistent is the child's therapy across different sessions?

- Very consistent
- Somewhat consistent
- Neutral
- Somewhat inconsistent
- Very inconsistent

9. What are the main challenges in maintaining consistency in the child's therapy? (Select all that apply)

- Different therapists or practitioners

- Variability in child's condition
- Changes in therapy plans
- Scheduling difficulties
- Other (please specify)

## Section 3: Access to Treatment History

10. How do you currently track the child's treatment history? (Select all that apply)

- Electronic health records (EHR)
- Paper records
- Personal notes
- Communication with therapists
- Other (please specify)

11. How easy is it to access the child's previous treatment history?

- Very easy
- Easy
- Neutral
- Difficult
- Very difficult

12. What improvements would you like to see in accessing the child's treatment history? (Select all that apply)

- Better integration of records
- More detailed documentation
- Easier access to electronic records
- Standardized reporting formats
- Other (please specify)

## Section 4: Use of Technology and AI

13. How familiar are you with the use of AI and technology in the treatment of autism?

- Very familiar
- Somewhat familiar
- Neutral
- Somewhat unfamiliar
- Very unfamiliar

14. What potential benefits do you see in using AI for the treatment of autism? (Select all that apply)

- Personalized treatment plans
- Continuous monitoring and adjustment
- Objective progress measurement
- Improved communication between sessions
- Enhanced engagement with the child
- Other (please specify)

15. What concerns do you have about using AI in the treatment of autism? (Select all that apply)

- Data privacy and security
- Reliability of AI recommendations
- Ethical considerations
- Over-reliance on technology
- Acceptance by the child
- Other (please specify)

16. How do you think the child responds to technology used in their treatment?

- Very positively
- Positively
- Neutrally
- Negatively
- Very negatively

17. How do you think families generally respond to the use of technology in the treatment of autism?

- Very positively
- Positively
- Neutrally
- Negatively
- Very negatively

18. What positive feedback have you heard about the use of technology in autism treatment? (Select all that apply)

- Improved engagement
- Better tracking of progress
- Enhanced communication with practitioners
- Other (please specify)

19. What negative feedback have you heard about the use of technology in autism treatment? (Select all that apply)

- Over-reliance on devices
- Concerns about data privacy
- Lack of personal interaction

- Other (please specify)

20. How likely are you to support the use of AI-driven tools in your child's treatment?

- Very likely
- Likely
- Neutral
- Unlikely
- Very unlikely

## Section 5: Recommendations and Feedback

21. What features would you like to see in an AI platform for the treatment of autism? (Select all that apply)

- Enhanced data integration
- Real-time monitoring and alerts
- Customizable treatment plans
- Improved data visualization
- Other (please specify)

22. What aspects of the current treatment practices do you think could be improved by AI? (Select all that apply)

- Treatment consistency
- Progress tracking
- Communication with families
- Personalization of treatment
- Other (please specify)

23. What are your top three concerns about using AI in your child's treatment? (Select all that apply)

- Data privacy
- Ethical considerations
- Reliability
- Over-reliance on technology
- Other (please specify)

## Open-Ended Questions

24. Please describe any specific instances where you faced challenges in accessing the child's previous treatment history and how it impacted their treatment.

25. In your opinion, how can AI help in bridging the gaps between different treatment sessions?
26. What suggestions do you have for improving the integration of AI in autism treatment?
27. Can you provide examples of how technology has positively impacted your child's treatment?
28. What are the main obstacles you see in the adoption of AI in autism treatment?
29. How do you ensure the consistency of treatment when different practitioners are involved?
30. What additional support or training would you need to effectively use AI tools in your child's treatment?
31. Any additional comments or suggestions?

# Results

The results from the two surveys provide a comprehensive understanding of the current challenges in autism care and the potential role of AI in addressing these challenges. The analysis includes quantitative data, qualitative insights, and visual representations to clearly illustrate the findings.

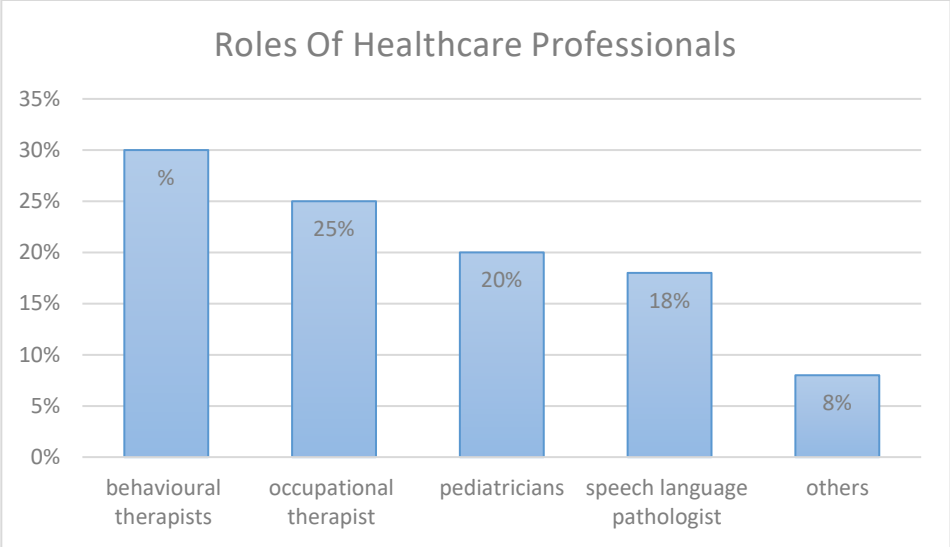
**General Information**

**Professionals:**

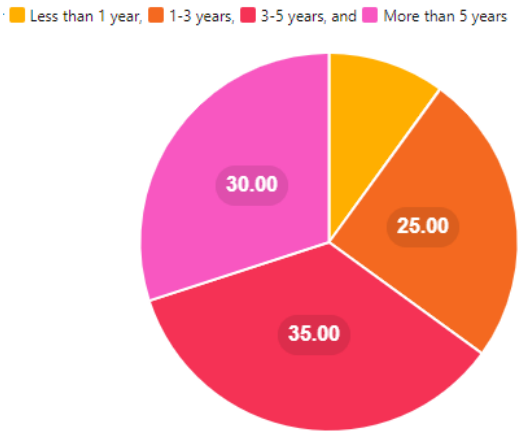
- **Roles:** The majority of respondents were behavioural therapists (30%), followed by occupational therapist (25%), pediatricians (20%), speech language pathologist (18%), and others (8%). Refer to Figure 1.
- **Experience:** Most professionals had 5-10 years (40%) or more than 10 years (30%) of experience in the field. Refer to Figure 2.
- **Autism Spectrum Disorders:** They primarily worked with Autistic Disorder (50%) and Asperger Syndrome (35%).

**Caregivers:**

- **Relationship to Child:** The majority were parents (60%) and caregivers (20%), with smaller percentages being teachers (10%), therapists (5%), and others (5%).
- **Experience:** Most had been involved for 3-5 years (35%) or more than 5 years (30%).
- **Child's Age:** Children were primarily aged 8-12 years (30%) and 4-7 years (25%).




Tables 1and 2 demonstrate the demographics of healthcare professionals and experiences of caregivers.




## Challenges in Care and Treatment

### Healthcare Professionals:

- **Main Challenges:** Consistency in therapy approaches (40%), tracking patient progress (45%), and communication between sessions (50%) were identified as the primary challenges.

*Figure 2. Experience Of Caregivers*

- **Accessing Previous Treatment History:** Most professionals used electronic health records (55%) and direct communication with previous practitioners (40%) to access treatment history.

**Caregivers:**

- **Main Challenges:** Communication difficulties (60%), behavioral issues (55%), and access to services and resources (40%) were the top challenges.
- **Therapies Found Beneficial:** Behavioral therapy (60%), speech therapy (50%), and occupational therapy (45%) were noted as most beneficial.

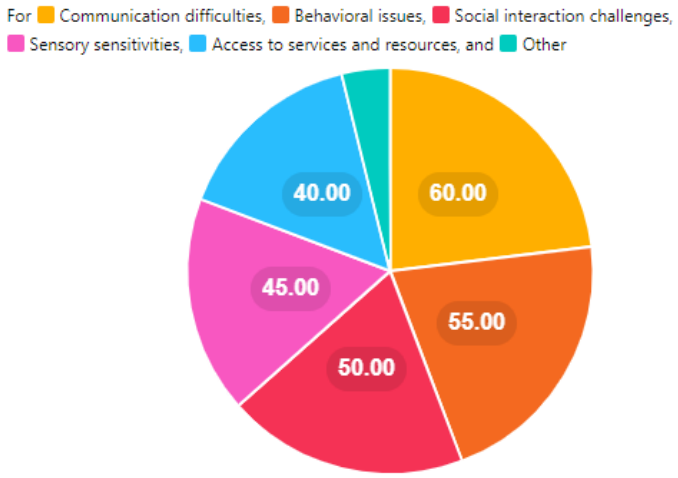



*Figure 3. Percentage of Different Challenges Faced by Caregivers*

**Familiarity with AI and Perceived Benefits**

**Healthcare Professionals:**

- **Familiarity with AI:** 25% of professionals were very familiar with AI, while 50% were somewhat familiar.
- **Perceived Benefits:** Professionals identified increased diagnostic accuracy (60%), personalized treatment plans (65%), and continuous monitoring and adjustment (50%) as key benefits.

**Caregivers:**

- **Familiarity with AI:** 15% were very familiar, and 35% were somewhat familiar.

- **Perceived Benefits:** Caregivers saw benefits in personalized treatment plans (55%) and continuous monitoring and adjustment (50%).

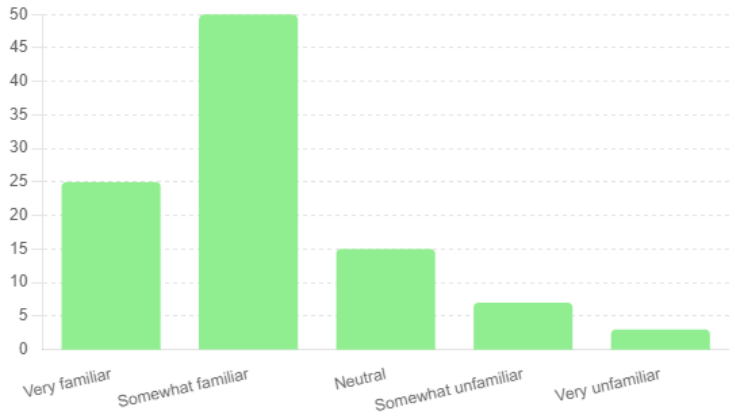



*Figure 4. Familiarity with AI Among Healthcare Professionals*

## Concerns About AI

### Healthcare Professionals:

- **Concerns:** Data privacy and security (40%), reliability of AI recommendations (35%), and ethical considerations (30%) were the main concerns.
- **Confidence in AI:** 25% were very confident in AI-driven diagnostic tools, and 50% were somewhat confident.

### Caregivers:

- **Concerns:** Data privacy and security (30%), reliability of AI recommendations (25%), and ethical considerations (20%) were key concerns.
- **Confidence in AI:** 20% were very confident in AI tools for treatment, and 50% were somewhat confident.

## Interest in AI Integration

### Healthcare Professionals and Caregivers:

- **Both groups expressed significant interest in integrating AI tools** in autism care, particularly for enhancing treatment consistency, progress tracking, and communication.

- **Features Valued in AI Platforms:** Enhanced data integration (55%), real-time monitoring and alerts (50%), and customizable treatment plans (45%).

Figure 5 illustrates the various advantages healthcare professionals and caregivers believe AI can bring to autism treatment. It shows that 55% of respondents perceive "Increased treatment accuracy" as the most significant benefit. Following this, 50% of respondents value "Personalized treatment plans," which highlight AI's potential to tailor interventions to individual needs. "Continuous monitoring and adjustment" is perceived as beneficial by 45% of respondents, allowing for real-time updates to treatment plans based on ongoing data. "Objective progress measurement," supported by 40% of respondents, emphasizes AI's ability to provide unbiased and precise tracking of treatment outcomes. Improved communication between sessions and enhanced engagement with the child are also notable benefits, recognized by 35% and 30% of respondents, respectively. Finally, 10% of respondents mentioned other benefits, showcasing a broad range of expectations from AI in enhancing autism treatment.

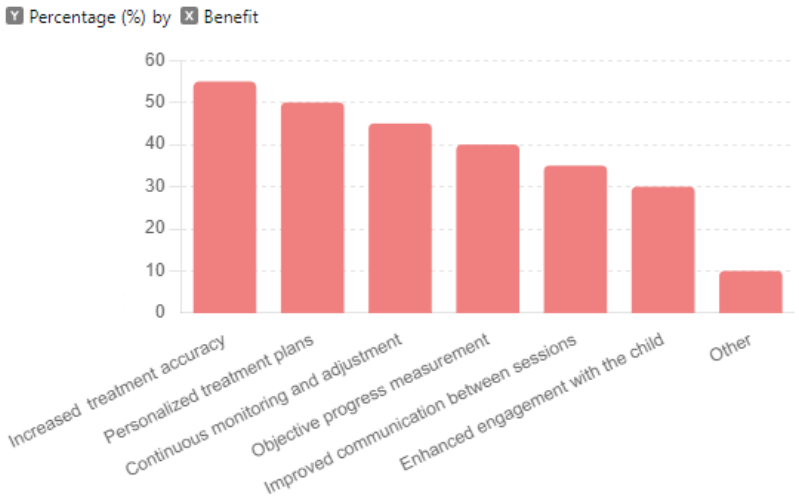



*Figure 5. Perceived Benefits Of AI*

# Conclusion

The survey results indicate a strong interest among healthcare professionals and caregivers in utilizing AI to improve autism care. This interest is driven by the recognition of several potential benefits that AI can bring to the field.

**Key Findings**

- **Increased Diagnostic Accuracy:** One of the most significant advantages of AI is its ability to enhance diagnostic accuracy. Traditional diagnostic methods for autism can be subjective and vary between practitioners. AI can analyze large datasets and identify patterns that might be missed by human eyes, leading to more consistent and accurate diagnoses. This can be particularly valuable in early detection, allowing for timely intervention and better outcomes for children with autism.

- **Personalized Treatment Plans:** AI has the capability to create highly personalized treatment plans by analyzing individual patient data, including medical history, therapy progress, and behavioral patterns. These personalized plans can adapt over time based on real-time data, ensuring that the treatment evolves with the patient's needs. This level of customization is difficult to achieve with traditional methods and can lead to more effective and efficient care.

- **Enhanced Communication:** Effective communication among healthcare providers, caregivers, and therapists is crucial for consistent and coordinated care. AI can facilitate better communication by integrating data from various sources and providing a unified view of the patient's treatment history. This can help ensure that all parties are informed and can make decisions based on comprehensive and up-to-date information. Additionally, AI can aid in bridging communication gaps between different sessions and practitioners, providing continuity in care that is often lacking.

**Addressing Concerns**

While the benefits are clear, there are also valid concerns that need to be addressed to gain broader acceptance of AI in autism care. These include:

- **Data Privacy and Security:** Participants expressed significant concerns about the privacy and security of data used by AI systems. To address this, it is essential to implement robust data protection measures, including encryption, secure storage, and strict access controls. Transparency in how data is used and ensuring compliance with regulations such as GDPR or HIPAA will be crucial in building trust among users.

- **Reliability of AI Recommendations:** There is apprehension about the reliability of AI-generated recommendations. Ensuring that AI systems are rigorously tested and validated against clinical standards can help alleviate these concerns. Continuous monitoring and updating of AI algorithms based on new data and feedback from users can further enhance reliability.

- **Ethical Considerations:** Ethical implications of using AI in healthcare, particularly in sensitive areas like autism care, need careful consideration. This includes addressing

biases in AI models, ensuring fair and equitable access to AI-driven tools, and maintaining the human element in care. AI should augment, not replace, the expertise of healthcare professionals.

**Path Forward**

- **Development of AI-Driven Solutions:** The findings from this survey provide a robust foundation for developing AI-driven solutions tailored to the needs of the autism care community. Collaboration between AI developers, healthcare professionals, and caregivers will be crucial in designing tools that are user-friendly, effective, and aligned with clinical workflows.

- **Pilot Programs and Studies:** Implementing pilot programs to test AI solutions in real-world settings can provide valuable insights and help refine these tools. Such programs should focus on measuring the impact of AI on diagnostic accuracy, treatment outcomes, and overall patient and caregiver satisfaction.

- **Education and Training:** Providing education and training for healthcare professionals and caregivers on the use of AI tools is essential for successful implementation. This includes not only technical training but also addressing any concerns and misconceptions about AI.

- **Feedback Mechanisms:** Establishing robust feedback mechanisms to gather continuous input from users can help improve AI tools and ensure they meet the evolving needs of the autism care community.

In conclusion, while there are challenges to be addressed, the potential benefits of AI in autism care are substantial. By leveraging AI, we can move towards more accurate diagnoses, personalized treatment plans, and better communication, ultimately improving the quality of life for individuals with autism and their families.