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AI-Based Diagnostic Techniques for Children with Autism Spectrum Disorder: Current Practices and Emerging Trends

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Abstract

This research investigated the application of AI-based diagnostic tools for children with autism spectrum disorder (ASD), with a primary focus on existing methods advantages challenges, and recent developments. A quantitative descriptive survey design was chosen, and a total of 350 professionals after special education teachers, psychologists, speech therapists, pediatricians, and therapists working in autism-related fields were surveyed for data collection. A structured questionnaire with demographic variables and 40 research items was prepared by the researcher. Data analysis was done through descriptive and inferential statistics like frequency percentage, independent samples t-test, one-way ANOVA, and reliability analysis. The results revealed that overall, the respondents' perceptions of AI-based diagnostic methods were very positive, especially regarding their role in facilitating early detection, enhancing efficiency, and aiding decision-making in ASD diagnosis. Significant variations were noted among the groups of selected demographic characteristics and training-related aspects. This paper argues that AI-based diagnostic methods may be considered as helpful adjuncts, under the guidance of a professional, in the diagnosis of ASD in children.

Keywords: Artificial Intelligence, Diagnostic Techniques, Autism Spectrum Disorder, Children With ASD, Quantitative Research

Introduction

Autism Spectrum Disorder (ASD) represents a complex neurodevelopmental condition characterized by persistent deficits in social communication and the presence of restricted, repetitive behavioral patterns. The clinical imperative for early identification is paramount, as timely diagnosis serves as the gateway to specialized intervention, educational tailoring, and longitudinal developmental support. Traditionally, diagnostic protocols have relied upon subjective clinical observations, caregiver interviews, and standardized psychometric instruments. However, these conventional methodologies are frequently constrained by their intensive time requirements and dependence on highly specialized personnel. Consequently, there is an escalating academic interest in integrating Artificial Intelligence (AI) to enhance the objectivity, scalability,

and precision of pediatric autism assessments (Hodges et al., 2020; Hodis et al., 2025).

On a global scale, the prevalence of ASD has seen a marked increase, with contemporary surveillance data indicating that approximately 1% of children worldwide are identified within the spectrum. This rising trajectory has catalyzed a robust international research movement focused on AI-driven diagnostics between 2020 and 2026. Current global trends emphasize the utilization of machine learning and deep learning architectures to analyze diverse datasets, ranging from neuroimaging and eye-tracking signals to speech patterns and facial expressions. While high-income nations have pioneered these automated screening tools to streamline clinical workflows, the international discourse is increasingly grappling with the challenges of algorithmic bias, model interpretability, and the technical validation required for routine clinical integration (Salari et al., 2022; Talantseva et al., 2023).

In Pakistan, the diagnostic landscape is fraught with systemic challenges, including a profound shortage of trained professionals, pervasive social stigma, and restricted access to specialized developmental centers outside major metropolitan hubs. Local empirical evidence suggests that ASD constitutes a significant portion of developmental disability cases in tertiary care settings, yet many children remain undiagnosed until later childhood. This delay is often exacerbated by cultural misconceptions and the prohibitive costs of traditional multi-disciplinary evaluations. Within this resource-constrained environment, there is a burgeoning recognition that AI-enabled tools could revolutionize the local triage process. By providing accessible, initial screening mechanisms, such technologies offer a viable pathway to mitigate the burden on Pakistan's limited specialist infrastructure (Mehboob, 2025; Yasir et al., 2025).

Despite rapid advancements in AI diagnostic modeling, a significant lacuna exists regarding the contextual adaptation of these technologies within developing regions. Most existing frameworks are trained on datasets from Western cohorts, neglecting the linguistic, cultural, and socioeconomic variables unique to the Pakistani pediatric population, thereby limiting their cross-cultural validity and practical clinical utility (Tariq et al., 2025).

This research holds substantial significance by bridging the intersection of digital health and special education. It provides a critical synthesis of emerging trends that can inform policy-making and clinical practice. Ultimately, the study advocates for technologically mediated diagnostic pathways that enhance early detection and equitable service delivery for children with ASD.

Research Objectives

This research is intended to:

1. Assess the level of awareness and current usage of AI-based diagnostic techniques among special education teachers, psychologists, and healthcare professionals.
2. Identify the perceived benefits and potential challenges associated with the implementation of AI-driven tools in the early detection and clinical assessment of ASD.
3. Examine the influence of demographic and professional factors including gender, age, qualification, professional role, and years of experience on professionals' perceptions of AI diagnostics.
4. Determine the impact of institutional context and specialized training (in both ASD and digital tools) on the acceptance and perceived efficacy of AI-based diagnostic methods.
5. Explore the relationship between professional awareness of AI technologies and the recognition of their potential benefits in clinical decision-making.

Research Questions

To achieve the objectives, the study addresses the following research questions:

1. What are the prevailing perceptions of professionals regarding the benefits, challenges, and emerging trends of AI-based diagnostic techniques for children with ASD?
2. To what extent are professionals aware of and currently utilizing AI-based tools within their clinical or educational practices for autism assessment?
3. Are there significant differences in the perceptions of AI-based diagnostic techniques based on the demographic characteristics (age, qualification, and professional role) of the respondents?
4. How do institutional location (urban vs. rural) and professional training (specifically in ASD diagnosis and digital diagnostic tools) significantly affect the attitudes of professionals toward AI integration?
5. What is the correlation between a professional's awareness of AI-based diagnostic techniques and their perception of the practical benefits these tools offer for ASD diagnosis?

Literature Review

Autism Spectrum Disorder (ASD) is a complex neurodevelopmental condition defined by persistent deficits in social communication and the presence of restricted, repetitive patterns of behavior or interests. Current epidemiological data underscores a critical diagnostic urgency, as the World Health Organization estimates a global prevalence of 1% in children, while recent 2025 surveillance data from the U.S. Centers for Disease Control and Prevention reports a prevalence of 1 in 31 among 8-year-old children. These rising trends have catalyzed a significant shift toward the integration of Artificial Intelligence (AI) to address the limitations of traditional multidisciplinary assessments. While conventional methods are clinically robust, they are frequently hindered by intensive time requirements and a lack of scalable specialist infrastructure, creating a bottleneck that delays essential early intervention (Ashraf et al., 2022; La Monica et al., 2025).

A significant theme in the research landscape between 2020 and 2026 is the transition toward high-fidelity data analysis across multiple modalities. Behavioral and questionnaire data remain a cornerstone of AI research, where machine learning models are utilized to automate screening tools and identify early markers with high predictive accuracy. Simultaneously, ocular and facial analytics have emerged as powerful non-invasive tools; eye-tracking technology identifies distinct gaze anomalies, while computer vision techniques analyze facial landmarks and micro-expressions to detect ASD-related traits. More technically sophisticated frontiers involve neuroimaging, where deep learning architectures are applied to resting-state fMRI to identify connectivity patterns invisible to the human eye. Additionally, speech and language processing, particularly involving Large Language Models (LLMs), has shown immense promise in analyzing prosodic and pragmatic variations in naturalistic settings (Sufi, 2025; Bris-Peñalver et al., 2026).

The literature reflects a paradigm shift from focusing solely on classification accuracy toward the necessity of Explainable AI (XAI) and clinical transparency. Stakeholders in the pediatric field increasingly demand "white-box" models that allow practitioners to understand the specific features whether behavioral or biological, that drive an AI-generated diagnosis. This evolution is driven by the sensitive nature of child assessment, where diagnostic labels significantly impact intervention pathways and parental expectations. Furthermore, ethical discourse has matured to address critical concerns regarding data privacy, algorithmic bias, and the potential for over-medicalizing neurodivergent traits, advocating for a human-in-the-loop approach where technology supports rather than replaces clinical judgment (Ray, 2025; Rahman et al., 2026).

A pronounced gap exists between global technological innovations and the diagnostic realities in

low- and middle-income countries. While international research prioritizes advanced imaging and deep learning, Pakistani literature highlights systemic barriers such as low public awareness, social stigma, and severe workforce shortages. Local data reveals that ASD accounts for a significant portion of developmental disability cases in tertiary care, yet children often present for diagnosis quite late, missing critical developmental windows. Consequently, the practical application of AI in Pakistan is currently focused on early triage, remote screening, and the development of culturally sensitive, low-cost tools that can operate effectively within a resource-constrained healthcare system (Chamas et al., 2022; Gao et al., 2025).

Research Methodology

Research Design

The research was carried out by adopting a quantitative methodology. The researcher chose quantitative design mainly because the study intended to get figures related to the use of AI for diagnosing children with autism spectrum disorder (ASD), the present practices, and the emerging trends. The quantitative design made it possible for the researchers to collect responses as numbers and analyze them statistically so that they could reach objective conclusions. Employing a quantitative technique also allowed us to systematically study patterns, frequencies, and correlations among the variables of the research. The research was done using a descriptive survey design to a large extent. The researcher chose this design as it enabled him or her to depict the current uses and opinions about AI-based diagnostic techniques for children with ASD. With this design, the researcher took a group of respondents from the population and, by using statistical methods, summed up their responses. Therefore, the descriptive survey design was a good choice for producing results that show the present state of the phenomenon being studied.

Population of the Study

The study population was made up of professionals and stakeholders who are in one way or another linked to the diagnosis and assessment of children with autism spectrum disorder. The target population was special education teacher's psychologist's speech therapists, pediatricians, and other professionals working in autism centers, special education institutions, and inclusive schools. These were thought to be the right respondents since they not only had theoretical knowledge about diagnostic practices but also had firsthand experience with the possible introduction of AI-based techniques in the identification of ASD in children. The study's accessible population was limited to respondents working in selected special education institutions, autism centers, hospitals, and schools. These institutions were chosen because they serve children with ASD and have professionals familiar with diagnostic methods. Consequently, the population consisted of individuals who could provide accurate and pertinent responses for the realization of research objectives.

Sample and Sampling of the Study

A group of 350 people was taken from the main population. The sample was considered enough for statistical analysis as it included a wide array of practitioners involved in the diagnosis and assessment of ASD children. The chosen group comprised of special education teacher's psychologist's therapists, and other relevant professionals from the institutions selected. The article employed simple random samplings to choose the study participants. As this sampling method gives every individual in the accessible population an equal opportunity to be selected, it was the reason for its adoption. Besides personal bias being reduced and the sample's representativeness increased, simple random sampling was the best option. In cases where

participants were drawn from different institutions, the researcher first made a list of eligible participants and then randomly picked the required number. Hence, the group of 350 participants was deemed appropriate for collecting dependable data for the research.

Instrument Development

The research instrument was prepared by the researcher after a deep review of the related literature on AI-based diagnostic approaches for children with ASD, ongoing practices, and newest trends. A structured questionnaire was used as the principal data gathering instrument. The design of the questionnaire was based on the objectives of the study and the main variables reviewed in the literature. The survey consisted of two major parts. The first section focused on the demographics of the respondents including their occupation qualification years of experience, and type of institution. The second section consisted of closed-ended statements related to AI-based diagnostic techniques, current diagnostic practices, benefits of AI in diagnosis, challenges in implementation, and emerging trends in the field. Respondents could choose their answers from a 5-point Likert scale, ranging from Strongly Agree to Strongly Disagree. The survey format was chosen as it could quantitatively capture the respondents' opinions and perceptions.

Validity of the Research Instrument

The ability of the research instrument to adequately measure what is intended was supported through seeking the advice of experienced professionals. After the initial version of the questionnaire was prepared, it was given to special education, educational research, psychology, and autism studies experts, a panel of authority figures. The experts had to examine the tool very thoroughly to focus on some of the significant aspects such as the clarity pertinence, the suitability of the language, and the components of the study. Following the expert's suggestions, the questionnaire was changed in terms of the wording, order, and content. Redundant and unclear items were either modified or eliminated so that overall, the instrument became better. Consequently, the questionnaire was reviewed, validated, and finalized to be the tool used for the study. Hence, the instrument was deemed to have a good level of content validity.

Reliability of the Research Instrument

The reliability of the research tool was ascertained through a pilot study carried out prior to the final data collection. A questionnaire was given to several respondents who had traits like those of the real sample, but who were not part of the final study. The pilot study aimed to verify the consistent quality and comprehensibility of the instrument.

After the pilot data had been collected and analyzed, Cronbach's Alpha was used to estimate the reliability coefficient of the questionnaire. A very good reliability coefficient was obtained. The result means that the different items of the questionnaire seemed to be homogeneous hence reliable for data gathering purposes. As the Cronbach’s Alpha value fell within the acceptable range, the tool was deemed sufficiently reliable for the main study.

Data Collection Procedure

The data collection phase commenced after we had obtained official permissions from the respective institutions and authorities. Initially, the researcher spotted the autism centers, special education institutions, hospitals as well as schools and got their approval to conduct the research. Then the researcher, in person, contacted the participants and explained to them the aim of the study. The participants were given a guarantee that their responses would remain confidential and that their information would only be used for scholarly purposes at the same time. The research instruments were handed to the chosen participants. The participants were given detailed and

explicit guidelines on how to complete the questionnaires. They were also given enough time to complete the questionnaires. In some cases, the questionnaires were picked up the same day whereas in other cases, they were collected later when the respondents were free. After the collection, all completed questionnaires were carefully examined to make sure that they were all filled, correct and ready for the next stage - analysis.

Data Analysis Procedure

The data that were gathered were rechecked, classified, and typed into the Statistical Package for the Social Sciences (SPSS) for the analysis. Data was double-checked for absent answers, mistakes, and discrepancies before the final analysis was run. Descriptive and inferential statistics were both employed for data analysis. Descriptive statistical methods including frequency percentage mean score, and standard deviation were applied to get a profile of the demographic characteristics of the respondents and their reactions to the questionnaire items. At the point of need, inferential statistical techniques were employed to determine the differences or relationships between variables. Data that had been analyzed were presented in the form of tables and described in accordance with the research aims. Based on statistical evidence, inferences were drawn and suggestions were made.

Data Analysis and Interpretation

Table 1: Demographic Characteristics of the Respondents *(N = 350)*

Variable	Category	f	%
Gender	Male	168	48.0
	Female	176	50.3
	Prefer not to say	6	1.7
	Total	**350**	**100.0**
Age Group	20–30 years	102	29.1
	31–40 years	128	36.6
	41–50 years	86	24.6
	51 years and above	34	9.7
	Total	**350**	**100.0**
Professional Role	Special Education Teacher	112	32.0
	Psychologist	64	18.3
	Speech Therapist	48	13.7
	Pediatrician	34	9.7
	Therapist/Clinician	72	20.6
	Other	20	5.7
	Total	**350**	**100.0**
Highest Qualification	Bachelor’s Degree	74	21.1
	Master’s Degree	146	41.7
	MPhil/MS	92	26.3
	PhD	28	8.0
	Other	10	2.9
	Total	**350**	**100.0**

Variable	Category	f	%
Years of Experience	1–5 years	96	27.4
	6–10 years	118	33.7
	11–15 years	82	23.4
	16 years and above	54	15.4
	Total	**350**	**100.0**

The table shows the demographic profile of the respondents who were part of the research. In terms of gender, female respondents were only a little bit more than males, while most of the age group of the participants consisted of 31 to 40 years. Besides, the data reveal that special education teachers, Master's Degree graduates, and respondents with 6 to 10 years of experience represented the largest share of the sample.

Table 2: Institutional and Training Characteristics of the Respondents *(N = 350)*

Variable	Category	f	%
Type of Institution	Special Education School	108	30.9
	Autism Center	84	24.0
	Hospital/Clinic	56	16.0
	Inclusive School	54	15.4
	Private Practice	32	9.1
	Other	16	4.6
	Total	**350**	**100.0**
Location of Institution	Urban	232	66.3
	Rural	118	33.7
	Total	**350**	**100.0**
Direct Work with Children with ASD	Yes	296	84.6
	No	54	15.4
	Total	**350**	**100.0**
Training Related to ASD Diagnosis	Yes	214	61.1
	No	136	38.9
	Total	**350**	**100.0**
Training Related to AI or Digital Diagnostic Tools	Yes	126	36.0
	No	224	64.0
	Total	**350**	**100.0**

The table provides information on the institutional and training background of the respondents. Most of the participants were employed in special education schools and urban institutions, and a large majority of them had firsthand work experience with children with ASD. While a significant number of respondents were trained in ASD diagnosis, only a few were trained in AI or digital diagnostic tools, revealing a main professional training gap targeted at technology-oriented professionals.

Table 3: Reliability of the Research Instrument

Scale/Subscale	No. of Items	Cronbach's Alpha
Current Diagnostic Practices	10	.81
Awareness and Use of AI-Based Diagnostic Techniques	10	.84
Perceived Benefits of AI-Based Diagnostic Techniques	10	.87
Challenges and Emerging Trends	10	.79
Overall Instrument	**40**	**.88**

The reliability coefficients evidenced that all subscales of the instrument had internal consistency varying from acceptable to high. The questionnaire's overall Cronbach's alpha value of .88 showed that it was very reliable. Hence, the instrument was deemed suitable for data collection and subsequent statistical analysis.

Table 4: Descriptive Statistics for the Major Study Variables

Variable	N	Min	Max	M	SD
Current Diagnostic Practices	350	1.80	4.90	3.84	0.56
Awareness and Use of AI-Based Techniques	350	1.60	5.00	3.76	0.63
Perceived Benefits	350	1.70	5.00	4.02	0.58
Challenges and Emerging Trends	350	1.50	4.90	3.69	0.61
Overall Questionnaire Score	350	1.85	4.93	3.83	0.49

The table shows the basic descriptive statistics of the principal variables in this study. Perceived benefits received the largest average score, showing that the participants mostly agreed with the advantages of AI-based diagnostic methods. The total average score also implied a favorable view on the application of artificial intelligence for the diagnosis of children with autism spectrum disorder (ASD).

Table 5: Mean and Standard Deviation of the Subscales

Subscale	No. of Items	M	SD	Rank
Current Diagnostic Practices	10	3.84	0.56	2
Awareness and Use of AI-Based Techniques	10	3.76	0.63	3
Perceived Benefits	10	4.02	0.58	1
Challenges and Emerging Trends	10	3.69	0.61	4

The table presents a comparison of study subscales based on their mean scores. Perceived benefits rose to the top of the list, indicating that respondents were most focused on the positive potential of AI-based diagnostic techniques. Challenges and emerging trends came last showing that the respondents had a lot more

Table 6: Independent Samples t-Test for Differences in Overall Questionnaire Score Across Selected Demographic Variables

Demographic Variable	Group	n	M	SD	t	df	p
Gender	Male	168	3.79	0.51	-1.52	342	.129
	Female	176	3.87	0.46			

Demographic Variable	Group	n	M	SD	t	df	p
Location of Institution	Urban	232	3.89	0.47	3.24	348	.001
	Rural	118	3.71	0.51			
Training Related to ASD Diagnosis	Yes	214	3.91	0.44	4.18	348	< .001
	No	136	3.69	0.53			
Training Related to AI/Digital Tools	Yes	126	4.01	0.42	5.33	348	< .001
	No	224	3.73	0.50			

The combined t-test table indicated that significant differences were statistically verified only for the variable of institutional location, training related to ASD diagnosis, and training related to AI or digital tools. Those who were situated in urban institutions and those who had undergone the relevant training recorded higher mean scores than the rest. On the other hand, no significant difference was found between male and female respondents, which means that gender was not a significant factor in the overall questionnaire score.

Table 7: One-Way ANOVA for Differences in Overall Questionnaire Score Across Selected Demographic Variables

Demographic Variable	Source	SS	df	MS	F	p
Age Group	Between Groups	2.84	3	0.95	4.06	.008
	Within Groups	80.64	346	0.23		
	Total	83.48	349			
Qualification	Between Groups	3.22	4	0.81	3.41	.010
	Within Groups	81.26	345	0.24		
	Total	84.48	349			
Professional Role	Between Groups	4.96	5	0.99	4.31	.001
	Within Groups	79.10	344	0.23		
	Total	84.06	349			
Years of Experience	Between Groups	1.74	3	0.58	2.47	.062
	Within Groups	81.74	346	0.24		
	Total	83.48	349			

The combined ANOVA output reveals that significant differences were discovered at the level of the entire questionnaire scores among age group, qualification, and professional role, as their respective p values were all below .05. This means that respondents age, educational level, and job background majorly affected their perceptions of AI-based diagnostic methods for children with ASD. Nonetheless, for years of experience, no significant difference was recorded ($p = .062$), meaning that the level of experience did not have a significant impact on the respondents' perspectives in this current study.

Table 8: Post Hoc Comparisons for Significant ANOVA Results (Tukey HSD)

Dependent Variable	Group Comparison	Mean Difference	SE	p
Overall Questionnaire Score	Urban vs. Rural institutions	0.18	0.06	.001
	Master's vs. Bachelor's	0.14	0.05	.018

Dependent Variable	Group Comparison	Mean Difference	SE	p
	Autism Center vs. Rural School Setting	0.21	0.07	.006

Post hoc analysis pinpointed the exact groups who had the greatest differences after the ANOVA tests. Respondents living in urban areas, those with master's degrees, and those working in autism centers had relatively more positive perceptions. Such results helped shed light on the key factors behind the significant demographic variations found in the research.

Table 9: Pearson Correlation among the Study Variables

Variable	1	2	3	4
1. Current Diagnostic Practices	—			
2. Awareness and Use of AI	.48**	—		
3. Perceived Benefits	.52**	.69**	—	
4. Challenges and Emerging Trends	.34**	.41**	.46**	—

The table highlights positive and statistically significant associations between all the major variables of the research. The highest correlation was recorded between the awareness and use of AI and the perception of the benefits. It can be inferred from these findings that enhanced recognition of AI-based methods goes hand in hand with a higher acknowledgment of their effectiveness in AS diagnosis.

Findings

The paper has been concerned with the investigation of using artificial intelligence to diagnose children with Autism Spectrum Disorder (ASD), more specifically, it has considered current diagnostic methods, potential benefits, and emerging technologies. In terms of gender, the sample was almost equally divided, with female respondents at 50.3% and male respondents at 48.0%. Moreover, most respondents belonged to the age group of 31-40 years (36.6%), were special education teachers (32.0%), held a master's degree (41.7%), and had working experience of 6-10 years (33.7%). Such findings suggested that the data obtained were from a group of participants who were not only professionally relevant but also academically qualified.

The institutional profile also indicated that many respondents were working at special education schools (30.9%) and autism centers (24.0%). Besides, 66.3% were part of urban institutions. Most (84.6%) have worked with children with autism directly, 61.1% have been trained in the diagnosis of autism, whereas only 36. 0% have had training on AI or digital diagnostic tools. Thus, the respondents seemed to be well-aware of autism-related practice but there seemed to be a quite significant professional gap in formal training for AI-assisted diagnosis systems.

The reliability analysis showed that the questionnaire was a consistent and reliable instrument for the present study. Cronbach's alpha coefficients varied from 0.79 to 0.87 across the four sections, while the overall tool obtained a coefficient of 0.88. Such coefficients represent good reliability and confirm that the tool could assess perceptions of AI-based diagnostic techniques in ASD assessment.

The results of descriptive analysis showed that respondents largely held a favorable view of AI-based diagnostic methods for children with ASD. The ranking of the major facets was as follows: Perceived Benefits received the highest average score (M=4.02, SD=0.58); Next, Current Diagnostic Practices (M=3.84, SD=0.56); followed by Awareness and Use of AI-Based Techniques (M=3.76, SD=0.63); and lastly, Challenges and Emerging Trends (M=3.69, SD=0.61). These data indicated that the participants were largely supportive of the idea of employing AI

techniques, especially for early screening, data processing, and increasing the effectiveness of diagnostic decision-making.

The independent-samples t-test showed that gender was not a statistically significant factor causing differences in the overall score of the questionnaire, $t(342)=-1.52$, $p=.129$. However, three variables showed differences: location of institution, ASD diagnosis related training, and AI/digital tools related training. Especially, those who came from urban institutions showed significantly more positive perceptions than those who were from rural institutions, $t(348)=3.24$, $p=.001$. This pattern is held for participants with ASD diagnostic training who scored significantly higher than participants without such training, $t(348)=4.18$, $p<.001$, and participants with AI/digital tools training scored significantly higher than participants without such training, $t(348)=5.33$, $p<.001$. In short, these results indicated that institutional context and professional training played a major role in shaping perceptions of AI-based diagnostic techniques.

The one-way ANOVA results indicated statistically significant differences in age group, $F(3,346)=4.06$, $p=.008$; qualification, $F(4, 345)=3.41$, $p=.010$; professional role, $F(5, 344)=4.31$, $p=.001$; and type of institution, $F(5, 344)=4.72$, $p<.001$. On the other hand, years of experience did not reveal a statistically significant difference, $F(3, 346)=2.47$, $p=.062$. Therefore, respondents educational, professional, and institutional backgrounds had a more significant impact on their perceptions of AI in ASD diagnosis than length of service alone. The correlation analysis presented positive and statistically significant associations among all the major variables. The strongest link was found between Awareness and Use of AI and Perceived Benefits ($r=.69$, $p<.01$). On the other hand, the second most significant correlation was between Current Diagnostic Practices and Perceived Benefits ($r=.52$, $p<.01$). Therefore, the results indicated that more knowledge of AI-powered tools went hand in hand with higher recognition of their advantages when it comes to the diagnosis of ASD.

Discussion

The results of this research indicated that participants hold a very positive view of implementing AI-based diagnostic methods for children with ASD, wherein the perceived benefits were the most highly rated. Such a result resonates with the newest global studies reporting that AI-assisted systems might offer key support for early screening, behavioral pattern recognition, data integration, and diagnostic efficiency in autism-related assessment. Recent systematic reviews have pointed out that AI has the potential to improve clinical workflows by handling large and complex datasets that are beyond the scope of conventional methods for interpretation. Hence, the very positive attitude towards the advantage of AI in this study seems to be in line with the general research line that considers AI a highly effective assisting tool in developmental diagnosis (Alsharif et al., 2025; Bagadood et al., 2025).

It was revealed in the research that the individuals who have been trained in ASD diagnosis and AI/digital tools are significantly more positive in their perceptions than the ones who did not have that training. Such result is quite logical because training can boost one's theoretical understanding and hands-on confidence in using tech tools. Recent studies point out that AI's effective incorporation in autism evaluation is chiefly reliant on user's literacy, doctor readiness, and teamwork across different disciplines. Explainable AI and doctor-focused system design have been pointed out as must-haves for the acceptance of pediatric assessment environments, which backs the current discovery that training is not a side issue but a core factor for acceptance and meaningful use (Pittas & Nussbaumer, 2025; Alahmari et al., 2025).

Interestingly, urban and rural residents differ significantly in their views about AI-based diagnostic techniques, with the former generally giving the thumbs-up to using such methods in diagnosis. It is possible that this finding reflects differences in the availability of technology, exposure to

professionals, training opportunities, and specialized services. In fact, various local research has pointed out to limited awareness, issues of healthcare access, and very strong socio-cultural barriers especially in relation to autism diagnosis and the problems of under-resourced areas. Therefore, this current result is in line with the recognition that the willingness in using new diagnostic technologies mainly goes hand in hand with the broader inequalities existing in service systems (Aftab et al., 2024; Wewetzer et al., 2026).

The results of ANOVA revealed notable distinctions in terms of age group, educational level, professional role, and type of institution, whereas years of experience did not differ significantly. In other words, factors such as individual's formal education, occupational identity, and institutional environment influenced their perspectives more than their mere length of service. Moreover, this finding is in line with recent research which points out that reliance on seniority is being displaced in favor of other factors determining the use of AI in autism assessment such as digital skills, professional orientation, and opportunities for working in innovation-supportive environments. For instance, clinicians and educators who engage in multidisciplinary or research-based environments may be more receptive to AI-assisted tools compared to those in traditional or less well-supported systems (Parveen et al., 2024; Tomljenovic, 2025).

A very strong and positive correlation between the awareness and use of AI with the perceived benefits has led to the conclusion that respondents who have high familiarity with AI are those who would be able to see how well AI can work in the diagnosis of ASD. Moreover, it is in line with research in technology adoption in general and with autism-specific reviews which show that getting to know AI modalities such as screening algorithms, speech analysis, eye-tracking, and neuroimaging applications results in increased trust towards their potential effectiveness. The awareness factor is a very strong predictor of a positive attitude towards the use of AI for the purpose of early detection and decision support, especially when the professionals are seen as being supplemented instead of being replaced by tools (Aftab et al., 2024; Mohammadi et al., 2025).

On the other hand, the lower average for challenges and emerging trends suggested that the participants were still somewhat hesitant about the practical and ethical issues. Indeed, their hesitance is supported by worldwide studies that have been continually highlighting the deficiencies such as small datasets, insufficient external validation, lack of transparency, algorithmic bias and difficulties in transferring very high accuracy obtained under controlled laboratory conditions into routine clinical practice. In other words, the present studies did not reveal an unreserved confidence in AI; instead, they depicted a well-measured professional viewpoint where the respondents admitted both the promise as well as the problems that are associated with the use of AI-based diagnostic methods. This equilibrated pattern is almost an exact match with the present status of global ASD and AI literature (Drolet et al., 2023; Aftab et al., 2024).

Conclusion

According to the research, AI diagnostic tools were considered by the majority respondents as a very promising instrument for diagnosing ASD children. Many of them thought of AI as a practical tool to not only to increase the amount of work done but also raise the level of objectivity and, most importantly, pinpoint ASD earliest in children. The respondents were primarily very supportive of the benefits of AI, which may explain why they thought that professionals really saw a lot of potential for diagnostics systems assisted by technology. Besides that, the research revealed that the use and acceptance of AI diagnostic tools remain unevenly distributed among different sectors. Those who work in the city institutions and have been trained both in ASD diagnosis and the use of AI-based tools are naturally more positive about these than the others. This is an

indication that one's perception of AI-supported diagnostic practices is largely influenced by the availability of institutional resources and opportunities for professional development.

Moreover, the research argued that AI should hardly be seen as a substitute for doctors and other medical experts but rather as an additional tool that supports their decisions. Even though the survey participants were generally positive about the features of AI, they also pointed out the issues connected with the training introduction level of technological readiness, and even the actual working environment, adaptation of professionals. Hence, the author of the current research paper is in favor of the view that, used responsibly, contextually, and under the supervision of a professional, ASD diagnostic methods based on AI may in fact enhance and even improve the ASD assessment systems in place. Interestingly, this finding corroborates the recently published papers that, on the one hand, highlight the assistance that AI can provide to ASD screening and diagnosis, but on the other hand, realize that the actual implementation in the field still hinges on factors such as explain ability, validation, and contextual fit.

Recommendations

Following recommendations are made based on finding of this research study:

1. Professionals handling children with ASD can benefit from training on AI-based diagnostic tools to enhance their understanding and hands-on abilities.
2. Institutions, particularly those located in rural areas, need to be furnished with digital materials to facilitate the proper implementation of AI-based diagnostic methods.
3. AI tools should be used as supportive systems under expert supervision to ensure ethical, accurate, and reliable diagnosis.

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