

Review Article

Screening tools interventions and strategies for early identification and management of autism spectrum disorders

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ABSTRACT

Autism spectrum disorder is a neurodevelopmental disorder marked by social communication difficulties, restricted interests, and repetitive activities. Both genetic and environmental variables impacting the growing brain influence it. Around the world, 1 in 100 children is identified with autism spectrum disorder. Estimates of prevalence have increased over time and varied significantly inside and across sociodemographic groups. Autism spectrum disorder is a prevalent neurodevelopmental condition that significantly shortens life expectancy. Early diagnosis on a community level is a critical public health concern since mounting evidence shows that early diagnosis makes functional gains and has better outcomes. In healthcare settings, autism spectrum disorder screening tools can be utilized to precisely confirm the diagnosis of autism. The American Academy of Pediatrics recommends screening for ASDs between ages 18 and 24 months, although recent research indicates that abnormal behaviours may be visible in certain children even earlier. The checklist for autism in toddlers, the modified checklist for autism in toddlers, the psychological development questionnaire-1, and the autism behaviour checklist are some of the commonly used screening tools in practice for the diagnosis of autism spectrum disorder. The majority of interventions are non-pharmacological and depend on behavioural modification strategies. Pharmacological therapy should only be used to treat target symptoms that are resistant to behavioural treatment. Although there is no cure, prompt and suitable intervention can dramatically raise the quality of life for children. The purpose of this research is to review the screening tools, interventions, and strategies for early identification and management of autism spectrum disorder.

Keywords: Autism, Spectrum, Disorder, Children, Screening

INTRODUCTION

Neurodevelopmental disorders referred to as autism spectrum disorders (ASDs) are characterized by limited areas of interest and impaired social communication abilities.¹ Asperger's syndrome, autism, and pervasive developmental disorder not otherwise specified are all included in the ASD group of neurodevelopmental disorders.² Persistent deficiencies in social communication or engagement and confined, repetitive patterns of behaviour and aberrant sensory responses are major presentations of autism. The magnitude of such symptoms varies greatly from patient to patient, resulting in a wide range of clinical manifestations. ASD commonly appears throughout childhood, with symptoms appearing as early as 18 months of age. However, due to the wide range of clinical symptoms, ASD diagnosis remains a challenge. Diagnosis involves both parental and caregiver awareness to recognize indicators and a multidisciplinary medical and paramedical team assessment to confirm signs.³ Around the world, 1 in 100 children is identified with autism. Estimates of prevalence have increased over time and varied significantly inside and across socio-demographic groups.⁴

Early identification and intervention can significantly improve the developmental outcomes for children with ASD, as well as the well-being of their parents, by resolving anxieties and easing the stress imposed by untreated ASD and co-morbid behavioural issues. The American Academy of Pediatrics recommends screening for ASDs between ages 18 and 24 months, although recent research indicates that abnormal behaviours may be visible in certain children even earlier. Over the past ten years, significant progress has been achieved in defining the ASD phenotype within the first two years of life, laying the groundwork for an early diagnosis. Furthermore, related developments in intervention research have made it possible for early diagnosis to result in significantly better outcomes.⁵

Developmental delay and ASDs severely limit a child's ability to develop without help. Children who require more evaluation or assistance might be recognized by monitoring their development using screening tools. To detect children with ASD or developmental delay, screening has been strongly advocated, and the literature suggests a wide range of screening tools. However, universal agreement on the most effective tools is still lacking. Screening tools are brief assessments or questionnaires used to identify children who may be at risk for a developmental disorder like autism.⁶ The primary objectives of treatment are to minimize the core characteristics of ASD, promote development and learning, encourage socialization, lessen maladaptive behaviours, educate and support families, and ultimately maximize the child's functional independence and quality of life.⁷ The purpose of this research is to review the screening tools interventions and strategies for early identification and management of ASD.

METHODS

This study is based on a comprehensive literature search conducted on August 24, 2023, in the PubMed, Web of Science, Science Direct, and Cochrane databases, utilizing the medical topic headings (MeSH) and a combination of all available related terms, according to the database. To prevent missing any possible research, a manual search for publications was conducted through Google Scholar, using the reference lists of the previously listed papers as a starting point. We looked for valuable information in papers that discussed information about screening tools, interventions, and strategies for early identification and management of autism spectrum disorders. There were no restrictions on date, language, participant age, or type of publication.

DISCUSSION

ASD diagnosis is an extended, multi-step process that evaluates a child's functioning on diverse levels and assesses for pre-existing illnesses. Parents, guardians, or other adults who often interact with children should start by observing the child. Additionally, it's important to rule out any conditions that could be causing ASD-like symptoms. This necessitates talks with various experts, such as audiologists, laryngologists, and geneticists. The final phase involves a team of professional's psychiatrists, psychologists, special educators, or speech therapists making a final diagnosis.⁸ In the early identification of ASD, family physicians play an essential role. Along with performing developmental evaluations of healthy children, they should also proactively screen for ASD when children visit clinics for immediate issues and pay heed to any worries voiced by guardians. Assess for delayed non-verbal developmental milestones such as no waving, pointing, eye contact, or spontaneous sharing by 12–18 months and poor social interaction such as a lack of interest in other children when screening for ASD in very young children. Refer the child as soon as possible to the appropriate specialized centres if ASD is detected. Children with ASD may benefit from early therapies that have been found to enhance functional outcomes. With continuing help, people with ASD can develop into useful members of society.⁹

Early identification and screening tools

Early in infancy, when developmental changes are rapid and symptoms are frequently modest, it can be difficult to diagnose ASD. Nevertheless, an early diagnosis is a crucial first step in implementing successful therapy tailored to the child's needs at a crucial juncture in development. The younger the child is at the time of the ASD diagnosis, the better the therapy's outcomes. Many screening tools have been devised to aid physicians in making an early diagnosis of ASD, and their proponents tout them as some of the most advantageous health policy improvements ever made for children with ASD. However, the cost-effectiveness, time-taking process, and poor psychometric

qualities of the tests, particularly in very young children, of ASD screening are criticized. The use of screening tools during routine medical visits, as opposed to solely relying on clinical impressions, may enable earlier and more precise identification of children who need additional support. This is crucial when providers lack experience in diagnosing ASD. One of the main therapeutic issues is the very early diagnosis of the youngest children because the efficacy of diagnosing ASD using various questionnaires grows with age. Later in life, developmental follow-up is crucial for such patients, for whom screening is linked to tests with poor psychometric qualities.¹⁰

Children at risk for autism should be identified through screening to promote parent-provider discussions and further examination, which will result in earlier identification and better results. Although there are benefits to using screening tools created in the exact culture and language in which they will be used, the development of such measures necessitates a significant investment of time and resources. As a result, there is an increase in tool adaptation and use in various cultural and linguistic contexts.¹¹ Results of a systematic review reported that there is evidence for ASD screening strategies to identify children aged 16 to 40 months with moderate to high positive predictive values.¹² Findings of another systematic review concluded that these screening tools may help distinguish ASD from other neurodevelopmental and psychiatric illnesses as well as children who are usually growing.¹³

Checklist for Autism in Toddlers (CHAT) was designed to detect ASD in children as young as 18 months through parent reports and professional observation of early warning signs such as lack of pointing and pretend play, among other signs.¹⁴

The Modified Checklist for Autism in Toddlers (M-CHAT) is a parent-completed questionnaire used to identify children between the ages of 16 and 30 months who may be diagnosed with ASD. Researchers have examined the psychometric properties of the M-CHAT, Revised with Follow-Up [M-CHAT-R/F], which has gone through form and content revisions and reduced the number of questions from the original 23 (M-CHAT) to 20, with additional items serving as follow-up questions for screen failures. This instrument has been studied internationally and translated into a number of languages.¹²

The Communication and Symbolic Behaviour Scale Developmental Profile, a more comprehensive assessment approach, includes the Infant Toddler Checklist (ITC) as a communication and broad developmental screener. The ITC has been researched about the detection of ASD but was not created as a standalone screener for ASD. The ITC is a 24-item questionnaire with a general inquiry on the presence of concerns that covers various social communication milestones. For children under 24 months old, cutoff scores are known from normative samples.¹⁵

The Psychological development questionnaire-1 (PDQ-1) is a 10-item questionnaire that mostly reflects parents' assessments of the communication and social orientation skills of their child. The developers of the measure only assessed it in one study that is currently known because it was only created in 2018. This study had a good sample size and was of high quality. The PDQ-1 demonstrated extremely excellent psychometric qualities, with high sensitivity and high specificity, particularly among children between 31 and 36 months.¹⁶

The Autism behaviour checklist (ABC) is a widely used ASD screening tool with a rating scale that was created in an effort to detect autistic children. A questionnaire with 57 items is provided by the ABC to parents and teachers of children between the ages of 12 and 14 months to document the symptoms related to the child's behaviour. These are grouped under five subscales: social and adoption behaviour, object use behaviour, body language, communication and language skills, and sensory behaviour. The ABC primarily consists of questions with scores ranging from 1-4 depending on the severity of the child's mental or behavioural disability and based on the responses provided by the child's parents, teachers, or care providers. The outcome is then examined by qualified experts. The early stage of treatment involves using measures to differentiate the child's condition from autism and other neurodevelopmental diseases, including obsessive-compulsive disorders. Following confirmation of the child's autism, more assessments are performed to determine the child's developmental needs.¹⁷

Sappok et al commented that different screening tools generate information in different ways. The majority of screening instruments, like the M-CHAT, are made in the form of affordable, easily-used questionnaires that rely on the ratings of close relatives or other people who are familiar with the subject's regular behaviours. Other measurements, like the scale for pervasive developmental disorders in individuals with mental retardation, involve brief diagnostic interviews with a parent/caregiver that are administered by a qualified professional and evaluate the subject's pertinent behaviours in scenarios encountered in daily life. Last but not least, observational tools like the childhood autism rating scale rely on actions prompted by the assessor during semi-structured interactional scenarios. When comparing various screening measures, these methodological differences must be taken into account.¹⁸

Management

Numerous alternative psychosocial therapies have been developed to address both the primary symptoms of ASD and its comorbid symptoms. A form of therapy referred to as applied behaviour analysis is based on the theories of operant conditioning and learning. The repetition of learning trials is a crucial element, and it includes precise intervention aims along with positive reinforcement. Pivotal response treatment, a treatment that employs a more naturalistic behavioural approach and focuses on

both specific abilities and motives, is another intervention that has shown some promise in addressing the main symptoms of ASD. Interventions for social skills have also been researched, although typically as parts of additional types of therapy. They are frequently offered in a group setting and have been investigated more thoroughly in people with medium to high cognitive functioning levels.¹⁹

The majority of interventions are non-pharmacological and depend on behavioural modification strategies. Pharmacological therapy should only be used to treat target symptoms that are resistant to behavioural treatment. Although there is no cure, prompt and suitable intervention can dramatically raise one's quality of life.²⁰ Gadia and Tuchman reported that interventions in speech and language, behaviour, and education are used primarily to treat the core deficiencies of ASD. A multidisciplinary approach is necessary for the clinical management of ASD to spot behaviours that can prevent a person from benefiting from interventions. Specific behaviours have been targeted with medications including neuroleptics, antiepileptics, SSRIs, neurostimulants, and others.²¹

Aishworiya et al described that while the core of ASD treatment continues to be behavioural interventions, in recent years, several promising targeted therapies that target the underlying neurophysiology of ASD have also become available. These have the potential to, in the future, be a standard treatment for addressing the primary symptoms of ASD, which is encouraging. Atypical antipsychotics, serotonergic medicines, alpha-2 agonists, and stimulant medications are only a few of the frequently used drugs to treat the comorbidities linked to ASD. The most prevalent genetic condition that causes ASD, fragile X syndrome, has targeted therapies that can serve as a paradigm for future therapies for other types of ASD.²² Baribeau et al. stated that the use of medication for the core and related symptoms of ASD is less well supported by recent studies than behavioural and psychological therapies for social communication and anxiety in ASD. The replication of preliminary results, the testing of additional biological targets, and the development of fresh biomarkers, such as genetic predictors of treatment response, are the next steps.²³ Our review highlights the importance of early diagnosis and management of ASD from the evidence in the literature; however, the screening tools utilized could not be elaborately discussed, which is the limitation of our paper as it was beyond the scope of this study. However, in the future, we aim to elaborately study all screening tests used in clinical practice and compare their efficacy and feasibility.

CONCLUSION

In recent times, the prevalence of ASD has been on the rise, which is alarming since it significantly impairs the quality of life of children and their parents. Early diagnosis and prompt management are the key elements, as delay in diagnosis is associated with a worse prognosis. The

utilization of screening tools in child wellness visits shall be effectively practiced. While co-occurring psychological disorders, including anxiety or aggression, may be treated with specialized behavioural treatment or medication, first-line therapy consists of behavioural intervention strategies.

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