Management of Autism Spectrum Disorder in Children and Treatment

Anu Iswarya Jaisankar¹, Raghu Nandhakumar*², Ezhilarasan D²

¹Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences [SIMATS], Saveetha University, Chennai - 600077, Tamilnadu, India
²Department of Pharmacology, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences [SIMATS], Saveetha University, Chennai - 600077, Tamilnadu, India

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ABSTRACT

Autism spectrum disorder is mainly characterized by impaired social function and disruptions of communication in a variety of Neurodevelopmental disorders. Symptoms involve conflict, loss of comprehension, intense emphasis on one task. Discussing the indications, Influenced youngsters to experience the absence of social correspondence and communication practices, for example, making conflicting eye contacts, not having the option to tune in and comprehend individuals around them, Rarely sharing happiness regarding items or exercises by pointing or demonstrating things to other people, Being delayed in reacting to their names or some other verbal endeavours to pick up consideration; Having outward appearances, developments and signals that don't coordinate with the circumstance; Having a surprising manner of speaking. It can have different etiological causes such as anatomy, maternal and perinatal influences, neuroanatomic anomalies, and environmental factors. As we examined the intricacy in the etiology and indications of the confusion, we may comprehend the trouble in the board intercessions and treatment ways to deal with the disorder. However, different specialists throughout the world had worked enthusiastically in building numerous intercession models that help in lessening the indications and in improving the social-relational abilities of the influenced. The review addresses various clinical, scientific, psychological, family-based and recovery strategies.

*Corresponding Author
Name: Raghu Nandhakumar
Phone: +91 87902 49776
Email: raghunandhakumars.sdc@saveetha.com

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INTRODUCTION

Autism spectrum disorder is a continuum of neuropsychological related mental disorders (Shreya and Brundha, 2017). They are dominated by hindered social working and correspondence unsettling influences (MP and Nallaswamy, 2019). As indicated by the "Symptomatic and Statistical Manual of Mental issue (DSM-5) a guide that has been made by the American Psychiatric Affiliation, Autism range issue is described by Difficulty with correspondence and communication with others; Restricted interests and dull practices; Symptoms that hurt the individual's capacity to work well in School, Work and different everyday issues (Swetha and Brundha, 2017). The term "Range" alludes to a wide variety in the sorts and force or seriousness of the manifestations that the individuals experience. Discussing the indications in detail, the influenced youngsters experience the absence of social correspondence and communication practices, for example, making conflicting eye contacts, not having the option to tune in and comprehend individu-
Youngsters enduring with Autism range issue must be treated with uncommon consideration and consideration. In spite of their social in cooperation and correspondence issues, People must attempt to speak with them as they speak with others. They should not be left confined or should not be caused to feel forlorn (Preethikaa and Brundha, 2018). As we examined the intricacy in the etiology and indications of the confusion, we may comprehend the trouble in the board intercessions and treatment ways to deal with the disorder. As of now, there are no meds accessible to treat turmoil (Kalaiselvi and Brundha, 2016). However, different specialists everywhere throughout the world had worked enthusiastically in building numerous intercession models that help in lessening the indications and in improving the social-relational abilities of the influenced. The present examination clarifies the Behavioral, Developmental, Combinational, Family-based, Therapy based, Medical and Alternative mediations in detail.

This article reviews more than 50 articles on Autism’s spectrum disorder and treatment management approaches. The articles were collected using search engines like Google Scholar, Pubmed, Biorxiv, Chemrxiv, etc. Since it is a review article, ethical approvals were not required for publication.

**Behavioural Interventions**

In general, treatments include doing something, taking steps or using an approach to care to change a particular illness or problem (Rajkumar et al., 2020) Behavioral scientific methods concentrate on teaching new habits to children using different strategies (Rajkumar et al., 2020). Both strategies are considered best in improving excellent skills and encouraging positive behaviour. As the best, they are the most widely used strategies. Here we discuss some in detail.

**Discrete Trial Training [DTT]**

Discrete trial training method uses simplified, structured teaching steps (Hannah et al., 2019). Here the whole teaching process is broken down into the most basic parts and gradually taught to children (Hannah et al., 2019). It can be applied in teaching 2.6-year-olds. Discrete trial training uses repetition, giving children plenty of learning opportunities. Rewarding children after a separate study training session has improved the training module’s positive outcomes. Using DTT to develop the writing skills, living skills, communication skills and language skills of a child. DTT training models have the drawback of being costly because they take a lot of time.

**Douglass Developmental Disabilities Center Program**

The Douglass developmental disability centre program was developed at Rutgers University in 1972. The program uses intensive, individualized instructions to improve academic and cognitive skills of the child. It’s a preschool formal early intervention program. The concept behind the program is to systematically teach every ability. They use different set-
tions like preschool, home, school and community to inculcate the children's cognitive skills. As part of its curriculum, it also uses discrete trial training.

Incidental Teaching Method

This training method resembles discrete trial training. Unlike discrete trial training, Incidental teaching method occurs in a natural environment and indicates the child’s interest in a particular activity or object, thus giving the child learning opportunities. It normally involves five steps—Wait, Asks, Express, Prompt and Reward. The trainer will wait until a child is interested in the practice. Then the child must have a question. Can give prompt when necessary. He/she must reward the child. McGee and Daly conducted an Incidental age-appropriate social phrases for children with Autism (McGee et al., 1999). They taught socially-appropriate phrases like “Okay” and “You know what?” Incidental teaching and research subjects 2 with standard traditional teaching. Subjects taught incidental communication techniques made greater use of specific phrases in social contexts than group 2 subjects (McGee et al., 1999).

Lovaas Program

Lovaas is a method of behavioural evaluation developed in the 1930s by Ole Ivar Lovaas. It is a program for early intervention (Muckian, 2007). When the child is only two years old, the program will begin. The technique includes breaking skills in quick, constructive reinforcement and generalization of skills learned in the natural environment (Muckian, 2007). Lovaas enhances, the linguistic abilities of the child, decreases self-incentives, raises the intelligence quota of the child, reduces child support in classrooms and also raises children's and parent's emotional connection. They train younger children to learn more complex skills, verbal communication, interactive play, cooperation, reading and writing when they are older. Lovaas is costly as it requires the efforts of different practitioners, different research and a lot of time.

Pivotal Response Treatment

Pivotal response therapy uses a variety of teaching approaches in the daily world of children. This focuses on four primary or core areas in the development of children. This is how it is. They contribute to the development of more complex abilities and behaviours, including verbal contact (Liao et al., 2020). The four key elements include motivation, self-initiation, Autonomy (Liao et al., 2020). They include establishing goals specific to a child; using the interest of a child in an activity; and rewarding the child whenever he or she is working (Simpson et al., 2019). The overall training program develops verbal communication, social competences, playing skills and behaviour. Simpson noted that PRT is an autism treatment science-based approach (Simpson et al., 2019).

Positive Behaviour Support

Positive behaviour support is a behaviour management program used to explain the motivating actions of the person. Functional behaviour evaluation examines and explains distinctly specific behaviours, defines conditions that predict how and when behaviour, and identifies behavioural effects. This module focuses on three main fields: Communication skills, Social skills and Autonomy. It also reduces the child’s negative behaviour. They modify their surroundings or routines, offer sensory breaks, change children's expectations and demands. They reinforce and empower the child’s good actions.

Developmental Interventions

Developmental interventions are designed to support children’s relationships in positive, real and significant ways. These interventions are often referred to as controlled interventions. Let us speak in-depth here about some of them.

Developmental Social Pragmatic Model

Developmental social pragmatic model is a developmental intervention and communication the spontaneity that is focused on child attention and motivation. They focus on spontaneous social, social, emotional and social communication (Shenoy and Brundha, 2016). The key idea behind the program is that cares can improve their social communication when they interact with their children in a way that reacts with them (Baron-Cohen, 1988). Unlike other methods of training, this method of training involves parental involvement.

Dir / Floortime Model

The model DIR/floortime is used in supporting ASD children in their social, spiritual and emotional development (Davis et al., 2014). This model promotes the motivation of a child, such as tying shoe laces, improves communication, especially in two ways, and supports the sensory, emotional and cognitive development of the child (Davis et al., 2014). It is an early intervention program. Stalug-Grennspan developed this intervention in 1980. All these targets, usually on the floor (Davis et al., 2014), are accomplished by a playtime of only 2 to 5 hours a day.

Relationship Development Interventions

Relationship developmental interventions program, is a trademark proprietary treatment program for
autism spectrum disorder. It is based on the declaration that dynamic intelligence development is the key to improving the quality of life. They gradually and systematically expose children to authentic emotional relations. They enhance emotional reference, social communication, the use of both verbal and non-verbal language of declarative interactions, versatility and adaptability to different environments, relational information processing which places things in context, forecasting of future probabilities from past experiences.

**Responsive Teaching**

This teaching method is for parents, not for children. Responsive education is a program in which parents are taught how to promote the development of communication with their children and how they interact more responsively with their children (Baranek et al., 2015). This is targeted at children under the age of 6 who have emotional, behavioural and social difficulties. It enhances receptive child-parent relationships.

**Combined Interventions**

Combined interventions are combinations of behavioural and developmental interventions. It is the most efficient of all. It is a program of family intervention.

**Early Start Denver Models**

Early Start Denver is an approach to children with autism-based spectrum disorder that leads to the development of academic, social, communication and daily life skills. The treatment is available for preschool students whose symptoms are early ASD. It focuses primarily on the communication and interaction skills of children who already have and using play strategies to intensively, structurally and in a fun way, build on these skills. It’s a much cheaper style of preparation.

**Scerts Model**

The SCERTS model is a provision of services. They use a variety of approaches to build individualized strategies for autism children (Ehrenreich, 2004). They help families, professors and therapists to work together to improve the development of the child. This refers to children aged preschool and primary school (Ehrenreich, 2004). They are more focused on social contact, emotional control and child care. The combination of PRT, DIR/floortime, Relationship Development Intervention is used. In some early year programs in Australia, SCERTS is delivered as part of autism-specific curricula (Ehrenreich, 2004).

**Family Based Interventions**

These interventions emphasize Family involvement in providing specific developmental needs and provide guidance to the family members for child care.

**More Than Words (R) Model**

This model is a family-centred group-based curriculum, designed to help children interact verbally. It is designed specifically to enhance the child’s communication skills. It was developed in 1975 by the Hanen Center. They have three main goals. They are aimed at improving social communication, improving play skills and initiation skills. The individualized training sessions are conducted in 8 small parts. It provides children with life strategies (Muhabir et al., 2019).

**Therapy Based Interventions**

Therapeutic interventions focus on specific problems such as speech therapy and occupational therapy. Let’s look at some of them in detail.

**Functional Communication Training**

Functional communications instruction is a program aimed at replacing harsh behavioural forms with more effective and comparable interactions. It is frequently used together with other behavioural interventions. This involves the decision-making or design of adequate ways, ignore difficult paths, encourage, strengthen and teach systematically (Carr, 1979).

**Sign Language System**

This refers to children with communication and language difficulties. This model is based on Australia and was instructed on behalf of Makaton (Al-Batayneh et al., 2020). Some researchers have demonstrated positive results, but more quality studies are necessary.

**Picture Exchange Communication System**

Like sign language, Children use cards, images, icons, photos like a sign language that represent those events, tasks or communication artefacts (Myles, 2013). Established in the early 1980s (Myles, 2013), It works based on Applied Behavioral Science.

**Medical Interventions**

There are currently no drugs available to treat autism spectrum disorders. But the symptoms of ASD, such as sleep disorders, self-harm and compulsive behaviour, and anxiety, are treated by medications. This can be done with antipsychotics and stimulants.

**Alternative Interventions**

There are no studies to support alternative interventions. Considerable evidence shows no conse-
quences for some. However, others are discussed here still: Vitamin supplements and probiotics, acupuncture, chelation therapy for the removal of mercury and heavy metals from the body, oxygen therapy for breathing inside a pressurized environment (Stornelli, 2016).

CONCLUSIONS
The article has discussed various intervention methods and strategies for improving the lifestyle of children with Autism spectrum disorder. Various researchers are working tirelessly to bring a solution to this problem. Let us pray for their success.

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REFERENCES
Al-Batayneh, O. B., Nazer, T. S., Khader, Y. S., Owais, A. I. 2020. Effectiveness of a tooth-brushing programme using the picture exchange communication system (PECS) on gingival health of children with autism spectrum disorders. European Archives of Paediatric Dentistry, 21(2):277–283.
Baranek, G. T., Watson, L. R., Turner-Brown, L., Field, S. H., Crais, E. R., Wakeford, L., Little, L. M., Reznick, J. S. 2015. Preliminary Efficacy of Adapted Responsive Teaching for Infants at Risk of Autism Spectrum Disorder in a Community Sample. Autism Research and Treatment, 2015:1–16.
Baron-Cohen, S. 1988. Social and pragmatic deficits in autism: Cognitive or affective? Journal of Autism and Developmental Disorders, 18(3):379–402.
Brundha, M. P. 2015. A Comparative Study-The Role of Skin and Nerve Biopsy in Hansen’s Disease. Journal of Pharmaceutical Sciences and Research, 7(10).
Brundha, M. P., Pathmashri, V. P., Sundari, S. 2019. Quantitative Changes of Red Blood cells in Cancer Patients under Palliative Radiotherapy-A Retrospective Study. Research Journal of Pharmacy and Technology, 12(2):687–687.
Brundha, M. P., Saivignesh, S. 2019. Myeloid sarcoma. International Journal of Clinico-pathological Correlation, 3(2):41–41.
Brundha, M. P., Visha, M. G. 2019. A review on ankylosing spondylitis. International Journal of Clinico-pathological Correlation, 3(2):44–44.
Carr, E. G. 1979. Teaching autistic children to use sign language: Some research issues. Journal of Autism and Developmental Disorders, 9(4):345–359.
Davis, A. L., Isaacson, L., Harwell, M. 2014. Floor-time Strategies to Promote Development in Children and Teens: A User’s Guide to the DIR® Model. Baltimore. Baltimore, MD: Paul H. Brookes Publishing Company.
Ehrenreich, H. 2004. More than Words: Developing Interpersonal Communication with Children on the Autism Spectrum. PsycEXTRA Dataset.
Hannah, R., Ramani, P., Brundha, M. P., Sherlin, H. J., Ranjith, G., Ramasubramanian, A., Jayaraj, G., Don, K. R., Archana, S. 2019. Liquid Paraffin as a Rehydrant for Air Dried Buccal Smear. Research Journal of Pharmacy and Technology, 12(3):1197–1197.
Kalaiselvi, R., Brundha, M. P. 2016. Prevalence of hysterectomy in South Indian population. Research Journal of Pharmacy and Technology, 9(11):1941–1941.
Kumar, M. D. A., Brundha, M. P. 2016. Awareness about nocturia-A questionnaire survey. Research Journal of Pharmacy and Technology, 9(10):1707–1707.
Liao, X., Liu, Y., Fu, X., Li, Y. 2020. Postmortem Studies of Neuroinflammation in Autism Spectrum Disorder: a Systematic Review. Molecular Neurobiology, pages 1–15.
McGee, G. G., Morrier, M. J., Daly, T. 1999. An Incidental Teaching Approach to Early Intervention for Toddlers with Autism. Journal of the Association for Persons with Severe Handicaps, 24(3):133–146.
MP, B., Nallaswamy, D. 2019. Hide and seek in pathology- A research on game-based histopathology learning. International Journal of Research in Pharmaceutical Sciences, 10(2):1410–1414.
Muckian, J. 2007. Influencing Policy Development: The Whirling Dervish of the Autism in-Home Program. Journal of Pediatric Nursing, 22(3):223–230.
Muharib, R., Atrasheed, F., Ninci, J., Walker, V. L.,
Voggt, A. P. 2019. Thinning Schedules of Reinforcement Following Functional Communication Training for Children with Intellectual and Developmental Disabilities: A Meta-analytic Review. *Journal of Autism and Developmental Disorders*, 49(12):4788–4806.

Myles, B. S. 2013. Interventions in school, home, and community for individuals with autism spectrum disorders. In *Interventions for Autism Spectrum Disorders*, pages 303–323. Springer.

Prashaanthi, N., Brundha, M. P. 2018. A Comparative Study between Popplet Notes and Conventional Notes for Learning Pathology. *Research Journal of Pharmacy and Technology*, 11(1):175–175.

Preethikaa, S., Brundha, M. P. 2018. Awareness of diabetes mellitus among general population. *Research Journal of Pharmacy and Technology*, 11(5):1825–1825.

Rajkumar, D., Manokaran, R. K., Shubha, S., Shruthi, T. K. 2020. Phenytoin Induced Status Dystonicus: A Rare Manifestation of Phenytoin Toxicity in a Child with Autism Spectrum Disorder. *The Indian Journal of Pediatrics*, pages 1–2.

Shenoy, P. B., Brundha, M. P. 2016. Awareness of polycystic ovarian disease among females of age group 18-30 years. *Journal of Pharmaceutical Sciences and Research*, 8(8):813–816.

Shreya, S., Brundha, M. P. 2017. Alteration of Haemoglobin Value in Relation to Age, Sex and Dental Diseases-A Retrospective Correlation Study. *Research Journal of Pharmacy and Technology*, 10(5):1363–1363.

Simpson, K., Adams, D., Bruck, S., Keen, D. 2019. Investigating the participation of children on the autism spectrum across home, school, and community: A longitudinal study.

Stornelli, J. L. 2016. Occupational Therapy for Autism Spectrum Disorder. *Autism Spectrum Disorder*, pages 339–368.

Swetha, S., Brundha, M. P. 2017. Analysis of knowledge about the hospital warning symbols among the postgraduate dental students-A comparative study. *Research Journal of Pharmacy and Technology*, 10(4):975–975.

Timothy, C. N., Samyuktha, P. S., Brundha, M. P. 2019. Dental pulp Stem Cells in Regenerative Medicine – A Literature Review. *Research Journal of Pharmacy and Technology*, 12(8):4052–4052.