Original Research Article

Implication of Early Psychological Intervention for Children with Autism Spectrum Disorder

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ABSTRACT

Autism Spectrum Disorder (ASD) is a lifelong, developmental disability which significantly affects an individual's global functioning and provides serious challenges in social, communication, and related cognitive, behavioural and emotional skills. The deficits can lead to problems in every domain of living and also compromises their quality of life. With an increase in the prevalence of autism in India over the years, planning timely intervention for this population an important issue. The two specific features considered most important for intervention of ASD are intensity and the age at which it begins. Early intervention programs have shown widespread implications in improving the functioning in ASD. Intervention can include cognitive training which involves repeated practice of a cognitive skill over a period of time to improve performance and social skills training is a behavioural intervention mainly focused upon teaching the recognition and application of appropriate social skills. A combination of both of these interventions provided timely can help children with ASD learn important social and practical skills, improve their cognitive functioning and reduce harmful behaviours. In the present study, three male and one female child case with diagnosis of ASD, aged between 5 to 6 years were included. After initial psychological assessment, comprehensive psychotherapeutic package was given which included psychoeducation, training in social skills, cognitive and behavioural domains along with parental counselling and training. Post therapy assessment indicates improvement in their overall functioning.
Key words: Autism Spectrum Disorder, Social, Communication, Cognitive skills.

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INTRODUCTION

Autism spectrum disorder (ASD) is a developmental disorder, with deficits in social communication, stereotypical and repetitive pattern of behavior and restricted interests as its main features [1]. It is a lifelong, developmental disability which significantly affects an individual's global functioning and provides serious challenges in social, communication, language, and related cognitive skills and behavioral and emotional regulation. The social skills deficits tend to be hallmarks features of autism, while at the same time, these behavioral symptoms are thought to reflect underlying cognitive deficits/differences, which have been extensively researched [2]. It has been estimated that more than 2 million people might be affected with ASD in India [3]. Thus, planning timely intervention for this population is an important issue.

Social skills are vital for maintaining relationships with the social world at large and to improve one's quality of life. They from a part of one's day to day functioning, communication, and interaction with others. With respect to some of the social skills deficits, neuroanatomical abnormalities have also been established, and specifically the basal ganglia have been implicated in the deficits in eye movement, coordination, sensory

modulation, and inhibition control in ASD. Overall, these deficits can manifest in several social situations beginning from home to school or any kind of gathering involving several individuals.

Social behavior further tends to involve a wide range of underlying cognitive processes such as attention, memory, planning and decision making, and problem solving [4]. These tend to majorly represent the domain specific theories of cognition in ASD, where the primary deficit to be focused upon is in social processing. While on the other hand domain-general accounts of ASD propose that the primary deficit/difference is not in social cognition specifically but lies in, attention and executive functions [5]. Attention impairment in autism has a major role to play in most of its core symptoms. Children with ASD often show slowness in shifting attention, difficulty in the ability to disengage oneself from visual stimuli and reduced ability to focus on tasks or stimuli over a period. Most of the early intervention programs focus on children in pre-primary and primary school to result in maximum benefits keeping in line with ease of training the child at younger ages and its greater sustainability over time. Further social skills training is a behavioral intervention mainly focused upon teaching the recognition and application of appropriate social skills, which tend to be impaired in children with ASD. It is one type of child-specific intervention which involves teaching specific skills through behavioral and social learning techniques.

Cognitive training which involves repeated practice of a cognitive skill over a period of time to improve performance has been widely utilized in training children. The efficacy of cognitive training has been well established for children with ADHD, and it has been found to result in improvement in the cognitive function after a period [6].

Even though several studies have been carried out to investigate the efficacy of cognitive and social skills training in ASD, there tends to be a difference in the specificity of the intervention package across different individuals with ASD, each requiring a carefully tailored package to address the needs of the individual.

Thus, the present study was carried out with the aim of examining the efficacy of a customized cognitive and social skills intervention program on the functioning of children with ASD.

Case Presentation

Details of the cases

In the present study, total four cases; three male and one female child case with diagnosis of ASD, residing in urban area of Kolkata, India aged between 5 to 6 years with IQ ranging 44 to 94, were included. All four children had received a diagnosis of Autism, in the last 6- 12 months, prior to which certain problems were reported to be present, but a definite diagnosis was not made. All the children went to regular schools for their education and visited a Training Centre for Autism twice a week to receive multiple interventions. The present intervention package was specially designed to be delivered to the training center, keeping in mind the needs of each child and their feasibility. They all were presented with the common complaints of difficulty in speech, repeating words and short phrases that are said to them, difficulty in sustaining eye contact and difficulty in sitting in one place. They were included based on the criteria of presence of Autism. The children were observed to follow simple one step instructions and were cooperative, however it took some time to establish rapport.

Further several standardized tool, such as, Seguin Form Board Test (SFBT) [7], Vineland Social Maturity Scale (VSMS) [8] and Indian Scale for Assessment of Autism (ISAA) [9]. were used to assess the level of intellectual functioning, socio-adaptive functioning, and severity of Autism in each of the clients.

Procedure:

The process began with screening the children to ensure their applicability and suitability for the intervention. After which permission and informed consent were obtained from the parents to begin the intervention. An intervention plan with tasks applicable for training of each of the target areas was formulated and was applied for a pre-decided period. Baseline, mid treatment, and post treatment assessments were carried out to ascertain the impact of the intervention package. Ethical consideration and confidentiality were maintained.

Intervention Plan:

The present intervention package was planned to continue over a duration of 5 months and would be spread across 15 sessions. The therapist would provide one session per week for a duration of one hour, to each child. Further the parent would be involved in the tasks used during the training of the task, to enable the parent to continue the practice on these tasks at home roughly for about 3 hours every day. Thereby providing a total of 20 hours of to the children per week, taking into consideration the requirement for an intensive training approach for children with ASD. The one-hour session would be further broken down into 20 minutes for social skills training, 25 minutes for cognitive training, including sufficient rest periods and 15 minutes for parental interaction, while the child is engaged in some tasks. The intervention package had the same goals for all the four children; however, they were modified in terms of difficulty level depending on the ability of the child and each child received individual therapy by a trained therapist.

Detailed intervention Package:

The intervention package primarily focused on cognitive and social skills training along with parental training.

Table1: Table showing the social and cognitive skills training packaged customized for the present sample

Area	**Task**
Social skills	
Improving eye contact	Object tracking
Improving reciprocal communication	Teaching action rhymes, Make-belief play, Playing interactive games
Improving social interaction	Make belief play, Playing interactive games
Cognitive skills	
Improving attention span	Sorting multi- coloured beads & cards and Matching
Improving problem solving skills	Mazes task and driving through barriers
Parental counselling and training	
Enhancing insight	Psychoeducation
Training for providing home intervention	Involving parents in setting goals, Demonstrating the tasks, giving suggestions, Taking parental feedback.

The intervention started with a detailed behavioral observation to understand the typical features of the children, along with the purpose of rapport building. The training started with targeting social skills, beginning with maintenance of eye contact using verbal prompts and reinforcing the child sometimes when they responded. In subsequent sessions along with verbal prompts a ball was moved in front of the child's eye and the movement ended with a position close to the therapist's eye, which led to tracking the object as it moved and maintaining eye contact. Later, improvement in eye contact maintenance was seen in terms of the duration of eye contact bubbles and torch light for eye contact sustenance was also used.

After the initial few sessions, the social skills training included not only eye contact as a target but also skills such as improving social interaction, improving reciprocal interaction and communication. Modelling responses were used to teach greeting skills, and with repeated prompts and reinforcement the greetings were generalized from therapist and parent to other strangers the children would come across. To improve reciprocal interaction and communication, make belief play and social stories were used to train the children, varying the complexity gradual after mastery of basic skills.

For attention training several tasks were used in the sessions and were increased in level of complexity when improvement in the basic level was observed. Initially the sustained attention training was focused upon, followed by divided attention where in the same task were used. However, instructions were modified to prompt the use of divided attention. The tasks used were Sorting teacher made cards-Red, blue and green, Sorting beads, Cancelation of letters and numbers. For problem solving training the tasks employed were mazes and driving through barriers, where in the later task there was a customized task made for the

intervention by the therapists in which a track was made on a sheet of paper and the children were made to solve problems occurring real time using play method. Throughout the sessions any difficulty faced by the children was addressed and repeated practice was used to train them.

Another major agenda was parental counselling and training. The parents were briefed about the test findings and diagnosis. A short discussion about ASD and its symptoms, nature and course was also done to remind the parents about the disorder and the intervention that is most beneficial for the child. They were explained about the therapy process and its efficacy, the goals were discussed, and it was explained as to how their cooperation and participation in the process would be of importance. Parental counseling and training continued frequently interspersed between sessions and after every session feedback from parents was taken and tended to. They were made to note down all the tasks that they could continue to make the child practice at home to keep the training on.

Further the intervention plan included for a provision of follow ups for the next 2-3 years, with a time gap of 6 months, to monitor the sustainability of the treatment effects as well as any drop in performance with increased time gap. This is necessary so that the effects of the intervention are long term and with a regular check, any difficulties in the process can be addressed.

The outcome measures mainly included were:

- Clinical observation
- Performance on tests
- Post intervention scores on task
- Parental and teacher observation.

RESULTS

Table 2: Socio-demographic and Clinical Details of the sample

Domain	**Range**	**Average**
Age	5-6 years	5 years 4 months
Gender	M: 3 F: 1	N.A
Intelligence Quotient	44-94	68
Social Quotient	44-86	64
ISAA Score	74-113	93

Table 3: Table showing the pre and post intervention scores of the sample

Domains	**Sessions**	**1st**	**5th**	**15th**
		Duration (in seconds)		
Social skills	Maintaining eye contact	5	18	26
	Sitting behavior	150	189	330
Cognitive skills	Sorting cards	120	95	50
	Sorting beads	240	195	135
	Cancellation sheets	260	230	200
	Solving mazes	100	80	50

DISCUSSION

The present study was carried out with the aim of establishing the efficacy of a social and cognitive skills training program customized for 4 children with ASD, presenting with similar presenting complaints. Pre intervention assessment of the children indicated towards presence of disturbances in attention, especially

sustained attention and divided attention and difficulty in problem solving capacity. Objectively difficulties in maintaining eye contact and poor social interaction and reciprocal communication skills were noticed, along with parental reports of the same. Thus, an intervention package catering to these skill deficits was prepared and applied over a span of 15 sessions to each of the children, individually.

Post therapy assessments indicated improvements in all the target areas, in all the four children. Improvements in maintaining eye contact were recorded in terms of duration for which eye contact was maintained and from table 3, a gradual improvement in the same is clearly indicated. The children responded to the object tracking task with most interest and it was used for a greater number of sessions for training. With repeated practice and frequent verbal prompts to maintain eye contact, the children responded, and it would improve further with them being reinforced by the therapist. This can also be related to the improvement in attention that was observed in the present study, thereby making it easier for the children to attend and follow instructions. Most previous studies used some sort of cues or prompting that included visual, tactile, and auditory cues [10]. Prompting is part of most therapeutic interventions and is logically linked to attention. Further it has been seen in previous studies that several procedures are needed to teach children to give eye contact spontaneously on their own, to give eye contact on request when they are asked to, and to increase the length of time the children hold their gaze. To encourage this behaviour, tangible rewards like small bites of food were used initially, then gradually substituted by intangible rewards like praises and the child's preferred activities [11].

Social interaction as assessed qualitatively in terms of frequency and quality of greeting others, reciprocating the greetings and initiating conversations. The use of make belief play and action rhymes showed considerable results both in terms of improved social skills observed by the therapist as well as improvements reported by the parents and the teachers at school.

In terms of the cognitive skills, there were improvements in the attention span as indicated by the duration of performing the attention training tasks. The performance of the sample on letter number cancellation task and sorting beads and cards task demonstrated considerable improvement over the 15 sessions period and it was observed to transfer to other domains of the children's lives as reported by parents in terms of increased duration for which they could attend to academics, be seated doing a task, follow instructions, complete assignments. Previous studies indicated improvements in attention following intervention, with most of them measuring improvements in aspects of joint attention, one referring to improvements in "attending," and one indicating less "off-task" behavior [12]. In terms of the problem-solving skills, the children showed greater difficulty in the initial sessions and had to be prompted several times during the training, however after the repeated exposure and practice minor improvements started becoming apparent and by the last session significant improvements were seen.

Overall findings of the study also suggest there had been a noticeable improvement in the target areas in all the 4 children across the sessions as also reflected in terms of: Improved peer interaction, reduced restlessness and increased parental involvement and awareness. The sample thus showed overall improvements in the social and cognitive skills, despite having a difference in the intellectual level in the sample, thereby highlighting the efficacy of using a tailor-made intervention package in overcoming the barriers posed by difference in level of functioning. Further it was also observed that parental involvement and motivation increased gradually over the sessions. Regular home training of the children along with the in-session training resulted in significant improvements. The parents were cooperative and participated in the intervention program and would provide adequate feedback for the intervention to proceed. On seeing the improvement in the targeted skills, parental satisfaction was expressed in terms of wanting to continue the training at home.

The core challenges associated with ASD can have an impact on the ability to succeed in educational programs, employment, and social relationships, and to acquire the skills needed to live independently [13,14] and have an impact on treatment responsiveness. Thus, using tasks and techniques according to their suitability to the individual does yield positive results in the case of children with ASD, and it also leads to transfer of training, as seen in the present study.

CONCLUSION

The present case series highlights that early intervention can have a significant positive impact on the overall outcomes of children with ASD and it also demonstrates that noticeable improvements can be achieved by structured and individualized packages for children with ASD. Thereby establishing the efficacy and objectivity of a structured package of cognitive & social skills training in improvement of adaptive functioning as reflected in generalized behavior. Moreover, as the human brain undergoes a profound period of establishment and refinement of connections between neurons during the first years of life, there tend to widespread implications of early and appropriate cognitive training for children with ASD, as evident in this study. However, this is a single case series and although the cognitive and social skills training program has been found to be effective the findings cannot be generalized. It must be studied with a greater number of cases. Future research may focus on developing such a package across all ages' groups and levels of severity.

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