

Evaluation of Early Start and One to One Based Intervention for Preschool Autistic Children

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ABSTRACT

Background: There is an increasing recognition of effectiveness of one to one intervention for autistic children before age of 6 years old. Our objective was to explore the importance of early detection and early intervention by one to one maneuver.

Methods: We studied 100 children aged divided into two groups of children, each group composed of 50 autistic children. The first group aged 22months- 6years old and had received 15-20 hours a week of the intervention – one to one sessions of comprehensive early intervention program, while that of the second group aged 6 – 12 years old and were already receiving group -based programs of intervention. Autism spectrum disorder was diagnosed clinically by DSM-V then participants were assessed before and after intervention by CARS-2-ST and by Vineland Adaptive Behaviours Scales– Second Edition (VABS-II) that was conducted by a licensed psychologist.

Results: As regard the first group Statistically significant post-intervention improvements were found in children's performance on their overall intellectual functioning and significant increases in their child's communication, socialization, daily living skills and motor skills on the VABS-II, and a significant decrease in autism-specific features on the

CARS scale. Nonetheless, these results are different from the second group as showed mild improvement statistically non-significant.

Conclusion: Our results in children indicated a significant relationship between early intervention of one to one sessions and prominent improvement. However, the late intervention by group based session's revealed unapparent improvement.

Keywords: Evaluation, Autistic Children, Intervention, Communication, One To One.

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INTRODUCTION

Autism is a neurodevelopmental disorder characterized by impairment of social interaction, communication, and restricted activities and interests, perseverative and stereotypic behavior patterns. It has a life-long impact on children and their families. The manifestations of this disorder vary between children and within an individual child over time. Treatment for autism has become a major public policy issue.¹

The prevalence of ASD is rising worldwide, with ASD estimated to affect around 1 in every 68 persons.² ASD is a disorder of significant public health importance that confers substantial personal, social and economic problems.³ Building on genetic vulnerability has been hypothesized that ASD emerges from a developmental cascade in which a deficit in the attention to social

stimuli leads to impaired interactions with caregivers. This results in abnormal development of the neurocircuitry responsible for social cognition, which in turn adversely affects later behavioral and functional domains dependent on these early processes, such as language development. Moreover, early intervention in the first years of life triggers the best potential for children as brain plasticity is almost during this period, enabling the establishment and reorganization of neuronal networks in response to environmental stimulation.⁴

Available evidence indicates that early intervention programs, such as the Early Start Denver Model (ESDM), can positively affect the clinical outcomes for children with Autism Spectrum Disorder (ASD).⁵

However, programs involving intensive one-to-one intervention are not usually available or deliverable in the community, resulting in many children with ASD missing out on evidence-based intervention during their early and most critical preschool years.

Studies exploring the effectiveness of Early Intensive Behavioral Intervention (EIBI) in community settings have produced generally desired results although effect values reported are typically smaller than one-to-one based efficacy studies.⁶ This study evaluated the effectiveness of the early detection and intervention for preschool-aged children with ASD using intensive one to one - based intervention including rehabilitation, speech therapy, play therapy, sensory integration and behavior modification sessions in child care setting by comparing 2 group of autistic children, one group preschoolers and have been received one to one based intervention, on the other hand the second group aged more than 6 years old and have been received group based training

METHODS AND PARTICIPANTS

Ethical Considerations: The study was approved by the ethical committee of academic of affairs of NWAFFH. Written informed consent was provided by the legal guardians of children.

Study Design: Retrospective cohort study was conducted in autism center of NWAFFH in Saudi Arabia Affiliated to Prince Mohamed Ben Salman program for Autism & developmental disorders.

Participants were 100 children (74 males and 26 female) with age range of (22 months – 12years old), were recruited from child psychiatry outpatients' clinic of north western armed forces hospital (NWAFFH). Children were evaluated with clinical diagnosis by Diagnostic and Statistical Manual of Mental Disorders (DSM-V). Childhood Autism Rating Scale (CARS-II) that consists of 14 domains assessing behaviors associated with autism, with a 15th domain rating general impressions of autism. Each domain is scored on a scale ranging from one to four; higher scores are associated with a higher level of impairment. Total scores can range from a low of 15 to a high of 60;^{7,8} and parent-report questionnaires - Vineland Adaptive Behaviors Scales–Second Edition (VABS-II), it is a diagnostic tool that measure the capabilities of both children and adults with Age Range from Birth to 90 in dealing with everyday life (i.e., communication skills, motor skills, functionalities needed in everyday life, and socialization)⁹.

Exclusion criteria applied were known neurodevelopmental (e.g., Fragile X Syndrome) or neurological disorders (e.g., cerebral palsy), and significant vision, hearing, motor or physical problems or case the mother was not the primary care giver of the child.

The children were separated into two groups, each group composed of 50 autistic children. The age range of the first group was (22months- 6years old) and contained 15 girls and 35 boys while that of the second group was (6 – 12 years old) and contained 11 girls and 39 boys. The first group had received 15-20 hours a week of the intervention – one to one sessions of comprehensive early intervention program that integrates behavioral modification, education, Lovaas method, TEACCH (Treatment and Education of Autistic and Communication Handicapped Children), was delivered by trained teachers and therapists during the child's attendance at our Autism Centre of NWAFFH for preschool-aged children with ASD. Children in our autism Centre were receiving rehabilitation sessions, speech therapy, play therapy, sensory integration and behavior modification sessions in child care daily setting five days a week. Children in the second group were already receiving group -based programs for therapy. At the beginning of the study there was no substantial difference in functioning between the two groups. The study was conducted between late September 2017 and early April 2018. The average intervention period was six months. Outcome measures were administered pre- and post-intervention, and comprised a Autism assessment – children autism rating scale(CARS-2-ST); and parent-report questionnaires – Vineland Adaptive Behaviors Scales–Second Edition (VABS-II) that were conducted by a licensed psychologist.

Statistical Analysis

Numerical data were presented as mean and standard deviation (SD) value. Paired t-test was used to study the changes after training within each group as mentioned by Gomez and Gomez (1984). The significance level was set at $p \leq 0.01$. Statistical analysis was performed with IBM® SPSS® statistics version 20 for windows.¹⁰

RESULTS

As regard the age and the gender, there was statistically significant difference between both groups.

As regard the first group Statistically significant post-intervention improvements were found in children's performance on their overall intellectual functioning and Parents reported significant increases in their child's communication, socialization, daily living skills and motor skills on the VABS-II, and a significant decrease in autism-specific features on the CARS scale. These effects were of around medium size, and appeared to be in excess of what may have been expected due to maturation. Nonetheless, these results are different from the second group as showed mild improvement statistically non-significant.

Table 1: Comparison between the two studied groups as regard demographic characteristic.

	1 st group (n = 50)		2 nd group (n = 50)		Test of sig.	p
	No.	%	No.	%		
Age (years)						
Min. – Max.		1.8- 6		6-12	t= 09.33	0.0001
Mean ± SD.		3.89± 0.97		7.78 ± 1.66		
Median		4		7		
Gender						
Male	35	70	39	78	$\chi^2 = 23.04$	0.0001
Female	15	30	11	22		
Total	50	100%	50	100		

Table 2: Comparison between the two groups as regard the pre- to post- intervention scores.

FIRST GROUP							
	Pre		Post		t	df	P
	Mean	SD	Mean	SD			
CARS	34.3	2.44	27.3	2.74	5.22	49	0.0001**
Vineland adaptive behavior scales							
Communication	22.32	5.50	24.58	5.24	-23.89	49	0.0001**
Socialization	28.94	7.39	31.32	7.62	-17.04	49	0.0001**
Daily living skills	30.3	7.82	32.8	8.04	-14.74	49	0.0001**
Motor skills	39.1	5.31	41.60	5.57	-16.76	49	0.0001**
SECOND GROUP							
	Pre		Post		t	df	P
	Mean	SD	Mean	SD			
CARS	36.90	2.59	36.93	2.45	0.0001	49	1.00
Vineland adaptive behavior scales							
Communication	26.50	5.74	26.62	5.844	-0.771	49	0.444
Socialization	30.32	5.38	30.28	5.38	0.704	49	0.485
Daily living skills	38.96	3.68	38.78	3.65	1.457	49	0.151
Motor skills	46.10	3.93	46.22	3.98	-1.769	49	0.083

DISCUSSION

The current study suggests the importance of early intervention for ASD, and is supported by studies showing better outcomes with earlier treatment.¹¹ Our results are compatible with other researchers¹² –early intervention program for very young children with autism – some as young as 18 months – is effective for improving IQ, language ability, and social interaction, a comprehensive new study has found.

Early intervention has the potential for significant clinical and economic benefits, in addition to one to one based training has better clinical effects but high economic costs. This is in keeping with the existing evidence that one to-one intervention starting at the youngest possible age offers the best opportunity for improving outcomes in children with ASD. However, our findings suggest that there are limited benefits to a less intensive intervention with older children.

Group based child care program provide a strong suggestion of the feasibility and effectiveness of this empirically validated treatment approach for children with ASD during their critical early years of development as late intervention has minimal improvement according to our results and suggested by one research.^{13,14}

Also our findings are in harmony with the first and only randomised controlled trial of the ESDM demonstrated significant gains in visual processing and improvements in language abilities, with subsequent gains in IQ and adaptive behaviors, among children receiving the ESDM¹⁵. Furthermore, the fact that the intervention was offered in the context of a long day, child care Centre similar to a 'real world' environment is offering greater opportunities for generalization of skills and improvements to school readiness, resulting in easier transition to other education settings following intervention.

RECOMMENDATIONS

- Early detection & intervention for Autism spectrum disorder provides better results and avoids high costs.

- One to one based training of autistic children has rapid and more constant results but has high cost.
- A long day, child care Centre is encouraging greater opportunities for generalization of skills.

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