The impact of Integrated Program of Rehabilitation on Development of Children with Intellectual Disability

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Abstract

Background: Intellectual disability is a disorder with onset during the developmental period that includes both intellectual and adaptive functioning deficit. Early intervention is a system of coordinated services which enhances child's growth and development.

Aims: To assess the impact of early intervention program among intellectually disabled children.

Methods: This intervention study was conducted in Children diagnosed with intellectual disability of according to DSM 5diagnostic criteria, consulting Medical Genetics Centre, Faculty of Medicine, Ain Shams University over the period between first of January 2017 till the end of March 2018. All selected children who agreed to participate in the study were subjected to full clinical assessment. They had whole year of early intervention training using the Portage Program.

Results: Twenty nine children completed the whole intervention training year. The twenty nine children were (17 male, 12 female; mean age 25.79± 16.08 months, age range 4- 61 months). Twenty five children had the diagnosis of Down syndrome and four patients had intellectual disability most probably of genetic etiology. Among these 29 children, twenty children had good compliance with mean attendance of 31 sessions and five children had poor compliance with mean attendance of 10 sessions. Children in the good compliant group had statistically high significant difference between developmental age before and after applying of the intervention program. The poor compliant group all children had statistically non- significant difference between developmental age before and after the intervention program.

Conclusion: There is a positive impact of implementation of integrated program of early intervention on the development of children with intellectual disability.

Keywords: Intellectual disability- Early Intervention- portage program.

تاثير تطبيق برنامج تاهيل متكامل على تطور الاطفال المصابين باعاقة ذهنية

الخلفية: الإعاقة الفكرية (اضطراب النمو الفكرى) هو اضطراب فى بداية الفترة الإنمائية التى تضم كلا من العجز فى تطور الذكاء والتكيف فى المجالات المفاهيمية والاجتماعية والعملية، وان التدخل المبكر للأطفال الصغار الذين لديهم تأخر فى النمو هو نظام متكامل يساعد على نمو وتطور الطفل ويساند الاسره فى خلال السنين الاولى الهامه لنمو الطفل.

الهدف: تقييم أثر برنامج التدخل المبكر لدى الأطفال المعاقين ذهنيا.

الحالات والمنهج: هذة الدراسة هى دراسه تداخليه اجريت على ألاطفال المصابين باعاقة ذهنية من المترددين على مركز بحوث وعلاج الامراض الوراثية، كلية الطب، جامعة عين شمس ويتم تشخيصهم باستخدام DSM 5 وتتوافر فيهم معايير الشمول فى الفترة بين يناير ٢٠١٧ الى نهايه مارس ٢٠١٨ وبعد الحصول على اذن من ولى الامر، وشملت الدراسه ٢٩ طفل، اتموا عاما كاملا من التدخل المبكر وتم اجراء تقييم أولى قبل تنفيذ البرنامج، ثم تم اجراء تقييم نهائى بعد اتمام برنامج البورتاج. اشتملت مجموعه المكونه من ٢٩ طفل على ١٧ ذكر و١٢ انثي، وكان متوسط اعمارهم ٢٥,٧٩ شهر. ٢٠ منهم كانت نسبه اعاقتهم الذهنيه معتدله، بينما كانت الاعاقه الذهنيه لـ٩ منهم متوسطه. انقسمت مجموعه البحث الى فئتين، الفئه الاولى كانت منتظمه فى حضور الجلسات بمتوسط ٣١ جلسه على مدى عام من التدخل المبكر، بينما كانت الفئه الثانيه غير منتظمه فى حضور الجلسات بمتوسط ١٠ جلسات على مدى عام من التدخل المبكر.

النتائج: اظهرت النتائج ان الفئه الاولى (الفئه منتظمه الحضور) حققت نتائج ذات دلالة إحصائية ايجابيه تتعلق بتطور النمو فى المجال المعرفى ومساعده الذات والنمو اللغوى والحركى والتطور الاجتماعى p- value< 0.01 بينما لم تحقق الفئه الثانيه (الفئه غير منتظمه الحضور) اى نتائج ايجابيه فى المجالات السابقه p- value> 0.05.

الخلاصة: يوجد تأثير ايجابى لتطبيق برنامج متكامل للتدخل المبكر على تطور الأطفال الذين يعانون من أعاقات ذهنية وهذا التطور يشمل جميع مجالات النمو الحركى واللغوى والمعرفى والاجتماعى ومساعدة الذات وتعتمد نتيجة البرنامج على انتظام الطفل فى حضور جلسات التدخل المبكر.

الكلمات المفتاحية: الأعاقة الذهنية– التدخل المبكر– برنامج البورتاج.

Introduction:

Intellectual disability (ID) has been generally defined by significant, lifelong impairments in cognition and daily functioning. While intellectual and adaptive behavior deficits are essential in the diagnosis of ID, the presentation of ID can vary widely in relation to the degree of impairment and in strengths and weaknesses (Witwer, et.al., 2014). Estimates of intellectual disability range between 1- 3%, with a male to female ratio of 1.6: 1 (Marrus and Hall, 2017). According to the DSM- 5, the following three criteria must be met for diagnosis of Intellectual disability:

1. Deficits in intellectual functions, such as reasoning, problem solving, and abstract thinking, confirmed by clinical assessment and standardized intelligence test.
2. Deficits in adaptive function that results in failure to meet developmental and sociocultural standards for personal independence and social responsibility.
3. Onset of intellectual and adaptive deficits during the developmental period.

Severity is specified as mild, moderate, severe, or profound based on the level of impairment in adaptive functioning, and not IQ scores, because it is adaptive functioning that determines the level of support required (APA, 2013). There are two main approaches for classification of Intellectual disability (ID), one is the neurodevelopmental- clinical approach and the other one is the psychoeducational- social approach. These approaches show a complex interaction throughout the history of ID and have had a diverse influence on its classification. Diagnostic and Statistical Manual (DSM)- 5 and ICD adhere to the neurodevelopmental-clinical model. The new definition in the ICD- 11 follows a restrictive normality approach to intellectual quotient and to the measurement of adaptive behavior (Salvador- Carulla et.al., 2018). Down syndrome is the best- known example of a prenatal genetic disorder (Li et.al., 2018). The outcome for ID is variable and depends upon the etiology, associated conditions, environmental and social factors. The goals of management of ID are to strengthen areas of reduced function, minimize extensive deterioration in mental cognitive and adaptability, and promote optimum or normal functioning of the individuals in their community (Dasteh Goli et.al., 2016). All young children who are at- risk for or who have been identified with intellectual disabilities should have access to high- quality, affordable developmental services in natural environments. Early intervention should build on the strengths of the child and family to achieve the best developmental outcome (Tassé et.al., 2016). The Portage Program is a system of well- structured cascade of learning skills and an individualized curriculum which aims to enhance development of a disabled child. It is based on a strong belief that parents play the most important role in the development and teaching of their child. It presents the curriculum in small, achievable steps to achieve long term goals (Barakat et.al. 2004).

Aim of the work:

This study aims of to assess the impact of early intervention program among children with intellectually disability.

Subject and Methods:

This is an intervention study, it was carried out in Medical Genetics Centre, Faculty of Medicine, Ain Shams University over the period between first of January 2017 till the end of March 2018 to evaluate the impact of Portage early intervention program (Published in Egypt By Ministry Of Education in 1999) on the children with intellectual disability according to DSM 5 diagnostic criteria (APA, 2013).

- Inclusion criteria: Both Sex, Age≤ 6 years, and Mild and moderate intellectual disability who agreed to attend a whole intervention training year.
- Exclusion criteria: Children with severe intellectual disability, and Children with associated psychiatrassociated sensory deficit.

Ethical approvals were obtained from cientific Ethical Committee of Faculty of Postgraduate Childhood Studies. An informed consent was taken from one parent of each child participating in the study after explanation of the aim of the study and its benefits. Each child was subjected to the following:

1. Careful history taking and general examination.
2. Family pedigree construction& analysis.
3. Audiometry assessment.
4. Ophthalmological examination.
5. IQ assessment.
6. Children with phenotypic expression suggestive of chromosomal aberration had chromosomal analysis.

Children presented with intellectual disability and their clinical evaluations and course of disease were suggestive of genetic etiology, molecular diagnosis was not available. Application of Early intervention using Portage program was performed with:

1. First stage, Pre- assessment using Portage checklist in motor, language, cognitive, social and self- help domains.
2. Second stage, individual educational program based on results of the pre- assessment was applied for each child in weekly individual sessions using Portage teaching cards, number of tasks were selected every session and the therapist trains the child to achieve each task and mother is instructed to repeat the same training at home till the child masters the tasks.
3. Third stage, post assessment at the end of one year of intervention using Portage checklist in motor, language, cognitive, social and self-help domains was performed. Twenty nine children completed the whole intervention training year using Portage Program of rehabilitation and had pre- assessment test before application of the program and post- assessment test after application of the program using Portage checklist. The assessment calculation depends on the number of tasks which child can perform divided by the number of tasks that the child should perform in his/ her age multiplied by the chronological age of the child in months. This results in the child's developmental age in months.

Statistical Analysis:

The collected data was organized, tabulated and analyzed using the statistical package for social science SPSS software version 17, SPSS Inc., Chicago, IL, USA to obtain the results.

Results:

The present study is an intervention that included twenty nine children of both sexes with mild and moderate intellectual disability of genetic etiology according to DSM 5 diagnostic criteria. Consulting Medical Genetics Centre, Faculty of Medicine, Ain Shams University over the period between first of January 2017 till the end of March 2018. Among these 29 children, 24 children had good compliance with mean attendance of 31 sessions, 5 children had poor compliance with mean attendance of 10 sessions over the whole year of intervention. The twenty four children who constitute the good compliant research group (11 female, 13 male; median age 24.5 months, age range 5- 51 months), twenty children had the diagnosis of Down syndrome, 4 had the diagnosis of ID most probably of genetic etiology. Five children who constitute the poor compliant group (1 Female, 4 males; median age 39 months, age range 4- 61 months), all had the diagnosis of Down syndrome. Comparison between the good compliant group and the poor compliant group regarding age, gender and diagnosis showed statistically non- significant difference between the two groups Table (1).

Table (1) Comparison between the good compliant group and the poor compliant group regarding age, gender and diagnosis.

		Good	Poor	Test Value	P-Value	Sig.
		No.= 24	No.= 5			
Age (Months)	Median (IQR)	24.5 (11.5- 34.5)	39 (8- 52)	- 0.607≠	0.544	NS
	Range	5- 51	4- 61			
Sex	Female	11 (45.8%)	1 (20.0%)	1.138*	0.286	NS
	Male	13 (54.2%)	4 (80.0%)			
Diagnosis	DS	20 (83.3%)	5 (100.0%)	0.967*	0.326	NS
	ID	4 (16.7%)	0 (0.0%)			

In the pre- assessment evaluations there was statistically non- significant difference between the good compliant group and the poor compliant group in cognitive, self- help, language, motor and social domains or IQ assessment at first stage table (2) Figure (1).

Table (2) Comparing results of pre- assessment evaluation and IQ assessment in the first stage between good compliant group and the poor compliant group

Pre- Assessment		Good	Poor	Test Value	P-Value	Sig.
		No. =- 24	No. = 5			
Cognitive	Median (IQR)	10.75 (5.1- 16.15)	9.7 (0.6- 25.8)	- 0.116≠	0.908	NS
	Range	0.8- 31	0- 35.8			
Self- Help	Median (IQR)	13 (7.5- 19.7)	18.5 (2- 36)	- 0.405≠	0.686	NS
	Range	1- 38.3	1- 55.4			
Language	Median (IQR)	6.6 (3.05- 12.1)	3.6 (2.4- 13.8)	- 0.405≠	0.686	NS
	Range	1.2- 41	0- 22.8			
Motor	Median (IQR)	14.6 (5.8- 20.65)	21.3 (0.8- 29.8)	- 0.289≠	0.773	NS
	Range	0.2- 37.5	0- 36.7			
Social	Median (IQR)	14.9 (8.35- 22.85)	17.5 (2.4- 29.9)	- 0.115≠	0.908	NS
	Range	2.5- 36	0.4- 47.8			
IQ	Mild	17 (70.8%)	3 (60.0%)	0.227*	0.634	NS
	Moderate	7 (29.2%)	2 (40.0%)			

P- value> 0.05: Non significant; P- value< 0.05: Significant; P- value< 0.01: Highly significant*: Chi- square test; ≠: Mann- Whitney

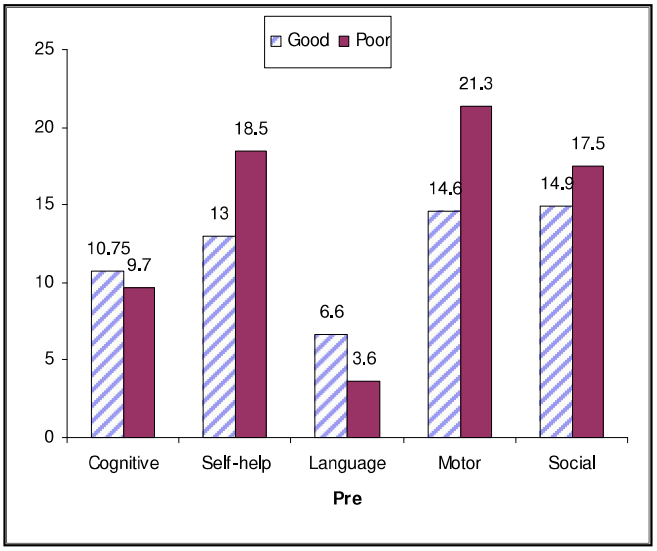

Fig. (1) Pre- assessment evaluation of the good compliant group and the poor compliant group in the cognitive, self- help, language, motor and social domains.

In the good compliant group, there was statistical high significant difference between the pre- assessment and post- assessment values in children with age ≤24 months (n. 13) and in children age >24 months (n. 11) in cognitive, self- help, language, motor and social domains table (3) figures (2)& (3).

Table (3) Good compliant group, skills gained in cognitive, self- help, language, motor and social domains in relation to age.

Research Group		Pre- Assessment	Post- Assessment	Test Value	P-Value	Sig.
Age ≤24 (no. 13)						
Cognitive	Median (IQR)	5.1 (1-19.15)	23.1 (12.2-30.6)	- 7.727	0.000	HS
	Range	0.8-12.3	8-42.6			
Self- Help	Median (IQR)	7.5 (2.75-10.6)	19.6 (13.8-32.05)	- 6.707	0.000	HS
	Range	1-15	9-39.6			
Language	Median (IQR)	3.05 (1.6-6)	17.05 (11.5-19.95)	- 10.572	0.000	HS
	Range	1.2-8	7.8-27.8			
Motor	Median (IQR)	5.8 (2.1-9.7)	18.65 (12.8-28.3)	- 7.627	0.000	HS
	Range	0.2-16.2	6.6-39.2			
Social	Median (IQR)	8.35 (4.2-15.1)	21.55 (13.6-32.55)	- 6.919	0.000	HS
	Range	2.5-21.1	9.4-42.7			
Age >24 (no. 11)						
Cognitive	Median (IQR)	16.15 (11.4-20.6)	33 (30.5-40.35)	- 10.161	0.000	HS
	Range	6.6-31	29.2-59			
Self- Help	Median (IQR)	19.7 (15-22.9)	33.5 (29-40.25)	- 12.251	0.000	HS
	Range	9.5-38.3	17-56			
Language	Median (IQR)	12.1 (6.9-14.3)	21.9 (19-29.6)	- 7.892	0.000	HS
	Range	6-41	12.9-56			
Motor	Median (IQR)	20.65 (15.5-24)	36 (32.45-41.6)	- 10.668	0.000	HS
	Range	14-37.5	24.2-53			
Social	Median (IQR)	22.3 (14.8-27.4)	33.1 (30.85-42.5)	- 9.112	0.000	HS
	Range	12.4-36	24.6-55			

P- value> 0.05: Non significant; P- value <0.05: Significant; P- value <0.01: Highly significant*: Chi- square test; ≠: Mann- Whitney

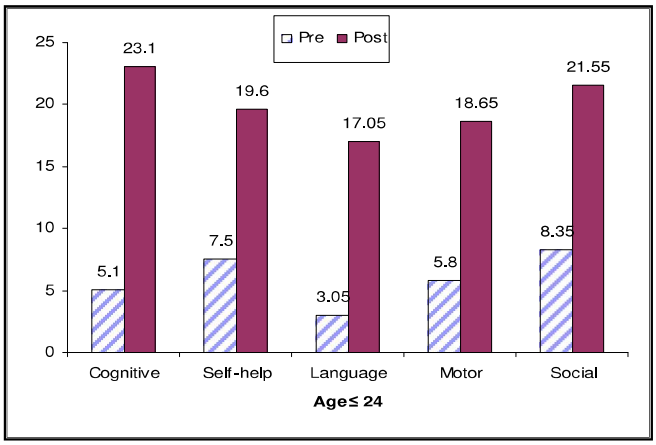

Fig. (2) Good compliant group children age ≤ 24 months, skills gained before and after intervention in cognitive, self- help, language, motor and social domains.

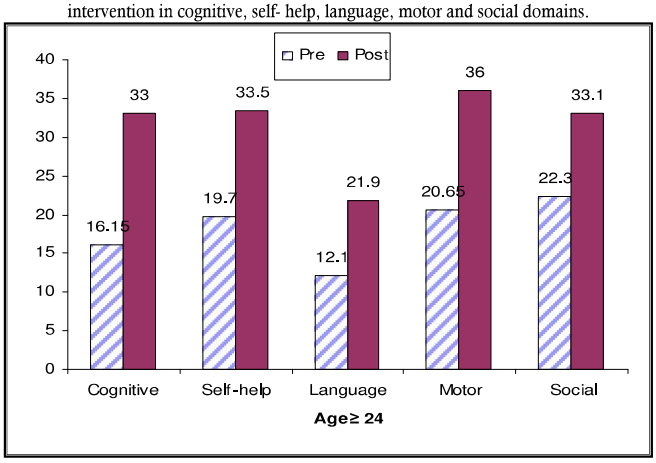

Fig. (3) Good compliant group children age > 24 months, skills gained before and after intervention in cognitive, self- help, language, motor and social domains.

In the poor compliant group, there was statistically non- significant difference between the pre- assessment and post- assessment values in children with age ≤24 months (n. 3) and in children age> w24 months (n. 2) in cognitive, self- help, language, motor and social domains table (4).

Table(4) Poor compliant group, skills gained in the cognitive, self- help, language, motor and social domains in relation to age.

Poor Compliant Group		Pre- Assessment	Post- Assessment	Test Value	P- Value	Sig.
Age > 24 months (No. = 3)						
Cognitive	Median (IQR)	25.8 (9.7- 35.8)	33.2 (18.3- 42.7)	- 1.604	0.109	NS
	Range	9.7- 35.8	18.3- 42.7			
Self- Help	Median (IQR)	36 (18.5- 55.4)	42.3 (23- 57.9)	- 1.604	0.109	NS
	Range	18.5- 55.4	23- 57.9			
Language	Median (IQR)	13.8 (3.6- 22.8)	22 (4.2- 23.4)	- 0.535	0.593	NS
	Range	3.6- 22.8	4.2- 23.4			
Motor	Median (IQR)	29.8 (21.3- 36.7)	40.2 (22- 47.1)	- 1.633	0.102	NS
	Range	21.3- 36.7	22- 47.1			
Social	Median (IQR)	29.9 (17.5- 47.8)	42.5 (19.9- 53.5)	- 1.604	0.109	NS
	Range	17.5- 47.8	19.9- 53.5			
Age ≤ 24 months (No. = 2)						
Cognitive	Median (IQR)	0.3 (0- 0.6)	7.25 (6- 8.5)	- 7.316	0.086	NS
	Range	0- 0.6	6- 8.5			
Self- Help	Median (IQR)	1.5 (1- 2)	10.5 (10- 11)	- 9.000	0.070	NS
	Range	1- 2	10- 11			
Language	Median (IQR)	1.2 (0- 2.4)	6 (3.6- 8.4)	- 1.333	0.410	NS
	Range	0- 2.4	3.6- 8.4			
Motor	Median (IQR)	0.4 (0- 0.8)	8.1 (5.6- 10.6)	- 3.667	0.170	NS
	Range	0- 0.8	5.6- 10.6			
Social	Median (IQR)	1.4 (0.4- 2.4)	10.45 (10.2- 10.7)	- 7.240	0.087	NS
	Range	0.4- 2.4	10.2- 10.7			

Correlation between age of children& skill gained In the post- assessment evaluations of the studied group, it was found that there is a positive correlation between age of the children in the studied group and the assessed skills values in the cognitive, self- help, language, motor and social domains, this is shown in the following figures (4), (5), (6), (7)& (8).

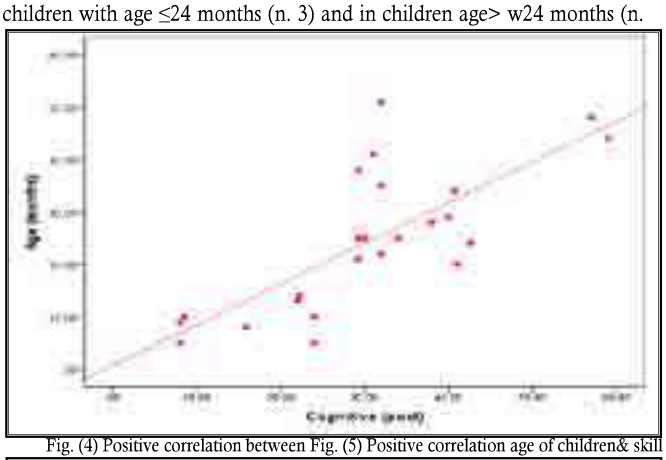

Fig. (4) Positive correlation between age of children& skill gained in cognitive domain.

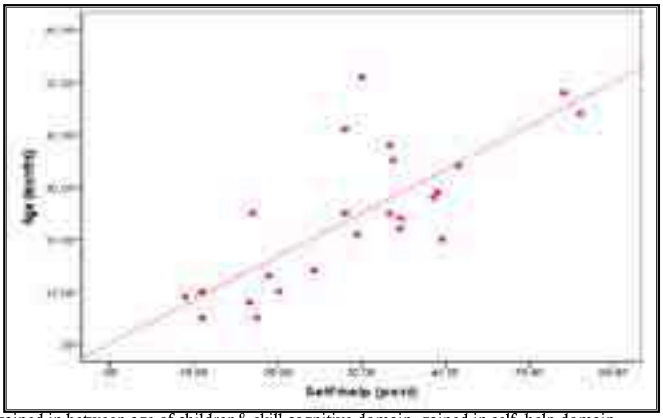

Fig. (5) Positive correlation between age of children& skill gained in self- help domain.

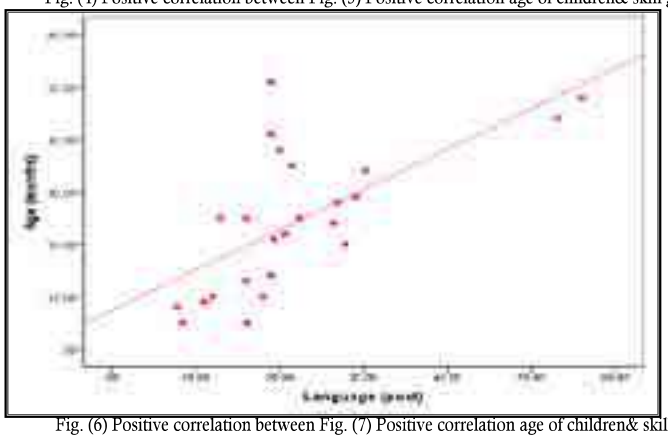

Fig. (6) Positive correlation between age of children& skill gained in language domain.

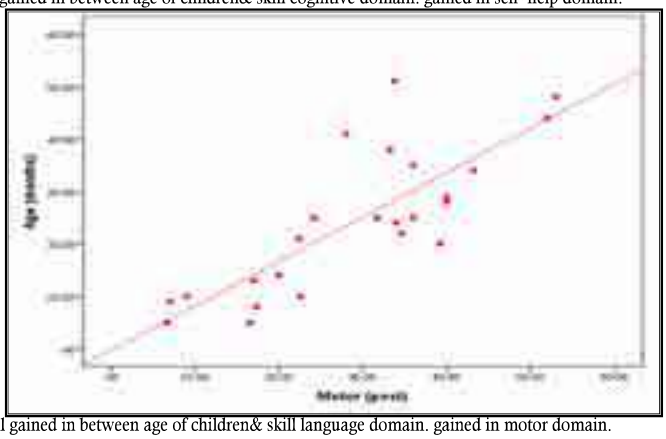

Fig. (7) Positive correlation age of children& skill gained in between age of children& skill gained in motor domain.

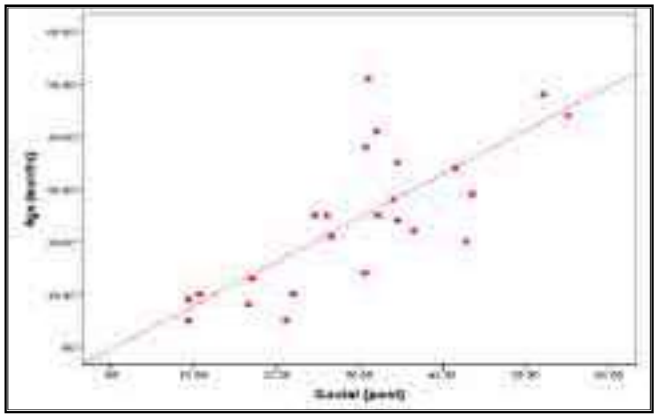

Fig. (8) positive correlation between age of children in the studied group and skill gained in social domain.

Discussion

Early intervention includes a series of purposeful, well structured, and enriched educational activities that enhance the intellectual development of children with intellectual disability. Timing of intervention is particularly important as the plasticity of the infant brain is the greatest during the phase of cortical cell migration and glial cell proliferation (Georgieff et.al., 2015).

In the current study, children in the good compliant research group who had mean attendance of 31 sessions over the period of the whole intervention year had statistically high significant difference between developmental age before and after intervention as P- value<0.01 in the cognitive, self- help, language, motor and social domains. This result is consistent with a relatively recent study which was conducted in China by Liu X. et.al (2018) using Portage program, Their results found that the intervention group has improved functioning in the areas of communication, social skills and motor skills. On the other hand, in the poor compliant group who had mean attendance of 10 sessions over the period of the whole intervention year all patients had statistically non-significant difference between developmental age before and after intervention as P- value >0.05. These results lead us to the conclusion that the compliance of the patient in attending the intervention sessions constitutes a fundamental factor in the impact of the results of the intervention program. This is constant with Ramey et.al. (2007) who emphasized that intensive educational efforts tend to lead to the greatest developmental gains. One parameter of intensity is the frequency which refers to how often those sessions occur. Warren et.al. (2007) suggest that short sessions delivered too frequently may only need to occur for a few weeks, but long sessions delivered less frequently may require months for individuals to acquire and maintain skills. There is a positive correlation between age of the child and the assessed skills values gained in the five targeted domains. This result is supported by other studies which stated that interventions delivered early in the lives of infants and young children as soon as they are identified as disabled or at risk of developmental delay bring developmental gains and improve daily and social functioning (Lanzi et.al., 2007). Also Der- Chung Lai et.al., 2014 stated that early intervention can improve the cognitive abilities of children with intellectual disability, and the earlier the intervention the better the results.

Conclusion:

There is a positive impact of implementation of integrated program of early intervention on the development of various domains of children with intellectual disability which depends mainly on the regular attendance of the child.

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Perinatal risk factors in autistic spectrum disorder associated with EEG abnormalities

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Abstract

Background: Autism spectrum disorder (ASD) is a common complex neurodevelopmental disorder characterized by persistent deficits in social communication and interaction, restricted, repetition of behavior and interests. Furthermore, it was stated that children with ASD have high incidence of abnormal encephalography (EEG) findings even with no seizures.

Objectives: To assess the association between perinatal risk factors and autistic spectrum disorder associated with EEG abnormalities.

Methodology: ASD cases according to inclusion criteria. The study was held at the center of special needs children- Faculty of postgraduate childhood studies- Ain Shams University, over the period from beginning of April 2015 till December 2017, visiting the center of special needs twice per week, 3: 4 hours per visit. EEG abnormalities were recorded, Childhood Autism Rating Scale and Vineland Adaptive Behavior Scale were applied, it was available to meet 120 caregivers and their children to collect finally 50 cases.

Results: Regarding the incidence of ASD, there was a higher percentage of male than female, the ratio was 2.5: 1 respectively. Relation between prenatal insults and EEG changes of the patient group with autism, Left focal epileptiform activity which was found in half of the patients 68% of them with no prenatal insults and 32% with prenatal insults and this result is statistically significant p 0.034.

Conclusion: There is a higher ratio of male than female presentations in ASD cases Epileptiform activities, abnormal background activities and slowing in different brain areas were observed and related to cases that exposed to perinatal insults.

Recommendations: More studies should be considered regarding pre and perinatal insults in more details and its effect on late EEG during childhood not only early infancy.

Keywords: Autism Spectrum Disorder (ASD), Electro Encephalo Graphy (EEG), Epileptiform activity (EA).

المخاطر الصحية فى فترة ما حول الولادة عند المصابين بالذاتوية المصاحب له تغيرات فى رسم المخ

الخلفية: اضطراب الذاتوية هو اضطراب النمو العصبى يتميز بالعجز فى التفاعل الاجتماعى والتواصل ووجود سلوك مقيد ومتكرر. العديد من الاعتبارات تجعل البحوث على عوامل ما قبل ومحيط وحديثى الولادة تستحق أن تدرس. وقد كان واضحا أن رسم المخ يظهر فى كثير من الأحيان بشكل مشوه فى المراهقين والشباب البالغين المصابين بالذاتوية.

الأهداف: تقييم الارتباط بين عوامل الخطر فى الفترة ما حول الحمل واضطراب الذاتوية المرتبط بتشوهات تخطيط كهربية الدماغ.

المنهجية: حالات الإصابة بالتوحد وفقا لمعايير الإدماج من مركز الأطفال ذوى الاحتياجات الخاصة، الدراسة تشمل ٥٠ حالة حيث تم تسجيل تشوهات فى تخطيط الدماغ، وتطبيق مقياس تصنيف التوحد فى مرحلة الطفولة، وتطبيق مقياس السلوك التكيفى فى فينلاند

النتائج: فيما يتعلق بنسبة الاصابة بالذاتوية كانت النسبة المئوية للذكور أعلى من نسبة الإناث، وكانت النسبة ٢,٥: ١ على التوالي. كما تم رصد علاقة بين المخاطر الصحية التى تعرضت لها الأم قبل الولادة وتغيرات تخطيط الدماغ من مجموعة المرضى المصابين بالذاتوية، وظهر اختلاف إحصائى دال فيما يتعلق بنشاط الصرع البؤرى الأيسر، أيضا هناك فرق إحصائى كبير فيما يتعلق بعدم التماثل فى النشاط الكهربى خاصة ناحية اليمين فى مجموعة المرضى الذين يعانون من الذاتوية ولديهم تاريخ مرضى تسبب فى الحجز بالرعاية المركزة لحديثى الولادة.

الخلاصة: نسبة اصابة الذكور أعلى من الإناث فى حالات الذاتوية، وقد لوحظت أنشطة بؤر صرعية، والأنشطة الخلفية غير الطبيعية والتباطؤ الكهربى فى مناطق الدماغ المختلفة، وكانت تتعلق بالحالات التى تتعرض للمخاطر الصحية قبل ومرحلة ما حول الولادة.

التوصيات: يوصى بإجراء مزيد من الدراسات التى تتعلق بالمخاطر الصحية فى فترة ما حول الولادة وعلاقتها بالتخطيط الكهربى لرسم المخ فى حالات التوحد.

الكلمات المفتاحية: اضطراب طيف التوحد، تخطيط الدماغ الكهربائي، نشاط صرعي.

Introduction:

Autism Spectrum Disorder (ASD) is defined as a developmental disorder characterized by marked impairment in social interaction, communication and restrictive stereotypic patterns of behavior (American Psychiatric Association, 2000).

Numerous considerations surrounding ASD make research on pre-, peri- and neonatal factors deserve to be studied. For example, increasing evidence indicates that the prevalence of ASD has increased over the past 20 years at a rate not explained by improved detection of ASD in the population (Barbaresi et.al., 2005). This phenomenon raises the probability that environmental factors play a role (Parner et.al., 2008) and the proportion of children with a major gene defect is limited to a small proportion of ASD cases (Cohen et.al., 2005).

Studies of monozygotic twins showed that less than 70% of twin pairs are concordant for autism. This finding suggests the presence of nonheritable, prenatal, and perinatal risk factors for autism (Bristol et.al., 1996).

Aim Of The Study:

To assess the association between perinatal risk factors in autistic spectrum disorder with EEG abnormalities.

Design Of Study:

Cross sectional study which was conducted at regular working hours for ASD patients over the period from beginning of April 2015 till December 2017.

Subjects:

Patients: the study included 50 children aged from 18 months to 13 years old who were diagnosed as ASD cases according to DSM V, it was available to meet 120 caregivers and their children to collect finally 50 cases after exclusion of cases did not meet the inclusion criteria such as 12 patients with no EEG abnormalities, one child with congenital heart disease, 12 patients belonging to far governorates and it was difficult to continue follow up in Cairo governorate, 45 patients refused recent EEG performing for two main reasons: the first one that they have already conducted EEG but outside the unit of Faculty of postgraduate childhood studies which is not suitable for our study as we need special format matching the viewer of EEG recoding on computer, the second reason was refusing of sedation during EEG.

Place Of The Study:

This study was held at the center of special needs children Faculty of postgraduate childhood studies- Ain Shams University

1. Inclusion Criteria: Patients with ASD and EEG abnormalities both sex in age group from 18 months to 13 years, diagnosed according to DSM- 5
2. Exclusion Criteria:
   a. ASD with no EEG abnormalities.
   b. All double syndromes (Down syndrome with autism, Angleman syndrome with autism, Ehlers- Danlos syndrome with autism).
   c. Patients with major cardiac problems.
   d. Patients with inborn errors of metabolism.
3. Ethical Aspects: Informed written consent was obtained from the care giver of the patients.

Methodology:

All patients underwent the following:

1. History taking: Full medical and psychiatric history, perinatal history and history of medications given to the patient.
2. Examination: Medical clinical examination, neurological and mental status examination
3. Vineland Adaptive Behavior Scales- Second Edition: Several studies have confirmed that the Vineland Adaptive Behavior Scales (Sparrow et.al., 2005), a well- standardized semi- structured caregiver report instrument for assessing adaptive behavior, can be used to document delays in adaptive development in individuals with autism spectrum disorders (Carter et.al., 1998) (Griffith et.al., 2010)
4. Childhood Autism Rating Scale (CARS): it is a 15 item behavioral rating scale developed to identify children with autism and to distinguish them from developed mentally handicapped children without autism so the CARS is considered a special powerful effective tool used for discrimination between autistic children and trainable mentally retarded children (Schopler et.al., 1986) (Morgan, 1988)
5. Investigations: All patients were subjected to: EEG examination where encephalographic abnormalities were detected.
6. Limitations of the study: refusal of the caregiver to perform the EEG.

Statistical Analysis:

The data were entered, coded and processed on computer using Statistical Packaged for Social Science (IBM SPSS version 22, 2013). The level $P \leq 0.05$ was considered the cut- off value for significance.

Results:

The current study was conducted on 50 patients with autistic spectrum disorder and EEG abnormalities recruited from Child psychiatry clinic of faculty of postgraduate childhood studies and center of children with special needs. In age group from 3 to 12 years with the mean of age± SD (6.0± 2.32). Gestational age less than 36 weeks and birth weight less than 2.5 kg represent only and twins were 8%. As regard the mode of delivery, NVD and CS were equal 50%, with a higher percentage of male than female (72%, 28% respectively), as shown in table (1)

Table (1) Descriptive data of the patient group with autism

	Range	Mean	±Sd
Age	3- 12	6.0	2.32
		no	%
Gestational Age	Less 36 Weeks	4	8
	More Than 36 Ws	46	92
Birth Weight	Less 2.5 Kg	4	8
	More Than 2.5Kg	46	92
Mode Of Delivery	NVD	25	50
	CS	25	50
One Of Twins		4	8
Sex	Male	36	72
	Female	14	28