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Impact of Early intervention on Cognitive Development of Children at Risk of Developmental Disabilities

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Abstract:

Early intervention services are designed to meet the developmental needs of children from birth to 3 years of age who have developmental delay in physical, cognitive, communication, social, emotional or adaptive development or have a diagnosed condition that has a high probability of resulting in developmental delay and disabilities. The aim of present study is to find out the effect of early intervention on cognitive development of children at risk of developmental disabilities. Samples of 40 children were selected from institutes of Sweekaar-Upkaar and Daffodils play school for children. Bayley scale of infant development (BSID) is used for the present study. The data was analyzed and interpreted by calculating mean, SDs, paired 't' test and 'F' test were used. The study revealed that there is positive impact of the intervention programme on the cognitive development of children at risk of developmental disabilities. There is significant improvement in performance on mental developmental index (MDI) of Bayley scale of infant development in experimental groups when compared to control groups.

Keywords: Cognitive development, experimental group, disability, at risk, early intervention

1. Introduction

Early childhood is a crucial period in the growth and development of an individual foundation of physical, mental, social and personality development of the children is laid down in this period and these foundations are very important as during this period the growth and development is very rapid. When a child fails to meet expected developmental milestones and there is no specific diagnosis or apparent explanation, there is a tendency to describe the child as being developmentally delayed and when a child is at risk of developing a disability, there is a tendency to describe the child as at risk child.

Deficits in cognitive functioning and learning styles characteristic of individuals which include poor memory, slow learning rates, attention problems, difficulty generalising what they have learned and lack of motivation. Many students with mental retardation have difficulty remembering information. As would be expected the more severe the cognitive impairment, the greater the deficits in memory. In particular a search has found that students with mental retardation have trouble retaining information in short term memory (Bray, Fletcher and Rurner, 1997). Merrill (1990) reported that students with mental retardation required more time than their non-disabled peers to automatically recall information and therefore have more difficulty handling large amounts of cognitive information at one time.

Early intervention can be defined as "efforts to eliminate existing or anticipating deficits using therapeutic intervention from birth to 3 years." Early intervention service are designed to meet the developmental needs of children from birth to three years of age who have a developmental delay in physical, cognitive, communication, social, emotional or adaptive development or have diagnosed condition that has a high probability of resulting in developmental delay. These services have been developed because early intervention is recognised to be important of children with disabilities or delays as to achieve their full potential. Early intervention of progress provide an assay of therapeutic and social services to families of young children with developmental concerns. These programmes are based on the assumption that therapies and enriching experiences provided at an early age can help lessen the impact of developmental problems. There are three primary reasons for intervening early with an exceptional child.

- To enhance the child's development.
- To provide support and assistance to family.
- To maximize child's and family's benefit to the society.

The aim of present study is to find out the effects of early intervention on cognitive development of children at risk of developmental disabilities. The awareness of general population is very poor. The available services are very few and there is a need to conduct research and improve the existing services and accessibility to the needy population to decrease the developmental delay to some extent.

2. Objective

The objective of the present study is 'To study the impact of Early intervention on the cognitive development of children at risk of developmental disabilities'.

3. Hypotheses

3.1. Hypothesis-1

There will be positive impact of the intervention programme on the cognitive development of children at risk of developmental disabilities.

3.2. Hypothesis-2

There will be significant improvement in both the experimental groups when compared to control groups children at risk of developmental disabilities receiving cognitive intervention.

3.3. Sample Selection

The total sample comprised of 40 children were selected from Sweekaar-Upkaar institute Secunderabad and Daffodils play school kukatpally, Hyderabad.

The selected samples from each institute were divided into two groups' i.e experimental and control groups consisting of 10 children in each group.

3.4. Tools for the study

Bayley scale of infant development (BSID-1986) is used for the present study. Cognitive tasks were presented to the experimental groups which were selected from step by step learning guide by Mike Jhon. The intervention was given for 6 months at the rate of 2 time a week.

3.5. Procedure

Pre-test was given to sample of 40 subjects. After conducting the intervention programme for both experimental groups, they were again administered with the same tool i.e Bayley scale of infant development which was used for pre test. A comparison was done between the pre-scores and post scores for the study to ascertain whether there is any positive impact because of intervention programme.

3.6. Statistical Analysis

The data was analyzed and interpreted by calculating the mean,SD's, paired 't' test and F test were used to find out the significant difference between experimental and control groups.

4. Results and discussion

The results, analysis and interpretation are presented in following section along with tables.

Comparison between pre and post scores for PDI and MDI of experimental Group-1				
	PDI	PDI	MDI	MDI
	Before	After	Before	After
Mean	67.6	68.6	64.2	76.4
SD	9.43	10.8	7.61	8.48
't' value	1.00NS		7.35*	

Table 1: Means, SD's and 't' values for Physical Developmental Index and Mental Developmental Index of experimental Group-1
PDI-Physical developmental Index, MDI- Mental Developmental Index

From the above table -1 it can be inferred that there is no significant difference in Physical Developmental Index before and after intervention for experimental Group-1. It was interesting to see a marked improvement in Mental Developmental Index in the Group when pre and post test scores were compared.

Hence the first hypothesis is confirmed that there will be positive impact of the intervention programme on the cognitive development of children at risk of developmental disabilities.

Comparison between pre and post scores for PDI and MDI of control Group-1				
	PDI	PDI	MDI	MDI
	Before	After	Before	After
Mean	58.9	59.8	63.3	64
SD	9.33	9.38	5.62	5.21
't' value	1.27NS		0.85NS	

Table 2: Table showing means, SD's, 't' values of control Group-1
NS- Not Significant PDI-Physical developmental Index, MDI- Mental Developmental Index

The table-2 shows the comparison of the mean score of control group. The analysis reveals that there is no significant difference in either Physical Developmental Index or Mental Developmental Index even after a period of six months. From this we can infer that because this group didn't receive any intervention programme, there was no significant improvement in their test scores.

	PDI		MDI	
	Before	After	Before	After
Mean	66.0	66.3	70.3	91.5
SD	14.4	14.27	9.17	12.61
't' value	1.72NS		8.59**	

Table 3: Comparison between pre and post scores of PDI and MDI of experimental group-2
PDI-Physical developmental Index, MDI- Mental Developmental Index

Table-3 shows the comparisons of the scores of PDI and MDI before and after the intervention programme. From the table it can be inferred that there is no significant difference in Physical Developmental Index before and after the intervention programme. But a significant difference was found in the Mental Developmental Index before and after intervention.

	PDI		MDI	
	Before	After	Before	After
Mean	65.3	65.6	60.2	60.8
SD	12.6	12.78	9.92	10.5
't' value	1.52NS		0.94NS	

Table 4: Means, SD's, and 't' values of PDI and MDI of control group-II

The 't' values for both PDI and MDI pre and post test scores are not significant. This is because no cognitive intervention has been given.

	MDI			MDI		
	Exp-1	Exp-2	CG-1	Exp-1	Exp-2	CG-2
Pre test Scores						
Mean	64.2	70.3	63.3	64.2	70.3	60.2
SE	2.4	2.8	1.7	2.4	2.8	3.1
F Value	2.5NS			3.2NS		
Post test scores						
Mean	76.4	91.5	64.0	76.4	91.5	60.8
SE	8.48	12.61	5.21	1.7	3.9	3.3
F Value	26.3***			23.5***		

Table 5

MDI-Mental Developmental Index, NS- Not Significant, Exp- Experimental Group, CG- Control Group, SE-Standard Error

From the Table-5 we can conclude that there is no significant difference between the experimental group and control group in Mental Developmental Index score before the intervention. After cognitive intervention for six months to the experimental group a highly significant difference was found between the experimental groups and control group. It was interesting to note that there is improvement in post test scores of both the experimental groups.

Hence the second hypothesis has been proved showing that there will be significant improvement in both experimental groups when compared to the control groups.

5. Conclusion

Present research study revealed that early cognitive intervention had an impact on the cognitive performance of children at risk of developmental disabilities. This finding is of great significance as cognitive development plays a crucial role in every person's life and more parents become aware of significance of early intervention and avail the services.

6. References

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