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Developing an intervention programme for improving functional ability of autistic children and training mothers as a service providers

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Abstract

The present study investigated the effect of supportive learning material (visual aids) on functional ability of autistic child and role of mothers as a service provider. The sample consisted of 10 autistic children, five each in experimental and control group (6 to 12 years old and poor functional ability range 10 to 13) and their mothers from Omit Child Development and Spastic Centre at Aligarh. Researcher develop a supportive learning material for improvement of autistic children's (experimental and control group) functional ability and mothers involve as a therapist in experimental group. Mothers are to serve as service providers it will be important to train them in specific procedures to work directly with their children who may be diverse and include development of communication skill, personal tasks and orderliness. There was significant difference in the effect of supportive learning material (visual aids) on functional ability of baseline behavior and two weeks, two and four weeks of intervention of autistic child (experimental group) and no significant difference in the effect of supportive learning material (visual aids) on functional ability of two and four weeks of intervention of autistic child (control group). There was significant difference in the role of mothers as a service provider in experimental group and control group.

Keywords: Autistic children, Functional ability, Supportive learning material, Mothers as a service provider.

Introduction

Autism is a disorder of neural development characterized by impaired social interaction and communication, and by restricted and repetitive behavior. These signs begin before a child is three years old. Autism affects information processing in the brain by altering how nerve cells and their synapses connect and organize; how this occurs is not well understood. Parents usually notice signs in the first two years of their child's life. The signs usually develop gradually, but some autistic children first develop more normally and then regress. Autism is diagnosed when child has abnormalities in a 'triad' of behavioral domains, that is, social development, communication, and repetitive behavior/obsessive interest (APA, 1994) [3]. Autism is seen at the time of birth, but takes a little time to be perceived by parents. Autistic children can be at any point on the IQ continuum, and IQ is a strong predictor of outcomes of intervention (Rutter, 1978) [12]. Some common co-occurring conditions in autism are Mental Retardation, Epilepsy, Seizures, Sleep problem, Pica, Low Muscle Tone, and Sensory Sensitivities (Dawson *et al.* 2008) [4]. The fraction of autistic individuals who also meet criteria for mental retardation have been reported as anywhere from 25% to 70%, this is a wide variation illustrating the difficulty of assessing autistic intelligence (Spence and Schneider 2009) [13]. Epilepsy is also seen with variations in risk of epilepsy due to age, cognitive level, and type of language disorder (Ozgen *et al.* 2010) [10]. Daley (2002) [5, 6] speculates that the reason for this is that it has symptoms which are similar to both. Although there are many other developmental disorders, which present difficulties autism is unique in several ways. Without a definitive test, the diagnosis of and prognosis for autism is fraught with uncertainty. This ambiguity makes it extremely difficult for parents to accept the child's condition. It is characterized by problems of social interaction, such as forming attachments and showing affection, parents of children with autism often feel denied of the fundamental reward of parenthood. Autism has been considered as one of the most complex and intractable developmental disorders with which families may have to cope.

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Aluri and Karanth (2002) ^[1] found that most parents initially consult pediatricians regarding their child's problem. Professionals such as psychologists, speech language pathologists and special educators were often consulted later. Parents reported that early referrals to these professionals for appropriate intervention would have helped the child show greater gains and stressed the need for this information being made available to medical practitioners. In his work, Peeters (2000) ^[11] noted that on their lists of priorities, the association for parents' of children with autism emphasized the creation of specialized diagnostic and home-training services for parents. According to Gray (2003) ^[7] mothers were much more likely to claim that their child's autism had severely affected their emotional well-being. It also had a significant effect on their careers.

Importance of parent support service

Parent training means including parents as therapists in their children's intervention programmes. (Symon 2001). According to Anderson *et al.* (1999) ^[2] parents should be taught the implementation of the programme through modeling and rehearsal; and the parents must be made to practice the programme with the expert's feedback. Hasting and Johnson (2001) ^[8] reported that success in training parents to teach a number of skills to their children, including play skills and communication. Symon *et al.* (2003) expects that involving the parents at this level, by providing more information and making them an integrated part of the child's education programme not only will enhance the child's skills but will also be instrumental in reinforcing belief of the parents in their own competencies.

Functional ability

Functional ability is a physical, mental, or social ability to carry on the normal activities of life for example using the toilet, dressing, preparing meals, and eating.

Two basic levels of functional ability recognized are

- ❖ Personal care and mobility (eating, bathing, dressing, using the toilet etc).
- ❖ Instrumental functional ability (e.g., taking medication, managing money, and grocery shopping). The present study will focus on improving functional ability of the first category.

Objectives

1. Assessment of the usefulness of supporting learning material for improving functional ability of autistic children.

Methodology

Selection of children

Ten autistic children between 6 to 12 years of age, attending Omit Child Development and Spastic centre Aligarh were selected purposely. The selected autistic child had poor functional ability the range of 10 to 13 as a measured by the centre.

Selection of Mothers

Mothers of the selected ten autistic children who were attending Omit Child Development and Spastic Centre of Aligarh for physical therapy were also part of the sample.

Tools

Two types of tools have been used for the purpose of study.

- Assessment tool (Tool for assessment of effect of intervention on Functional ability). Respondent of this

tool of Therapist, Researcher and Mothers.

- Educative tool (Supportive Learning Material). Respondent of this tool of Mothers.

Supportive Learning Material (Educative tool): The Supportive Learning Material was basically designed in the form of visual aids and was made with the help of coral draw. The supportive learning material was prepared for the improvement of functional ability in personal task (Brushing the teeth, Hand washing) and responding to visual stimuli (choosing food item, responding to wait signal). Each functional skill was task analyzed in to a number of steps, brushing teeth was analyzed into seven steps, washing hands was task analyzed into eight steps and visual stimuli cards had three optional choice and food choice book had ten choices.

Tool for assessment of effect on functional ability after Intervention

(Assessment tool): The self made assessment tool was used to assess the effect of supportive learning material on functional ability of autistic children during and after intervention. This tool has six questions. These six questions relate to supportive learning material. The right responses were assigned one mark and wrong responses were given zero mark.

Procedure

Exploration phase

At the onset functional ability of selected autistic children was assessed. The purposively selected ten autistic children having similar functional ability score were randomly divided into control and experimental group.

Pre intervention phase

Supportive Learning Material was low tech visual material. This basic principle of structured teaching was explicitly explained to mothers of experimental group during the course of intervention. During the pre intervention the researcher identified the areas of functional ability that need to be improved for the autistic children. This was done through discussion with the mother during pre intervention phase. On the basis of the child's need and ability as well as mother's willingness following functional ability tasks were identified for improvement.

- Personal task – Hand washing, brushing teeth.
- Responding to visual stimuli – Three optional choice waiting cards and food choice book.

Then researcher made a supportive learning material with/without the help of the mothers for experimental/control group respectively.

Intervention phase

Intervention with the experimental group

Didactic interaction, demonstration and modeling techniques were done with experimental group for teaching the use of supportive learning material. The researcher met the mothers daily in the clinic and worked directly with the autistic child, during the course of interaction the mothers learnt the use of supportive learning material. For recapitulation of learnt skill demonstration and modeling of teaching was done for the mothers. During the four weeks of intervention, the researcher conducted weekly home visits to ensure that mothers of experimental group worked with their child in the home, using the same materials and techniques as papered by the researcher and mother. As the mothers become more capable of handling of structured teaching, they were given increasing

responsibility for directing the home program. The researcher was with mothers for one week and gradually withdrew after two week. The next two weeks, week third and fourth were only monitoring period and assessment period. At the end of every week during the four week intervention the researcher assessed the change in function ability of experimental group.

Intervention with the control group

Didactic interaction was done for mothers of control group for teaching the use of supportive learning material. The supporting learning material was provided to mothers and clear explanation of its use was done. Further explanation was done only on demand. The researcher met the control group daily in the clinic to remove the problem of mothers in the use of supportive learning material. No home visits were conducted. At the end of every week during the four week intervention the researcher assessed the change in function ability of control group.

Post intervention phase

Change in function ability of experimental group and control group was assessed by therapist, researcher and mother.

Results

Table 1: showing functional ability scores of experimental group at baseline and after two weeks of intervention.

Assessor	Baseline performance		Performance after two weeks of intervention		“t” value	P
	Mean	S.D	Mean	S.D		
Mothers	1.20	0.45	4.80	0.45	6.46	0.01
Researcher	0.60	0.55	2.80	0.45	4.38	0.05
Therapist	0.60	0.55	3.00	0.71	3.78	0.05

It was found that mean, S.D. and ‘t’ values for functional ability scores of experimental group at baseline and after two weeks of intervention. The mean scores on functional ability were 1.20, 0 .60 and 0.60 at baseline for scores given by mothers, researcher, and therapist respectively. These scores increased to 4.80, 2.80, and 3.00 for mothers, researcher, and therapist respectively after 2 weeks of intervention. When t values of the three assessors were calculated the obtained t values were 6.46, 4.38 and 3.78 for mothers, researcher and therapist respectively. All values are highly significant and show that in the two weeks of intervention there was great improvement in functional ability of autistic children.

Table 2: showing functional ability scores of experimental group after second and fourth week of intervention.

Assessor	After two weeks of intervention		After four weeks of intervention		“t” value	P
	Mean	S.D	Mean	S.D		
Mothers	4.80	0.45	7.20	0.84	3.56	.05
Researcher	2.80	0.45	6.21	1.30	3.49	.05
Therapist	3.00	0.71	4.80	0.84	2.81	.05

Table 2 shows mean, S.D. and ‘t’ values for functional ability scores of experimental group after two weeks and four weeks of intervention. At two weeks of intervention the mean scores on functional ability were 4.80, 2.80 and 3.00 as per the scores given by mothers, researcher, and therapist respectively. These scores increased to 7.20, 6.20 and 4.80 for mothers, researcher and therapist respectively after four weeks of intervention. The

obtained “t” values for the three assessors were found to be 3.56, 3.49 and 2.81 for mothers, researcher and therapist respectively. All the obtained t values are significant showing that there was a significant improvement in functional ability of the subjects after further two weeks of intervention. Thus it may be concluded that the low tech programme for improvement of functional ability was effective as per the evaluation done not only by researcher but also by the therapist and mothers.

Table 3: showing functional ability scores of control group at baseline and after two weeks of intervention.

Assessor	Baseline performance		Performance after two weeks of intervention		“t” value	P
	Mean	S.D	Mean	S.D		
Mothers	1.40	0.54	3.20	0.83	2.84	0.05
Researcher	0.80	.45	1.62	0.54	2.79	0.05
Therapist	0.80	.45	1.80	0.45	2.80	0.05

Table 3 shows mean, S.D. and ‘t’ values for functional ability scores of control group at baseline behavior and after two weeks of intervention. The mean scores on functional ability as obtained by children were 1.40, 0 .80 and 0.80 (from mothers, researcher and therapist) respectively. These scores increased to 3.20, 1.62 and 1.80 for mothers, researcher and therapist respectively after 2 weeks of intervention. The obtained “t” values of the three assessors were 2.84, 2.79 and 2.80 for mothers, researcher and therapist respectively. All these values are significant indicating that functional ability of the subjects in control group improved after two weeks of intervention.

Table 4: showing functional ability scores of control group after second week and fourth week of intervention.

Assessor	After two weeks of intervention		After four weeks of intervention		“t” value	P
	Mean	S.D	Mean	S.D		
Mothers	3.20	0.83	5.40	0.89	2.82	0.05
Researcher	1.62	0.54	2.40	0.54	1.48	Ns
Therapist	1.80	0.45	2.40	0.54	1.21	Ns

Table 4 shows mean, S.D. and ‘t’ values for functional ability scores of control group after two weeks and four weeks of intervention. The mean scores on functional ability awarded by mothers, researcher and therapist were 3.20, 1.60 and 1.80 after two weeks of intervention. These scores increased to 5.40, 2.40 and 2.40 for mothers, researcher and therapist respectively after four weeks of intervention. The obtained “t” values of the three assessors were calculated which 2.82, 1.48 and 1.21 were for mothers, researcher and therapist respectively. The obtained “t” values for scores of mothers are significant (2.82) but those for the scores of researcher and therapist are insignificant. Since only the score of mothers indicate an improvement in functional ability it may not be wrong to comprehend that the mothers may be biased in their judgment. It may therefore be said that the children of control group did not show further improvement in their performance after two weeks of intervention. Several reasons can account for this result, but the most pertinent cause is the low maternal involvement in the teaching of functional ability. The children showed initial rapid improvement in their functional ability as evident from the obtained significant “t” value after two weeks. Later the mean scores increased no doubt but the

improvement was not significant. According to Thorndike (1913) when learning begins from a scratch gains are rapid, but soon plateaus set in due to poor monitoring, disinterest and inconsistent efforts. Perhaps this explains partly for the decelerated rate of improvement in function ability as intervention continued for additional two weeks.

Table 5: showing assessment of baseline functional ability in experimental group and control group.

Assessor	Experimental group		Control group		“t” value	P
	Mean	S.D	Mean	S.D		
Mothers	1.20	0.45	1.40	0.54	0.40	Ns
Researcher	0.60	0.55	.80	.45	0.39	Ns
Therapist	0.60	0.55	.80	.45	0.39	Ns

Table 5 shows mean, S.D and ‘t’ values for functional ability scores of experimental and control group at baseline. The mean scores of experimental group on functional ability were 1.20, 0.60 and 0.60 for the scores of mothers, researcher and therapist respectively. Mean scores of control group on functional ability were 1.40, 0.80 and 0.80 for the scores of mothers, researcher and therapist respectively. The “t” values were calculated for the two groups which were 0.40, 0.39 and 0.39 for mothers, researcher and therapist respectively. All obtained “t” values are insignificant which is indicating that both groups have similar functional ability at baseline stage. Hence it may be concluded that any difference in functional ability of the two groups at a later stage of research is due to the difference in their intervention programme.

Table 6: showing assessment of functional ability in experimental and control group after two weeks of intervention.

Assessor	Experimental group		Control group		“t” value	P
	Mean	S.D	Mean	S.D		
Mothers	4.80	0.45	3.20	0.83	2.78	0.05
Researcher	2.80	0.45	1.62	0.54	2.82	0.05
Therapist	3.00	0.71	1.80	0.45	2.79	0.05

Table 6 shows mean, S.D and ‘t’ values for functional ability scores of experimental and control group after two weeks of intervention. The mean scores of experimental group on functional ability were 4.80, 2.80 and 3.00 for the scores given by mothers, researcher and therapist respectively. The mean scores of control group after two weeks of intervention on functional ability given by mothers, researcher and therapist were 3.20, 1.60 and 1.80. When “t” values for the two groups was calculated they was 2.78, 2.82 and 2.79 for mothers, researcher and therapist respectively indicating that the functional ability of experimental group was superior to that of control group as evident from higher mean score. This shows the effectiveness of mothers as service providers for autistic children.

Table 7: showing assessment of functional ability in experimental and control group after four weeks of intervention.

Assessor	Experimental group		Control group		“t” value	P
	Mean	S.D	Mean	S.D		
Mothers	7.20	0.84	5.40	.89	2.84	0.05
Researcher	6.21	1.30	2.40	0.54	3.81	0.05
Therapist	4.80	0.84	2.40	0.54	3.39	0.05

Table 7 shows mean, S.D and ‘t’ values for functional ability scores of experimental and control group after four weeks of intervention. The mean scores of experimental group on functional ability were 7.20, 6.20 and 4.80 for scores of mothers, researcher and therapist and mean scores of control group on functional ability were 5.40, 2.40 and 2.40 per the scores given by mothers, researcher and therapist respectively. The obtained “t” values for the two groups were 2.84, 3.81 and 3.39 for mothers, researcher and therapist respectively. All the obtained “t” values are significant showing that there was a significant difference in the improvement of functional ability of the subjects of the two groups.

Conclusion

It is clear from the results that the supportive learning material was useful for improvement of autistic children’s functional ability and mother’s role was chief care taker for greater improvement of their autistic children. This shows the effectiveness of mothers as service providers for autistic children. Thus parental participation in child treatment can contribute significantly to the rate of child’s progress. A well-documented parent-training programme enables parents to serve as home tutors and therapists for their own autistic children.

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