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Effectiveness of Jacobson Progressive Relaxation, Acceptance & Commitment Therapy and Cognitive Behavioral Therapy on Stress, Anxiety and Quality of Life in Mothers of Differently Abled Children: A Quasi Experimental Study

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ABSTRACT

Background And Objectives: Stress and anxiety are the current global problem facing by mothers of differently abled children and that leading to lower quality of life. Presence of a special child in a family is known to impact families in varied ways. A good parent and child relationships are vital for the development of children. Therefore, this study was undertaken to find the effectiveness of Jacobson progressive relaxation, acceptance & commitment therapy and cognitive behavioral therapy on stress in mothers of differently abled children.

Methodology: Twenty subjects were selected based on inclusion and exclusion criteria, then divided into two groups. Experimental group (n= 10) received Jacobson progressive relaxation, acceptance & commitment therapy and cognitive behavioral therapy. Control group (n=10) not received any intervention. Exercise program was held for three days a week for 40 minutes for 8 weeks. Stress, anxiety and quality of life were measured at the pre and post of intervention using Parenting stress scale, State – Trait Anxiety Inventory and World Health Organization Quality Of Life- Bref.

Results & Discussion: Paired t test is used to analyze the results within the group and independent t test were used to analyze the results between the groups. The significance level kept as $p < 0.05$. From pre to post eight week intervention, statistically significant changes were observed in all of the outcome measures.

Conclusion: A combined intervention of Jacobson progressive relaxation, acceptance & commitment therapy and cognitive behavioral therapy are effective in improving stress, anxiety and quality of life in mothers of differently abled children.

KEY WORDS: Mother's stress, anxiety and quality of life; Jacobson progressive relaxation, Acceptance & commitment therapy and Cognitive behavioral therapy.

INTRODUCTION

Developmental disabilities are a group of conditions due to impairment in physical, literacy, language, or action areas. These conditions begin during the prenatal period, may impact day- to- day functioning, and generally last throughout a person's life span [(1)]. According to the Convention on the Rights of Persons with Disabilities (CRPD), children with disabilities "include those who have long- term physical, internal, intellectual or sensorial impairments which in commerce with varied fences may hamper their full and effective participation in society on an equal base"[(2)].

The global statistics on children with disabilities says there are between 93

million and 150 million children live with a disability worldwide [3]. Out of total 70.22 core mannish Indian citizens, 1.5 cores are differently abled. There are1.18 core differently abled women in India out of 65.46 core womanish Indian citizens [4].

The foundation of family is considered vital for the survival of society. Family serves as a shock absorber in moments of instability and distress. Presence of a special child in a family is known to affect families in different ways. A good rapport between parent and child are essential for the development of children. [5, 6]

Motherly stress is defined as the objective stressors and private passions of torture related to having a child with a habitual illness [7]. The parents suffer a number of consequences like as angriness, guilt, rejection and aloneness affecting in " stress " not only as the result of child- upbringing but also due to their social and environmental circumstances, liabilities and everyday life [8, 9]. Parents frequently come cut off from family and intimates who may not understand the child's actions and disability [10, 11]. They tend to feel responsible and criticized for their children's conditions, culpable, shamefaced, and feel abomination, angriness, and condemn toward their husband for their perceived responsibility [12-17].

Anxiety is a psychological and physiological state that causes temporary feelings of fear and worry. Anxious is a normal response to stressful situations. Anxiety helps motivate to anticipate challenges, plan ahead and push through tough times. Still, when anxiety reaches extreme or constant, it disrupts day-to-day life and can affect internal health condition [18]. Studies have shown that parents of differently abled children develop psychological issues while child care [19, 20].

The World Health Organization (WHO) defines quality of life as "individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns" [21]. Caring for differently abled children is begin to be physical as well as mentally tasking job for the parents, which becomes worse depending on the type of disability, impacting in a compromised quality of life of the parents[22,23].

Jacobson relaxation approach is a non-pharmacological, supplementary therapeutic, easy to learn, cost less and no side effects. In 1920, Dr. Edmund Jacobson, an American physician who discovered this technique and explained that while flexing specific muscle groups, holding that position will produce tension and while relaxing the muscles, tension will lose [24].

Acceptance and Commitment Therapy (ACT) is a new structured and systematic psychotherapy approach to better parenting skills and reduce psychological torture. This represents a third wave behavioral remedy that can be useful in easing the internal, emotional, and physical challenges. ACT focuses on six core processes acceptance, defusion, contact with the present moment, self as context, values and committed action [25].

Cognitive behavioral therapy is a psychological intervention. According to this approach, thoughts, emotions, behaviors and physiology are part of an interlaced system. A change in any one element will be accompanied by changes in the other factors. Thoughts can lead to emotions and behavior. Emotions that negatively embedded with prejudiced thinking led to emotional disorders. Therefore, people with emotional disorders can better their internal health by changing their thinking patterns [26, 27].

Numerous instruments are available for assessing stress, anxiety and quality of life. The Parenting stress scale (PSS) is used to capture individual statuses of stress associated with raising children. This 18-item self- report measure holds advantages in that it's brief, easy to administer and freely available. The PSS focuses on parent's comprehensions of their maternal

position rather than the sources of stress [28, 29]. The Spielberger's State – Trait Anxiety Inventory (STAI- S) is used to measure state anxiety, a temporary condition endured in specific situations, which contains a 20 items scale, each item graded. It was developed by Charles D. Spielberg, Richard L. Gorsuch and Robert E. Lushene, in the year 1970 [30, 31]. The World Health Organisation Quality Of Life- Bref (WHOQOL- BREF) is used to measure the quality of life [32, 33].

The parents particularly mothers report depressive and anxiety diseases with the impact on their lives of the child's condition [34, 35] thus this study experiments on the combination effect of Jacobson progressive relaxation, acceptance & commitment therapy and cognitive behavioral therapy on stress, anxiety and quality of life in mothers of differently abled children.

METHODOLOGY

Study Design: Quasi Experimental Study, Pre & Post design
Study Setting: Community, Pediatric center
Study Duration: 6 Months
Sampling: Convenient Sampling
Sample Size: n=20
10 mothers in each group (Experimental and Control)

Inclusion Criteria

- Mothers of differently abled children with moderate (43 to 66) to severe (67 to 90) scores on PSS [28, 29].
- Mothers of differently abled children with higher anxiety above 40 according to STAI for Adults [30, 31].
- Age group of parents 25 to 45years [36, 37, 38].
- Mothers those who are willing to participate in this study.

Exclusion criteria

- Age less than 25 years and greater than 45 years.
- Mothers on psychiatric medication
- Mothers with severe cardiovascular & neurological diseases.
- Mothers who have physical disabilities.

Outcome Measurement

- Parenting stress scale
- Spielberger's State – Trait Anxiety Inventory
- World Health Organization Quality Of Life- Bref

Materials Used

Pen, Chair, Note book

Pre-Intervention Procedure

Ethical approval obtained and permission taken from authorities of respective Pediatric Rehabilitation centers. 30 Subjects were screened using PSS, STAI and WHOQOL-BREF. From that 20 subjects met the inclusion criteria. After signing the consent form, participants were divided into 2 groups. The control group did not receive any intervention. The experimental group has received the intervention of a total of 24 sessions were conducted over an 8-week period with three sessions per week on non-consecutive days.

Figure 1: Filling up questionnaire

INTERVENTION

The intervention has 3 phases as follows

Phase one: Jacobson progressive relaxation: Subject in relaxed sitting position. The technique involves flexing specific muscles, holding that position and then relaxing the muscles. This technique

involves contraction of the muscle groups of body one at a time, beginning with the feet, spending approximately 1 min. on each area. Duration was 20 min.

Following instructions was given to the subjects:-

1) Take three deep abdominal breaths, exhaling slowly each time. As you exhale, imagine that stress of your body begins to flow out.
2) Tight your calf muscles by pulling your toes towards you. Hold and then relax. Hold for 7-10 seconds and then release for 15-20 seconds. The same time interval was used for all other muscle groups.
3) Squeeze the muscles in your thighs all the way down to your knees. Hold and then relax. Feel your muscles of thigh smooth and relax completely.
4) Tense your buttocks by pulling them together. Hold and then relax. Imagine the muscles of your buttocks going loose and relax.
5) Tighten your stomach muscles by sucking your stomach in. Hold and then relax. Imagine a feel of relaxation spreading through your abdomen.
6) Tighten the muscles of your chest by taking in a deep breath. Hold for up to 10 seconds and then release slowly. Imagine tension in your chest flowing away with the exhalation.
7) Tighten the muscles around your shoulder blades by pushing your shoulder blades back as if you are going to touch them together. Hold the tension in your shoulder blades and then relax.
8) Tighten your shoulders by raising them up as you are going to touch your ears. Hold and then relax.
9) Tighten your triceps by extending your arms out straight and lock your elbows. Hold and then relax.
10) Tighten your biceps by drawing your forearms up towards your shoulders with both arms. Hold and relax.
11) Clench your fists. Hold and relax.
12) Tighten the muscles in the back of your neck by pulling your head way back; as you are going to touch your head to your back. Hold and then relax.
13) Tighten your jaws by open your mouth widely. Let your lips part and allow your jaw to hang loose. Hold and then relax.
14) Tense the muscles around your eyes by clenching your eyelids tightly shut. Hold and then relax. Imagine sense of relaxation spreading around your eyes.
15) Tense the muscles in your forehead by raising your eyebrows as far as you can. Hold and then relax. Imagine your forehead muscles becoming smooth and relax.
16) Now imagine a wave of relaxation slowly spreading throughout your body, starting at your feet and slowly penetrating every muscle groups all the way up to your head.

Figure 2: Breathing exercise

Figure 3: Jacobson relaxation for legs

Phase Two: ACT: A new structured and systematic psychotherapy approach which proposed to improve parenting skills and reduce psychological distress. This represents a third wave behavioral therapy that can be useful in alleviating the psychological, emotional, and physical challenges. Duration was 10 minutes.

Definition of mindfulness is the defused, accepting, open contact with the present moment and the private events it contains, as a conscious human being, experientially distinct from the content being noticed. Six core processes in ACT: (1) Contact with the present moment, (2) Acceptance, (3) Defusion, (4) Self as context, (5) Values, (6) Committed action.

Session 1: Taking a history, followed by introducing ACT. The history includes the problems, the life context, and a brief assessment of goals/ values plus a review of strategies tried, how they worked both short term and long term and the costs.

Session 2: Confronting the agenda (Creative hopelessness)

Session 3: Control is the problem.

Session 4, 5, 6: Major focus on defusion/ acceptance/ present moment/ willingness.

Session 7: Self as context exercises.

Session 8: Values to goals to actions.

Session 9, 10: Values, Goals, And Actions, Identify barriers like: Fusion with unhelpful thoughts, Evaluation, Avoidance of discomfort and Reason.

Session 11-24 : Practice each stress on subsequent sessions and home work on attempted solutions and their long term effects, daily willingness diary and clean versus dirty discomfort diary.

Phase three: CBT: a psychological intervention. The thoughts, emotions, behaviors and physiology are part of an interlaced system. A change in any one element will be accompanied by changes in the other factors. Duration was 10 minutes.

Session 1: Helped participants become aware of their responsibility for personal change. Educate the subjects about their child's disorder and its effect on their family.

Session 2: A discussion about feelings was initiated and the subjects were asked to distinguish different emotions and analyze the cost benefits of normal feelings and un-healthy feelings.

Session 3: Introducing ABC model (Activating events, Beliefs and Consequences).

Session 4: Make B-C connection and Clarify goal.

Session 5: Exploring unhelpful thoughts and helpful thoughts.

Session 6: This session continued to work on beliefs.

Session 7: Setting home work: Exploring evidence for and against a belief.

Session 8: Researchers summarized what was learnt, and the participants practiced the skills they were taught in previous sessions.

Session 9-24: Practicing CBT on everyday stress as the application in daily life.

DATA ANALYSIS AND INTERPRETATION

The statistical analysis of the results was performed by using the SPSS Software (SPSS.20). Students t - test was used for the calculation of the results. Paired t test was used for the intra group comparison of pre and post test results. Independent t test was used for the inter group comparison. Significant level kept as $p<0.05$. Equations were used in:

$$\text{Sample} \quad n \geq \frac{2\sigma^2 (Z\beta + Z\alpha_{/2})^2}{\text{Difference}^2}$$

- n- Sample size in each group (assumes equal sized groups)
- σ- Standard deviation of the outcome variable
- $z\alpha$ - Represents the desired level of statistical significance (typically 1.96)
- $z\beta$ -Represents the desired power (typically 0.84 for 80% power)

- differences- Effect size (the difference in mean)
- **Independent Variables**: Jacobson progressive muscle relaxation exercise, Acceptance & commitment therapy and Cognitive behavioral therapy.
- **Dependent Variables**: Stress, Anxiety and Quality of life.

	Mean age	Standard deviation	Minimum	Maximum
Experimental group	31.4	6.81	25	44
Control group	34	6.58	26	44

Table 1- Mean age in EG and CG

DEMOGRAPHIC INFORMATION
AGE OF MOTHERS

Age	Experimental group		Control group	
	Frequency	Percentage	Frequency	Percentage
25-30 years	6	60%	4	40%
31-35 years	2	20%	2	20%
36-40 years	0	0%	2	20%
41-45 years	2	20%	2	20%

Table 2-Frequency and percentage of age in EG and CG

DIAGNOSTIC DISTRIBUTION OF CHILD

Diagnosis	Experimental group		Control group	
	Frequency	Percentage	Frequency	Percentage
Cerebral Palsy	5	50%	6	60%
Autism Spectrum Disorder	2	20%	2	20%
Attention Deficit Hyperactivity Disorder	1	10%	0	0%
Down's Syndrome	1	10%	1	10%
Mental Retardation	1	10%	1	10%

Table 3- Diagnostic distribution in EG & CG

AGE OF CHILDREN

Age	Experimental group		Control group	
	Frequency	Percentage	Frequency	Percentage
0-5 years	7	70%	4	40%
6-10 years	1	10%	2	20%
11-15 years	1	10%	2	20%
16-20 years	1	10%	2	20%

Table 4- Age distribution of child in EG & CG

PERCENTAGE OF DISABILITY

Disability	Experimental group		Control group	
	Frequency	Percentage	Frequency	Percentage
40-50%	2	20%	5	50%
51-60%	2	20%	2	20%
61-70%	2	20%	0	0%
71-80%	2	20%	3	30%
81-90%	0	0%	0	0%
91-100%	2	20%	0	0%

Table 5 - Percentage of disability in EG & CG

COMPARISON WITHIN GROUP (paired t test)
COMPARISON OF PRE- TEST AND POST- TEST VALUES OF PSS IN EXPERIMENTAL GROUP

Test	Mean	SD	Mean improvement	n	t	df	p value
Pre- test	47.5	5.70	10.9	10	6.899	9	0.0001
Post- test	36.6	3.56					

Table 6 - Comparison of pre- test and post- test values of PSS in EG

The mean column displays the mean pre-test and post-test of PSS of mothers in the EG. SD is the standard deviations of PSS in two groups. Mean change 10.9 is the difference between pre-test and post-test mean PSS (47.5 and 36.6). Since the t-value 6.89 shows $p < 0.01$ ($p=0.0001$), there is a significant difference existing between the pre-test and post-test PSS of mothers in the EG. This proves that JPR, ACT and CBT has effect on stress of mother.

COMPARISON OF PRE- TEST AND POST- TEST VALUES PSS IN CONTROL GROUP

Test	Mean	SD	Mean improvement	n	t	df	p value
Pre- test	52.5	8.52		10	0.32	9	0.75774
Post- test	52.4	8.44	0.1				

Table 7 - Comparison of pre- test and post- test values PSS in CG

The mean column displays the mean pre-test and post-test of PSS among mothers in the CG. SD is the standard deviations of the PSS in two groups. Mean change 0.1 is the difference between pre-test and post-test mean of PSS (52.5 and 52.4). Since the t-value 0.32 shows $p > 0.05$ ($p=0.75774$), there is no significant difference existing

between the pre-test and post-test PSS of mothers in the CG.

COMPARISON OF PRE- TEST AND POST- TEST VALUE OF STAI IN EXPERIMENTAL GROUP

Test	Mean	SD	Mean improvement	n	t	df	p value
Pre- test	50.6	10.19		10	8.33	9	0.00002
Post- test	32.6	7.90	18				

Table 8 - Comparison of pre- test and post- test value of STAI in EG

The mean column displays the mean pre-test and post-test of STAI among mothers in the EG. SD is the standard deviations in two groups Mean change 18 is the difference between pre-test and post-test mean STAI (50.6 and 32.6). Since the t-value 8.33 shows p <0.01(p=0.00002), there is significant difference existing between the pre-test and post-test STAI of mothers in the EG. This proves that JPR, ACT and CBT has an effect on anxiety.

COMPARISON OF PRE- TEST AND POST-TEST VALUE OF STAI IN CONTROL GROUP

Test	Mean	SD	Mean improvement	n	t	df	p value
Pre-test	52.1	12.65	0.4	10	1.30	9	0.222868
Post-test	52.5	12.41					

Table 9 - Comparison of pre- test and post- test value of STAI in CG

The mean column displays the mean pre-test and post-test of STAI of mothers in the CG. SD is the standard deviations of the STAI in two groups. Mean change 0.4 is the difference between pre-test and post-test mean STAI of mothers (52.5 and 52.1). Since the t-value 1.30 shows p >0.01(p=0.222868), there is no significant difference existing between the pre-test and post-test STAI of mothers in the CG.

COMPARISON OF PRE- TEST AND POST-TEST VALUES OF QOL IN EXPERIMENTAL GROUP

Test	Mean	SD	Mean improvement	n	t	df	p value
Pre- test	84.4	10.86		10	8.28	9	0.00002
Post- test	98.8	10.00	14.4				

Table 10 - Comparison of pre- test and post- test value of QOL in EG

The mean column displays the mean pre-test and post-test of QOL of mothers in the EG. SD is the standard deviations of the QOL of mothers in two groups. Mean change 14.4 is the difference between pre-test and post-test mean QOL of mothers (84.4 and 98.8). Since the t-value 8.28 shows p < 0.01(p= 0.00002), there is significant difference existing between the pre-test and post-test QOL of mothers in the EG. This proves that JPR, ACT and CBT has effect on QOL.

COMPARISON OF PRE- TEST AND POST -TEST VALUES OF QOL IN CONTROL GROUP

Test	Mean	SD	Mean improvement	n	t	df	p value
Pre- test	76.8	7.59		10	0.32	9	0.75774
Post- test	76.9	7.62	0.1				

Table 11 - Comparison of pre- test and post- test value of QOL in CG

The mean column displays the mean pre-test and post-test of QOL of mothers in the CG. SD is the standard deviations of the QOL of mothers in two groups. Mean change 0.1 is the difference between pre-test and post-test mean QOL of mothers (7.62 and 7.59). Since the t-value 0.32 shows p >0.05(p=0.75774), there is no significant difference existing between the pre-test and post-test QOL of mothers in the CG.

COMPARISON BETWEEN GROUPS (Independent t test)

COMPARISON OF PRE-TEST PSS SCORES BETWEEN EXPERIMENTAL AND CONTROL GROUPS

Group	Mean	SD	Mean improvement	n	t	df	p value
Experimental	47.5	5.70		20	1.54	18	0.070
Control	52.5	8.53	5				

Table 12 - Comparison of pre-test PSS scores between EG and CG

The Mean column in the t test table displays the mean pre-test test PSS values in EG and CG respectively. The standard deviation column displays the standard deviation of the scores in two groups. The difference (5) shows the difference between mean in two groups (52.5 and 47.5). Since the t-value 1.54, shows p-value >0.05(p=0.070), there is no significant difference in pre-test PSS values between the EG and the CG. So, we can consider the groups as homogenous in the baseline level.

COMPARISON OF POST TEST PSS SCORES BETWEEN EXPERIMENTAL AND CONTROL GROUPS

Group	Mean	SD	Mean improvement	n	t	df	P Value
Experimental	36.6	3.56		20	5.45	18	0.00004
Control	52.4	8.45	15.8				

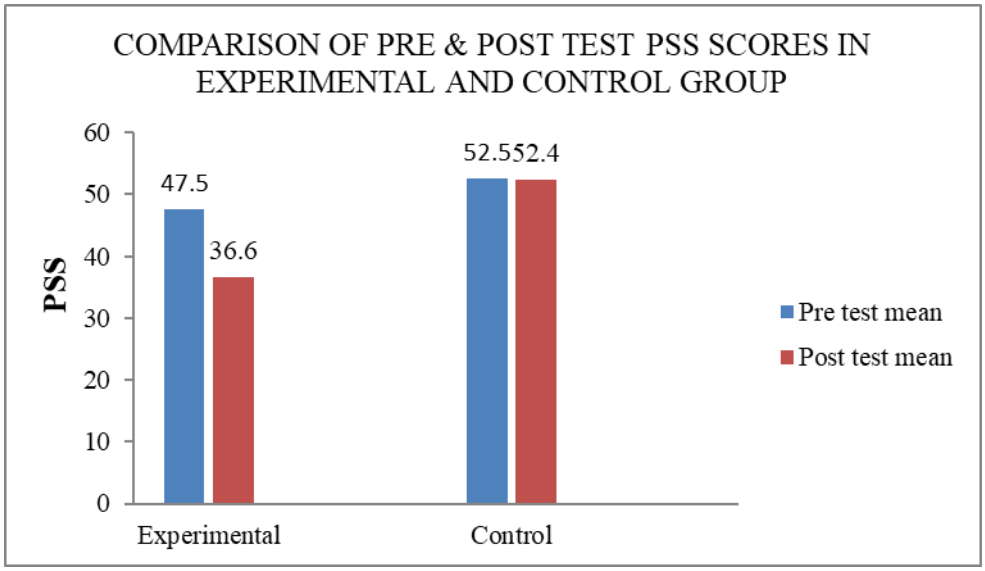
Table 13 - Comparison of post-test PSS scores between EG and CG

The Mean column in the t test table displays the mean post-test PSS values in EG and CG respectively. The standard deviation column displays the standard deviation of the scores in two groups. The difference (15.8) shows the difference between mean in two groups (52.4 and 36.6). Since the t-value, 5.45 shows p-value < 0.01(p=0.00004), there is a significant difference in post-test PSS values between the EG and the CG. The scores in the EG are significantly higher than that in the CG. This proves that JPR, ACT and CBT has effective on stress.

COMPARISON OF PRE-TEST & POST-TEST PSS SCORES IN EXPERIMENTAL AND CONTROL GROUPS

Group	Pre-test mean	SD	Post-test mean	SD
Experimental	47.5	5.70	36.6	3.56
Control	52.5	8.53	52.4	8.45

Table 14 - Comparison of pre-test & post-test PSS scores in EG and CG



Graph 1 - comparison of pre-test post-test PSS score in EG& CG

COMPARISON OF PRE -TEST STAI SCORES BETWEEN EXPERIMENTAL AND CONTROL GROUPS

Group	Mean	SD	Mean improvement	n	t	df	p value
Experimental	50.6	10.19		20	0.29	18	0.386
Control	52.1	12.65	1.5				

Table 15 - Comparison of pre-test STAI scores between EG and CG

The Mean column in the t test table displays the mean pre-test STAI of mothers in EG and CG respectively. The standard deviation column displays the standard deviation of the scores in two groups. The difference (1.5) shows the difference between mean in two groups (52.1 and 50.6). Since the t-value 0.29, shows p-value > 0.05(p=0.386),

there is no significant difference in pre-test STAI of mothers between the EG and the CG. So, we can consider the groups as homogenous in the baseline level.

COMPARISON OF POST-TEST STAI SCORES BETWEEN EXPERIMENTAL AND CONTROL GROUP

Group	Mean	SD	Mean improvement	n	t	df	p value
Experimental	32.6	7.90		20	4.28	18	0.000454
Control	52.5	12.41	19.9				

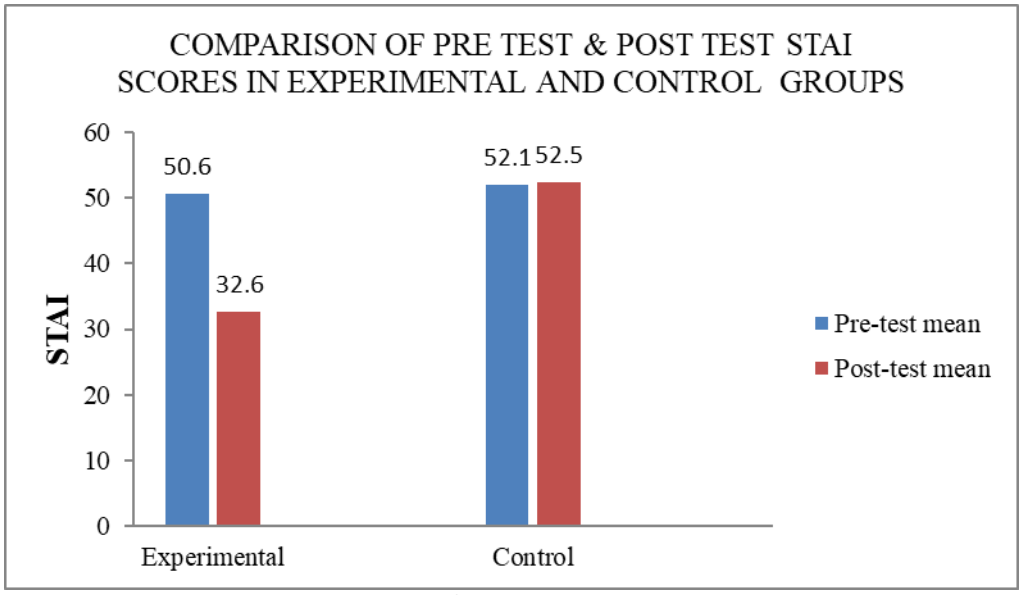
Table 16 - Comparison of post-test STAI scores between EG and CG

The Mean column in the t test table displays the mean post-test STAI of mothers in EG and CG respectively. The standard deviation column displays the standard deviation of the scores in two groups. The difference (19.9) shows the difference between mean in two groups (52.5 and 32.6). Since the t-value, 4.28 shows p-value <0.01(p=0.000454), there is significant difference in STAI in post-test between the EG and the CG. The scores in the EG are significantly lesser than that in the CG. This proves that JPR, ACT and CBT has effective on anxiety.

COMPARISON OF PRE-TEST & POST- TEST STAI SCORES IN EXPERIMENTAL AND CONTROL GROUPS

Group	Pre-test mean	SD	Post-test mean	SD
Experimental	50.6	10.19	32.6	7.90
Control	52.1	12.65	52.5	12.41

Table 17 - Comparison of pre-test & post-test STAI scores in EG and CG



Graph 2 - comparison of pre-test post-test STAI in EG & CG

COMPARISON OF PRE-TEST QOL SCORES IN EXPERIMENTAL AND CONTROL GROUPS

Group	Mean	SD	Mean improvement	n	t	df	p value
Experimental	84.4	10.86		20	1.81	18	0.086588
Control	76.8	7.59	7.6				

Table 18 - Comparison of pre-test QOL scores between EG and CG

The Mean column in the t test table displays the mean pre-test WHOQOL-BREF of mothers in EG and CG respectively. The standard deviation column displays the standard deviation of the scores in two groups. The difference (7.6) shows the difference between mean in two groups (84.4and 76.8). Since the t-value 1.81, shows p-value >0.05 (p=0.086588). Hence there is no significant difference in pre-test WHOQOL-BREF of mothers between the EG and the CG. So, we can consider the groups as homogenous in the baseline level.

COMPARISON OF POST TEST QOL SCORES IN EXPERIMENTAL AND CONTROL GROUPS

Group	Mean	SD	Mean improvement	n	t	df	p value
Experimental	98.8	10.00		20	5.50	18	0.00003
Control	76.9	7.62	21.9				

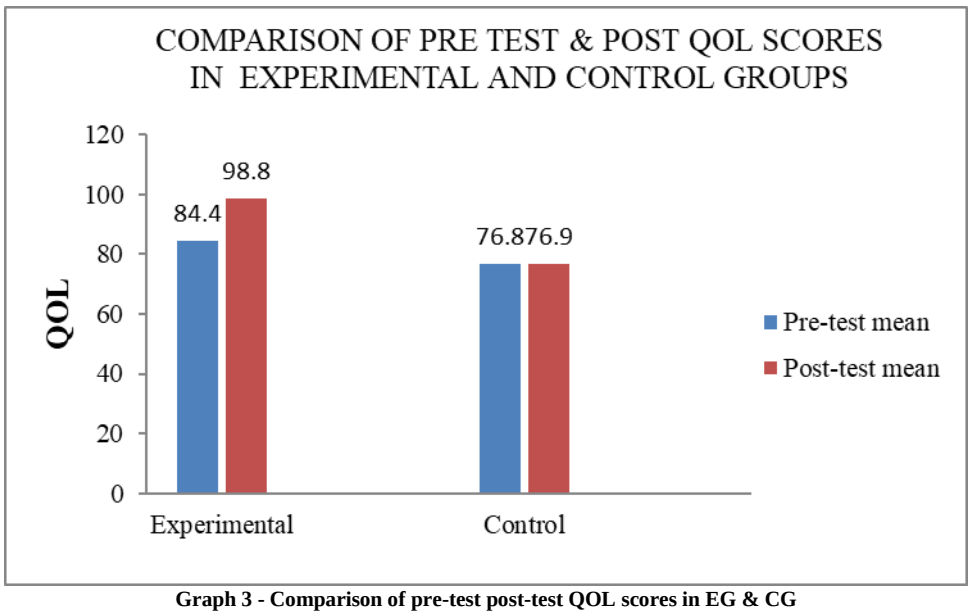
Table 19 - Comparison of post-test QOL scores between EG and CG

The Mean column in the t test table displays the mean post-test WHOQOL-BREF of mothers in EG and CG respectively. The standard deviation column displays the standard deviation of the scores in two groups. The difference (21.9) shows the difference between mean in two groups (98.8 and 76.9). Since the t-value, 5.50 shows p-value <0.01(p=0.00003), there is significant difference in post- test QOL of mothers between the EG and the CG. This proves that JPR, ACT and CBT has effective on QOL.

COMPARISON OF PRE-TEST & POST-TEST QOL SCORES IN EXPERIMENTAL AND CONTROL GROUPS

Group	Pre-test mean	SD	Post-test mean	SD
Experimental	84.4	10.86	98.8	10.00
Control	76.8	7.59	76.9	7.62

Table 20 - Comparison of pre-test & post-test QOL scores in EG and CG



Graph 3 - Comparison of pre-test post-test QOL scores in EG & CG

DISCUSSION

The results were analyzed using t-test. Paired t-test was used to compare the results within the group and independent t-test to compare results between the groups. Significant level kept as p value <0.05. Within the experimental group showed that there is significant difference between pretest and post test scores of PSS, STAI and WHOQOL-BREF. Therefore stress & anxiety are reduced and increased the quality of life of mothers of differently abled children.

In case of the stress, it was found that in paired t- test, since the t- value 6.89 shows p <0.01(p=0.0001), there is significant difference existing between the pre-test and post-test PSS among the experimental group. The t-value 0.32 shows p > 0.05 (p=0.75774), there is no significant difference existing between the pre-test and post-test PSS among the control group also. The results showed there is significant difference in PSS in experimental group and no significant difference in control group.

In the independent t test, since the t- value 5.45, shows p-value < 0.1, (p= 0.00004) there is significant difference in post-test PSS values between the experimental and the control groups. The mean difference,

15.8 shows the difference between mean in two groups 36.6 and 52.4 respectively.

In case of the anxiety, in paired t-test, the t-value, 8.33 shows p<0.01 (p=0.00002) there is significant difference existing between the pre-test and post- test STAI among experimental group. The t- value, 1.30 shows p >0.01 (p=0.222868), there is no significant difference existing between the pre-test and post-test of STAI in the control group also. Experimental group has shown improvement.

In the independent t test, since the t- value 4.28 shows p- value < 0.01 (p=0.000454) there is significant difference in post -test of STAI between the experimental and the control groups. The difference, 19.9 shows the difference between mean in two groups 32.6 and 52.5 respectively.

In case of the QOL, in paired t-test, the t-value, 3.41 shows p<0.01 (p=0.00002), there is significant difference existing between the pre-test and post-test WHOQOL-BREFF among experimental group. The t- value, 0.32 shows p>0.05 (p=0.75774), there is no significant difference existing between the pre-test and post- test of WHOQOL-BREFF in the control group also. Experimental group has shown improvement.

In the independent t test, since the t- value 5.50 shows p- value < 0.01 (p=0.00003). There is significant difference in post-test WHOQOL-BREFF between the experimental and the control groups. The difference, 21.9 shows the difference between mean in two groups 98.8 and 76.9 respectively.

The study results showed statistically significant difference in all outcome scales possibly due to combination effect of Jacobson progressive muscle relaxation technique, Acceptance & commitment therapy and cognitive behavioral therapy.

The possible mechanisms of Jacobson progressive muscle relaxation technique to reduce stress & anxiety are as follows that body responds to stress & anxiety with muscle tension and release those with muscle relaxation; it is a cyclic process.JPR helps to break this cycle by hold and relax. Another mechanism is that JPR helps to counteract a normal reaction to stress known as the flight-or-fight response. During the time of stress & anxiety there is a repeated activation of the flight-or-fight reaction. JPR has reverse effect on this by eliciting the relaxation response, lowering heart rate, calming the mind and reducing bodily tension. Also a subject becomes more aware of how stress & anxiety contributing to muscle tension and its transformation to relaxation state [(39)]. According to Jacobson, complete muscle relaxation is due to alteration of muscle tension and relaxation results in the reduction of hypothalamic discharge which leads to activation of the parasympathetic system which causes a decrease in heart rate, blood pressure and muscle tone [(40)].

The results of present study supported by the finding of other previous studies. Sabah M. Ebrahem et al (2016) found that progressive muscle relaxation helps in reducing depression, anxiety levels, stress, blood glucose levels and increase quality of life in type 2 diabetes patients.[(41)] Sravanthi Perakam et al (2017) on the effect of Jacobson progressive muscle relaxation technique on depression in diabesity patients.[(42)] Corinne Urech et al (2010) found that immediate effect of progressive muscle relaxation causes a significant reduction in hypothalamic pituitary adrenal (HPA) axis and sympathetic nervous system by decreasing salivary cortisol and nor epinephrine levels.[(43)] Hence the present study states that Jacobson progressive relaxation technique can be used to relieve stress & anxiety and subsequent improvement of QOL in mothers of differently abled children.

The possible mechanisms of Acceptance and Commitment Therapy to reduce stress & anxiety are as follows that ACT encourages people to embrace their thoughts and feelings rather than fighting or feeling guilty for them. ACT can't always change

the circumstances that cause the stress, but can influence them. Some stress simply must be managed, and it can be life-changing when find strategies that help to deal with stress in a way that minimizes its negative effects. There are six core processes of ACT guide patients through therapy and provide a framework for developing psychological flexibility (Dr. Russell Harris, 2011). These six core processes of ACT include the following: Acceptance, Cognitive Defusion, Being Present, Self as Context, Values and Committed Action. Radical Acceptance teaches individuals to work with and accept the anxiety, rather than to fight it. Ironically, acceptance often leads to decreased anxiety [(44)]. Elisabeth Hertenstein et al (2014) carried out a study on Quality of Life Improvements after Acceptance and Commitment Therapy in Non-responders to Cognitive Behavioral Therapy for Primary Insomnia and concluded that ACT may be a promising treatment for non-responders to CBT, especially targeting QOL [(45)]. Semra A et al (2021) investigated following ACT intervention, participants exhibited reductions in brain activation within and between key networks including self-reflection, emotion and cognitive control[(46)].

A similar intervention study conducted by Flavia Marino et al (2021) on the effect of ACT for improving psychological wellbeing in parents of individuals with Autism spectrum disorders. In which study the duration of intervention was weekly once for 24 weeks, 12 parents and used parental stress index/short form for evaluating stress [(47)]. In this present study, our duration of intervention was thrice in a week for 8 weeks, 10 mothers of differently abled children irrespective of any specific condition and used PSS for evaluating stress. As compared to study carried by Flavin Marino et al, this present study showed duration of intervention thrice in a week and subjects were specifically mothers. Amrapali Mahadev et al (2021) conducted study on effect of group based ACT on mental health of parents of children with autism spectrum disorders [(48)]. In this present study, used individualized ACT and subjects were mothers only irrespective of children with any specific diseases or disorders. Hence, ACT intervention showed significant difference in stress, anxiety and subsequently QOL of mothers of differently abled children.

The possible mechanisms of CBT to reduce stress & anxiety are as follows: CBT for stress enables to understand how certain thinking and behaviour patterns can increase stress levels. It can also help to develop new thinking and behaviour patterns which enable to identify stress causing triggers and increase confidence and ability to deal with stressful situations more effectively [(49)]. CBT works by addressing interaction between thoughts and behaviors to create anxiety. Give awareness to recognize how negative thought patterns influence feelings and behaviors [(50)]. The study carried by Zohreh KhayamNekouei et al (2012) on Cognitive-behavioral therapy and quality of life: An experience among cardiac patients concluded that making use of cognitive-behavioral intervention is an appropriate method for improving the quality of life of cardiovascular patients [(51)]. Shiting Yuan et al (2022) conducted a systematic review on Cognitive behavioral therapy strives to restructure the brain by establishing new neural pathways via neutral thinking. [(52)]

A similar study of Maryam Izadi-Mazidi et al (2015) conducted a study on the effect of cognitive behavior group therapy on parenting stress in mothers of children with autism; in which study 7 sessions of group based intervention used and the subjects were mothers of children with autism [(53)]. In the present study; 24 sessions of individualized CBT were used. In both studies, subjects were mothers only. Hence, CBT showed a significant difference in improving stress, anxiety and subsequently increasing QOL of mothers of differently abled children.

Strength of the Study

Number of participants was equal in both groups.

Participants actively committed to the exercise sessions and were regularly present.

Mothers were very friendly they give immense support throughout the study.

Cost effective programme.

Individualized attention can be given.

Outcomes were self questionnaire; no manual error occurs.

Limitations of the Study

Time consuming.

Control group has no intervention.

Comparison between the interventions was not taken.

Does not ensure the lasting effect of reduction in stress, anxiety and improved quality of life once the intervention has stopped.

Future Research

The sample size of the study can be increased.

A follow up study could ensure the long term effect of the treatment.

Study design can be RCT for better efficiency.

CONCLUSION

The results of this study showed that a planned and structured 8 weeks Jacobson progressive relaxation therapy, acceptance & commitment therapy and cognitive behavioral therapy are effective in improving stress, anxiety and quality of life in mothers of differently abled children. This study provided compelling new evidence that this intervention should be included in daily practice to support the development of good relationship between mother and child by reducing stress, anxiety and subsequent increase in quality of life among the mothers, which indirectly beneficial to differently abled children.

Declaration by Authors

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