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Autogenic Relaxation Therapy: A Pilot Study on its Multidimensional Effects

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Abstract **Introduction:** Mothers of special children may feel more worried and depressed, leading to issues with their physical and mental health. Autogenic Relaxation Therapy (ART) has emerged as a promising intervention for mitigating these adverse effects. This study aimed to investigate the efficacy of ART in reducing psychological and bio-physiological distress among mothers of special children. **Methods:** A prospective quasi-experimental design was employed, recruiting 40 mothers of special children with borderline to moderate depression. Participants were assigned to either an experimental group (n = 20) receiving ART sessions twice weekly for 8 weeks or a control group (n = 20) receiving no intervention. Outcome measures included stress, anxiety, depression, respiratory rate, pulse rate, blood pressure, and salivary cortisol levels. **Results:** The research showed that mothers caring for special children who underwent ART had improved psychological and physiological well-being. The scores for stress, anxiety, and depression were 27.1, 37.2, and 36% lower, respectively, and the two-way repeated measures ANOVA proved that the treatment resulted in significant decreases as the time passed ($p<0.001$). However, the control group didn't experience significant changes or only slight increases in various parameters. Researchers found significant drops in pulse rate and cortisol as well as an improved respiratory rate ($p<0.001$). **Conclusion:** The findings highlight the effectiveness of Autogenic Relaxation Therapy (ART) in reducing psychological and biophysiological distress among mothers of special children. Significant reductions in stress, anxiety, depression, and physiological parameters indicate that ART can serve as a valuable, non-pharmacological adjunct to conventional caregiver support.

Key Words Autogenic Relaxation Therapy, Mothers, Special Children, Psychological Distress

INTRODUCTION

The caregiving experience for mothers of children with special needs is complex and multifaceted. It involves not only managing the child's health and educational needs but also navigating social and emotional challenges that can impact family dynamics and personal relationships [1]. The psychological burden can be so significant that it affects not only the mother's mental health but also her ability to provide effective care and support to her child.

Elevated blood pressure, heart rate, and respiratory rate are common physiological responses to stress, which, if prolonged, can increase the risk of cardiovascular disease and other health complications [2]. Chronic stress leads to prolonged cortisol release, which, while essential for short-term stress responses, can negatively impact health over time, contributing to weight gain, sleep disturbances, and weakened immune function [3]. Therefore, interventions that can effectively reduce stress and cortisol levels are crucial for maintaining the health and well-being of caregivers.

Autogenic Relaxation Therapy (ART) offers a promising approach to managing stress and promoting relaxation. By teaching individuals to focus on specific body parts and induce feelings of warmth and heaviness, ART helps reduce muscle tension and promote a state of deep relaxation [4]. This technique has been shown to be improving the sleep quality and reducing heart rate and blood pressure [5]. Additionally, ART's emphasis on self-regulation and mindfulness can enhance emotional resilience, allowing individuals to better cope with stressful situations [6].

The application of Autogenic Relaxation Therapy (ART) presents a promising intervention for reducing psychological and physiological distress among mothers of children with special needs. These mothers often face unique challenges that lead to heightened stress and anxiety, and ART has shown effectiveness in alleviating these symptoms. The theoretical underpinnings of ART, which incorporates self-hypnosis and relaxation techniques, provide a platform for mothers to engage constructively with their emotional and physiological states [7-8].

Despite the documented benefits of ART in various populations, there remains a need for research specifically targeting mothers of special children. These caregivers face unique stressors that may require tailored interventions to address their specific needs. By exploring the effectiveness of ART in this demographic, this study aims to evaluate the effect of autogenic relaxation therapy on psychological (stress, anxiety and depression) and bio-physiological parameters (pulse, respiration, systolic and diastolic blood pressure, salivary cortisol) among mothers of special children.

MATERIAL AND METHODS

A quasi-experimental design was adopted to assess the impact of Autogenic Relaxation Therapy (ART) on mothers of special children in Puducherry. A total of 40 mothers were selected using non-probability convenience sampling from Anbagam Special Schools. Inclusion criteria included mothers aged 18–55 years with children aged 3–18 years diagnosed with disabilities who exhibited borderline to moderate depression (BDI score 17–30). Mothers with severe depression, psychiatric illness, suicidal ideation, or those undergoing steroid or complementary therapies were excluded.

Tools

Data collection tools included three parts: Part I covered demographic variables; Part II included standardized self-rating scales—Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI), and Berry and Jones Parental Stress Scale; and Part III involved biophysiological measures including pulse, respiratory rate, blood pressure, and salivary cortisol (measured via ECLIA at Rainbow Clinical Laboratory, Puducherry).

Data Collection Procedure

The data collection was conducted in three phases. Phase I (Week 1) involved baseline assessments, including administration of the Berry and Jones Parental Stress Scale, Beck Anxiety Inventory (BAI), measurement of physiological parameters (pulse, respiratory rate, and blood pressure), and collection of 5 ml saliva samples for cortisol analysis. Phase II (Weeks 4, 8, and 12) consisted of the intervention period, during which the experimental group received Autogenic Relaxation Therapy (ART) twice weekly for eight weeks, with each session lasting 20-25 minutes. The control group received no intervention. Follow-up assessments were conducted at Weeks 4, 8, and 12 to evaluate changes over time. Telephonic reminders were provided to ensure adherence. Phase III addressed ethical considerations, offering ART to the control group after the 12-week study period, following the same intervention schedule as the experimental group.

Intervention: Autogenic Relaxation Therapy (ART)

In the experimental group, mothers were provided with a mat and guided to perform Autogenic Relaxation Therapy (ART) in a quiet room. They received demonstrations on the day of data collection and then lay down to follow a structured relaxation protocol, starting with 3 minutes of guided imagery and ART verbal cues such as "feeling heavy, warm, relaxed, and calm." These sessions lasted 20-25 minutes and were conducted twice weekly for 8 weeks, with telephonic reminders sent twice a week to ensure adherence. No intervention given to control gorup. Data was collected at four intervals: baseline, midline (4 weeks), endline (8 weeks), and follow-up (12 weeks), allowing for a comprehensive assessment of ART's impact over time.

Statistics

The effectiveness of autogenic relaxation was analysed using two-way RM ANOVA for psychological and biophysiological parameters, followed by Bonferroni t-test. Demographic data were analysed using chi-square tests for homogeneity, with $p \leq 0.05$ as significant. Analysis was conducted using SigmaPlot 14.5.

RESULTS

Stress, Anxiety, and Depression

The experimental group showed a 27.1% reduction in stress, while the control group remained stable. Anxiety increased by 7.2% in the control group but decreased significantly in the experimental group. Depression rose slightly (3.7%) in the control group but declined by 36% in the experimental group. The result revealed significant group, time, and interaction effects ($p<0.001$ for all outcomes), confirming the intervention's effectiveness (Table 1).

Respiratory Rate and Pulse Rate

The control group showed a 7.2% increase in respiratory rate, while the experimental group had a 7.7% decrease. Pulse rate increased by 2% in the control group but decreased by 7.6% in the experimental group. Significant group × time interactions were found ($p<0.001$), with between-group differences at 8 and 12 weeks, supporting ART's physiological benefits (Table 2).

Systolic and Diastolic Blood Pressure

Systolic BP increased by 3% in the control group and decreased by 2.3% in the experimental group. Diastolic

BP increased by 1.9% in the control group and decreased by 3% in the experimental group. Significant differences were observed between groups and over time ($p<0.05$), with notable group × time interaction ($p<0.001$), indicating reduced BP in the experimental group (Table 3).

Salivary Cortisol

Cortisol levels increased by 3.3% in the control group and decreased by 37.1% in the experimental group. Though between-group cortisol difference at 12 weeks was not statistically significant ($p = 0.152$), significant time and interaction effects were found ($p<0.001$), confirming the intervention's influence on cortisol reduction (Table 4).

Demographic Characteristics

Demographic and clinical homogeneity between control and experimental groups, with no significant differences across all variables ($p>0.05$) (Table 5).

Table 1: Comparison of Stress, Anxiety, Depression in Control and Experimental Groups.

S.No	Groups comparisons	Test comparisons	Stress Mean+SE	Anxiety Mean+SE	Depression Mean+SE
1	Control	1-week	58.65+1.424	30.35+1.276	21.35+0.987
	Control	4-week	59.2+1.241	30.9+1.117	21.5+0.803
	Control	8-week	59.05+1.175	32.2+0.972	22.15+0.604
	Control	12-week	59.35+1.118	32.85+0.921	22.15+ 0.504
	Experimental	1-week	56.1+1.849	32.05+1.693	21.8+0.97
	Experimental	4-week	51.7+1.67	29.05+1.538	21.1+0.778
	Experimental	8-week	45.15+0.755	23.05+1.035	15+0.894
	Experimental	12-week	40.9+0.946	20.15+0.741	13.95+0.863
2	Among control and experimental groups.		F = 40.779 P<0.001	F = 12.304 P = 0.001	F = 12.760 P<0.001
	Among tests in 1-week/4-week/8-week/12-week.		F = 44.741 P<0.001	F = 32.775 P<0.001	F = 53.617 P<0.001
	Interaction with groups X week		F = 51.528 P<0.001	F = 77.332 P<0.001	F = 81.174 P<0.001

Table 2: Comparison of on Pulse and Respiratory Rate (Rr) Control and Experimental Groups.

S.No	Groups comparisons	Test comparisons	Pulse (beats/min) Mean+SE	RR (breaths/min) Mean+SE
1	Control	1-week	99.25+2.184	20.8+0.9
	Control	4-week	98.6+2.328	21.3+0.8
	Control	8-week	100.25+2.319	22.1+0.8
	Control	12-week	101.2+2.335	22.3+0.7
	Experimental	1-week	99.15+2.232	20.7+0.8
	Experimental	4-week	99.3+2.295	20.4+0.8
	Experimental	8-week	95.35+1.873	19.1+0.5
	Experimental	12-week	91.6+1.965	19.1+0.5
2	Among control and experimental groups		F = 1.362 P = 0.251	F = 3.521 P = 0.068
	Among tests in 1-week/4-week/8-week/12-week		F = 6.230 P<0.001	F = 0.232 P = 0.874
	Interaction with groups X week		F = 21.680 P<0.001	F = 12.655 P<0.001

RR: Respiratory rate, SE: Standard error

Table 3: Comparison of Systolic BP and Diastolic BP

S.No	Groups	Test	Systolic BP (Mean+SE)	Diastolic BP (Mean+SE)
1	Control	1-week	123.75+2.678	83.5+1.533
	Control	4-week	126.05+2.642	83.95+1.45
	Control	8-week	126.5+2.289	84.35+1.42
	Control	12-week	127.5+2.559	85.1+1.556
	Experimental	1-week	118.9+2.488	80.8+1.068
	Experimental	4-week	118.35+2.362	80.4+1.21
	Experimental	8-week	117.4 +2.063	78.55+1.186
	Experimental	12-week	116.15+1.986	78.4+0.816
2	Among control and experimental groups.		F = 6.213 P = 0.017	F = 7.162 P = 0.011
	Among tests in 1-week/4-week/8-week/12-week.		F = 0.778 P = 0.509	F = 1.116 P = 0.345
	Interaction with groups X week		F = 10.625 P<0.001	F = 8.127 P<0.001

BP: Blood pressure, SE: Standard error

Table 4: Comparison of Salivary Cortisol

S.No	Groups and comparisons	Tests	Cortisol (ng/L) mean+SE
1	Control	1-week	5.606+1.584
	Control	12-week	5.798+1.634
	Experimental	1-week	4.556+1.309
	Experimental	12-week	2.865+1.076
2	Among Control and Experimental group		F = 0.993 P = 0.325
	Among tests in 1-week/4-week/8-week/12-week.		F = 18.744 P <0.001
	Interaction (groups X week)		F = 29.569 P <0.001
3	Baseline assessment (Control and Experimental)		t = 0.523 P = 0.604
	Significance between 12-week among Control and Experimental		t = 1.462 P = 0.152
4	Within Control (baseline and 12-week)		t = 0.784 P = 0.438
	Within Experimental (baseline and 12-week)		t = 6.906 P =<0.001

SE: Standard error

Table 5: Demographic Details

S.No.	Variable	Category	Control group	Experimental group	Chi-square
1	Age of mother	< 30 years	13	16	$\chi^2 = 0.502$ P = 0.479
		> 31 years	7	4	
2	Residential area	Urban	15	15	$\chi^2 = 0.133$ P = 0.715
		Rural	5	5	
3	Education of head of family	Graduate	13	10	$\chi^2 = 0.409$ P = 0.522
		Schooling	7	10	
4	Occupation of head of family	Professional	6	4	$\chi^2 = 0.622$ P = 0.733
		Office employed	6	6	
		General worker	8	10	
5	Type of family	Nuclear	7	8	$\chi^2 = 0$ P = 1.0
		Joint	13	12	
6	Age at marriage of mother	< 20 years	5	8	$\chi^2 = 0.456$ P = 0.500
		> 21 years	15	12	
7	Type of marriage	Consanguineous	10	10	$\chi^2 = 1.0$ P = 0.752
		Nonconsanguineous	10	10	
8	Age of child	< 10 years	10	12	$\chi^2 = 0.101$ P = 0.751
		> 11 years	10	8	
9	Gender of child	Male	15	14	$\chi^2 = 0$ P = 1.0
		Female	5	6	
10	Birth order	First	14	15	$\chi^2 = 0$ P = 1.0
		Second and above	6	5	
11	Type of disability	Intellectual disability	11	10	$\chi^2 = 0.190$ P = 0.979
		Learning disability	4	4	
		Autistic spectrum	3	4	
		Cerebral palsy	2	2	
12	Duration of treatment	< 3 years	11	11	$\chi^2 = 0.101$ P = 0.751
		> 3 years	9	9	
13	No of disabled children	1	19	20	$\chi^2 = 0$ P = 1.0
		> 1	1	0	

DISCUSSION

The findings of the study significantly underscore the therapeutic potential of Autogenic Relaxation Therapy (ART) in enhancing both psychological and physiological health outcomes among participants. The experimental group exhibited a marked reduction in psychological distress, with stress levels decreasing by 27.1% and depression levels declining by 36%. In contrast, the control group demonstrated no such improvements, which aligns with existing literature that supports the efficacy of ART in mental health improvement [7].

The emphasis on stress reduction is crucial since stress is a prevalent psychological condition that affects many individuals today. This reduction is consistent with research highlighting how effective autogenic techniques are at promoting relaxation and emotional regulation, thereby decreasing overall stress reactivity [8]. Furthermore, the significant decrease in anxiety and depression as a result of ART correlates with findings indicating autogenic training as an intervention that successfully lowers depressive symptoms among diverse populations [9].

Physiologically, ART also contributed to significant improvements, as observed in the experimental group. Participants experienced a 7.7% decrease in respiratory rate and a 7.6% reduction in pulse rate, alongside a 2.3% decrease in systolic blood pressure (BP). These findings can be contextualized within the framework of mind-body therapies that engage both physiological and psychological mechanisms to promote health [10-11]. The reductions in respiratory and pulse rates suggest a shift towards a more relaxed state, indicative of decreased activation of the sympathetic nervous system commonly associated with stress responses [12].

Although the difference in cortisol levels did not reach statistical significance at the 12-week mark, the overall physiological trends observed in the experimental group bolster the argument for ART as a valuable intervention for managing physiological markers of stress. Previous studies have indicated that ART can lead to enhanced physiological states conducive to health. Moreover, the integration of physiological markers such as blood pressure and heart rate provides a comprehensive understanding of ART's multifaceted efficacy [13-15].

In sum, the results from this study affirm the efficacy of Autogenic Relaxation Therapy, encompassing both psychological and physiological dimensions of health. The significant improvements in stress, anxiety, and depression levels, combined with the physiological changes, provide a strong case for incorporating ART into therapeutic regimens aimed at promoting holistic well-being [16]. These findings resonate with previous research efforts that advocate for ART's use in various clinical settings to aid stress management and improve health outcomes [17,18].

CONCLUSIONS

This study highlight that ART improves psychological and physiological well-being. ART showed potential to reduce stress, anxiety, and depression, while enhancing key health indicators. Future directions should also briefly suggest the value of broader, more diverse samples and the inclusion of qualitative assessments, without requiring immediate implementation.

Limitations

This study offers valuable insights but is limited by a small, demographically narrow sample, affecting generalizability. Further research, using larger and more diverse populations, and longitudinal designs should be performed.

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