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Psychological and Relaxation Interventions to Reduce Maternal Stress and Improve Quality of Life and Parent–Child Relationship in Families of Children with Disabilities

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ABSTRACT

Caring for a child with a disability presents significant emotional, physical, and psychological challenges, often resulting in elevated stress, diminished quality of life, and disrupted parent-child relationships—particularly for mothers who serve as primary caregivers. This quasi-experimental pretest-posttest study aimed to evaluate the effectiveness of a multi-modal intervention—comprising Jacobson Progressive Muscle Relaxation (JPMR), Cognitive Behavior Therapy (CBT), breathing exercises, and guided imagery—in reducing stress, enhancing quality of life, and improving the parent-child relationship in mothers of children with disabilities. A total of 39 mothers from VQURA Child Development Centre, Delhi, participated in an 8-week intervention program, which included four 30-minute sessions per week. Standardized tools—the Parental Stress Scale (PSS), Child-Parent Relationship Scale (CPRS), and WHOQOL-BREF—were used to assess outcomes before and after the intervention. Results showed a statistically significant reduction in stress (mean PSS scores reduced from 53.49±5.24 to 45.10±4.31, $p<0.001$), a marked improvement in parent-child relationship (CPRS scores increased from 89.49±8.71 to 100.69±9.95, $p<0.001$), and a significant enhancement in overall quality of life (WHOQOL-BREF scores rose from 100.82±6.49 to 120.95±7.89, $p<0.001$). These findings suggest that integrating progressive relaxation, cognitive restructuring, mindful breathing, and visualization techniques can effectively address the complex emotional needs of mothers caring for children with disabilities. This structured approach holds promise for inclusion in family-centered care models aimed at supporting caregiver well-being and strengthening familial bonds.

KEY WORDS: BREATHING EXERCISE, COGNITIVE BEHAVIOR THERAPY, GUIDED IMAGERY, JACOBSON PROGRESSIVE RELAXATION, PARENT-CHILD RELATIONSHIP.

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INTRODUCTION

Caring for a child with a disability is a profoundly challenging and demanding role. Mothers, as primary caregivers, often experience unique and intense psychological, emotional, and physical burdens that far exceed those faced by parents of typically developing children [1]. These persistent demands frequently lead to heightened stress, anxiety, and depression, which negatively impact maternal well-being and caregiving ability [2]. Navigating complex healthcare systems, advocating for services, and managing everyday caregiving tasks can result in emotional exhaustion and compromised mental health [3]. Chronic stress among caregivers also increases the risk of physical health issues such as hypertension, cardiovascular conditions, and weakened immune function.

In the Indian context, these challenges are further exacerbated by social expectations, financial limitations, and a lack of comprehensive support services [4]. Research consistently shows that mothers of children with disabilities report higher levels of psychological distress compared to mothers of neurotypical children [5]. This psychological strain can affect the quality of parent-child interactions, potentially influencing the child's emotional, social, and cognitive development [6]. Maternal stress often leads to emotional withdrawal, reduced patience, and increased relational tension [7].

Socioeconomic status plays a critical role in shaping the caregiving experience in India. Many families struggle with the high cost of therapies, special education, and medical care, which contributes to increased stress and limited access to resources [8]. In addition, stigma and lack of awareness surrounding disability contribute to social isolation, depriving mothers of community support and mental health services [9]. The ongoing uncertainty about the child's future and the responsibility of advocacy deepen these emotional burdens [10]. Ultimately, caregiving is a complex, long-term commitment that significantly impacts a mother's physical health, psychological state, and social relationships.

In light of these multifaceted challenges, there is a critical need for interventions that support caregiver mental health and overall well-being [11]. This study addresses that need by examining a multi-modal intervention program combining Jacobson Progressive Muscle Relaxation (JPMR), Cognitive Behavioral Therapy (CBT), breathing exercises, and guided imagery. These mind-body approaches are evidence-based and target distinct stress pathways: JPMR addresses physical tension [12], CBT focuses on modifying maladaptive thought patterns 13, breathing techniques aid physiological regulation, and guided imagery supports emotional calm [14].

The current study aims to evaluate the effectiveness of this integrated intervention in reducing maternal stress, improving quality of life, and enhancing the parent-child relationship in mothers of children with disabilities—ultimately informing both clinical practice and community-based care.

MATERIAL AND METHODS

This study utilized a quasi-experimental pretest-posttest design to evaluate the effects of the intervention. This study was reviewed and approved by the Institutional Ethical Committee of Santosh College of Occupational Therapy (Ref No. SCOT/NOV-24/ECPEADS-03). Permission to conduct the study was obtained from the VQURA Child Development Centre in Delhi over an eight-week period. All subjects were informed about the nature and purpose of the study, and written informed consent was obtained prior to their participation. Based on a statistical power of 80% and an alpha level of 0.05, the required sample size was calculated to be approximately 39 participants.

A sample size of 39 mothers was recruited using a convenience sampling technique. Participants were selected based on specific inclusion and exclusion criteria. Inclusion criteria required mothers to be aged 25 to 45 years, have a child with a benchmark disability as confirmed by a healthcare professional, score in the moderate to severe range on the Parental Stress Scale (PSS), and be willing and available to participate in the full eight-week program. Exclusion criteria were applied to mothers with a severe psychiatric disorder, severe medical conditions, or physical impairments that would interfere with their participation.

Each participant underwent a structured intervention comprising four weekly sessions (30 minutes each), integrating Jacobson Progressive Relaxation (JPR), Cognitive Behavioral Therapy (CBT), breathing exercises, and guided imagery. The JPR component involved sequential muscle contraction and relaxation to release physical tension . CBT sessions guided participants through the ABC model to challenge negative thoughts and promote cognitive restructuring [15]. Breathing exercises included diaphragmatic and pursed-lip techniques to support physiological stress regulation 16, while guided imagery involved visualization of calming scenes to foster emotional balance and reduce psychological distress [17].

Outcome Measures: The following outcome measurements were taken at baseline and again 8 week of training. To evaluate the impact of the intervention, three validated instruments were used. The Parental Stress Scale (PSS), a self-report tool comprising 18 Likert-scale items, was employed to measure stress levels in mothers. This scale captures both the rewarding and challenging aspects of parenting and demonstrated strong internal reliability, with a Cronbach's alpha of 0.74. The Child-Parent Relationship Scale (CPRS) was used to assess the quality of interactions

between mother and child. This 30-item scale examines dimensions such as intimacy, conflict, and dependency, and is frequently applied in both clinical and research contexts involving parents of children aged 3 to 12 years 18. Lastly, the World Health Organization Quality of Life – BREF (WHOQOL-BREF) was used to assess overall quality of life across four domains: physical health, psychological well-being, social relationships, and environment. The instrument is globally recognized for its reliability and has demonstrated excellent internal consistency, with Cronbach's alpha values exceeding 0.7 in all domains [19].

RESULTS

Descriptive analysis of the sample revealed that the mean age of the 39 participants was 34.87±5.69 years. This moderate age variability suggests that the intervention was evaluated among mothers in the active parenting phase (Table 1).

Normality tests confirmed that the Parental Stress Scale (PSS) and Child-Parent Relationship Scale (CPRS) scores were normally distributed, supporting the use of parametric tests. While some of the WHOQOL-BREF domain scores showed non-normality, the paired t-test was deemed robust enough for within-subject comparisons in a small sample.

The intervention demonstrated a highly significant effect on all primary outcome measures. For parental stress, the mean PSS score decreased from a pre-intervention mean of 53.49±5.24 to a post-intervention mean of 45.10±4.31. This reduction was statistically significant, as indicated by a t-value of 26.784 and a p-value of p<0.001.(Table 2).This finding confirms that the program was highly effective in reducing participants' perceived stress.

Table 1. Descriptive Statistics of Age

Variable	Mean	N	Standard Deviation
Age	34.87	39	5.69

Table 2. Pre- and Post-Intervention Data

Outcome Measure	Time	Mean ± SD	t-value	p-value
Parental Stress Scale (PSS)	Pre	53.49 ± 5.24	26.784	0.000***
	Post	45.10 ± 4.31		
Child-Parent Relationship Scale (CPRS)	Pre	89.49 ± 8.71	-37.494	0.000***
	Post	100.69 ± 9.95		
WHOQOL-BREF Total Score	Pre	100.82 ± 6.49	-9.390	0.000***
	Post	120.95 ± 7.89		

Similarly, the quality of the parent-child relationship showed a marked improvement. The mean CPRS score increased significantly from 89.49±8.71 at baseline to 100.69±9.95 post- intervention. The paired sample t-test yielded a t-value of -37.494 and a p-value of p<0.001, affirming that the observed enhancement in relational dynamics was not due to chance.

Table 3. Correlation Matrix of Key Variables

Variables	Age	PSS PRE	PSS POST	CPRS PRE	CPRS POST	WHOQOL PRE	WHOQOL POST
Age	1.000	0.101	0.045	0.087	0.228	-0.074	0.015
PSS Total PRE	0.101	1.000	0.934*	0.902*	0.843*	−0.945*	−0.858*
PSS Total POST	0.045	0.934*	1.000	0.868*	0.868*	−0.866*	−0.909*
CPRS Total PRE	0.087	0.902*	0.868*	1.000	0.752*	−0.848*	−0.776*
CPRS Total POST	0.228	0.843*	0.868*	0.752*	1.000	−0.791*	−0.793*
WHOQOLTotal PRE	- 0.074	−0.945*	−0.866*	−0.848*	−0.791*	1.000	0.874*
WHOQOL Total POST	0.015	−0.858*	−0.909*	−0.776*	−0.793*	0.874*	1.000

Regarding quality of life, the WHOQOL-BREF total score showed a considerable increase, rising from a pre-intervention mean of 100.82±6.49 to a post-intervention mean of 120.95±7.89. This improvement was highly significant with a t-value of -9.390 and a p-value of p<0.001. Interestingly, while the total score improved dramatically, individual domain scores for physicalhealth, psychological health, social relations, and environment showed slight,

statistically significant decreases. Pearson's correlation analysis was conducted to explore the relationship between variables.The correlation matrix revealed strong negative correlations between PSS scores and WHOQOL total scores (r=−0.945 pre-intervention, r=−0.909 post-intervention), and a strong positive correlation between PSS and CPRS scores (r=0.902 pre-intervention, r=0.868 post-intervention), indicating that higher stress is strongly linked to lower quality of life and poorer parent-child relationships(Table 3).

DISCUSSION

The findings of this study provide strong evidence for the effectiveness of a structured, multi-modal intervention in addressing the psychological challenges faced by mothers of children with disabilities. The most significant outcome was the marked reduction in parental stress, which supports existing literature highlighting the efficacy of combining relaxation techniques and cognitive behavioral strategies for stress reduction [15]. The intervention's strength lies in its holistic design, targeting both physical tension and maladaptive thought patterns. Jacobson Progressive Relaxation (JPR) and breathing exercises offered immediate physiological relief, while cognitive behavioral therapy (CBT) supported long-term psychological adaptation by addressing distorted beliefs and stress-inducing cognitive patterns.

Moreover, the significant improvements observed in the quality of the parent-child relationship, as measured by the Child-Parent Relationship Scale (CPRS), underscore the interdependence between caregiver well-being and familial dynamics. By improving emotional regulation and psychological resilience in mothers, the intervention likely fostered greater emotional availability and positive interactions with their children. These outcomes are in line with previous findings by [9], who reported enhanced maternal coping through a similar intervention, and [20], who emphasized the mediating role of parental mental health in shaping child behavior and attachment.

An interesting observation emerged in the analysis of WHOQOL-BREF domain scores. Although the overall quality of life score improved significantly, some individual domains (physical, social, psychological, and environmental) showed marginal declines post-intervention. This paradoxical trend may reflect increased self-awareness among participants, leading to a more accurate appraisal of their challenges. Rather than indicating deterioration, this may suggest a cognitive shift toward greater introspection, acceptance, and psychological maturity. Similar reflections were noted in the work of [21], where increased mindfulness led to greater emotional insight among mothers of children with learning disabilities.

Overall, the intervention aligns with the growing body of research that supports caregiver-focused interventions as critical elements in pediatric care. The inclusion of mothers in structured therapeutic programs not only benefits their own mental health but also indirectly enhances child development outcomes through improved caregiving capacity [19].

However, several limitations temper these conclusions: the absence of a control group prevents definitive causal inferences; reliance on self report measures introduces risk of bias; lack of qualitative interviews limits insight into subjective experiences; and no formal monitoring of participants' consistency in practicing techniques outside guided sessions may affect fidelity. Future research should employ randomized controlled trial designs; include larger, more diverse populations (including different socioeconomic backgrounds and fathers); add follow up evaluations at multiple intervals to assess sustained effects; combine quantitative data with qualitative interviews or focus groups to capture emotional depth; and explore mobile or online versions of the intervention and adaptations for community or group settings to increase accessibility and sustainability.

CONCLUSION

In conclusion, this study highlights the effectiveness of an eight-week structured intervention— combining Jacobson Progressive Relaxation, CBT, breathing exercises, and guided imagery—in improving the psychological well-being of mothers of children with disabilities. The program significantly reduced parental stress, strengthened parent-child relationships, and enhanced overall quality of life. These findings emphasize the importance of integrating maternal mental health support into pediatric rehabilitation to promote healthier families and better child outcomes.

Ethical Clearance
Ref No. SCOT/NOV-24/ECPEADS-03,13/11/2024.

Conflict of interest statement - NONE.

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