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THE IMPACT OF NEURO-LINGUISTIC PROGRAMMING (NLP) AND YOGA INTERVENTIONS ON STRESS LEVELS IN MOTHERS WITH ADOLESCENT CHILDREN

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ABSTRACT
Stress occurs when parental expectations are higher than the real and expected resources. Adolescence is a vital period, which makes every new stage of development with anxiety, especially for mothers of teenagers. Yoga is a holistic approach used as an alternative medicine for preventing and healing different diseases, and "NLP is an expressive and compelling model of individual interaction and experience that permits [the practitioner] to make several fundamental and long-lasting changes quickly and easily". We aimed to find out whether there would be any significant correlation on Hamilton Anxiety Rating scale (HAM-A, cortisol and heart rate due to yoga practice with NLP intervention among anxiety mother's having adolescent child. The Subject were mothers having adolescent child (14-18years). The total number of sample size determined to be 90. Based on the information obtained, subjects were randomly divided into yogic practice with NLP group (30), yoga group (30) and control group (30). Pre and post-test were carried out for all variables viz. Cortisol level in the serum, Hamilton Anxiety scale and heart rate. The study's total duration was 12 weeks. Experimental group received yogic practice 4 days/week and 2 NLP sessions /month/sample. Control group was engaged with active rest. ANOVA Test applied for changes in variable. Yogic practice with NLP training helped to reduce Stress of mother's having adolescent child at 0.05 level of confidence on Parenting Sense of Competence Scale, Cortisol and Heart rate while the response was minimal in case of yogic practice.

KEYWORDS: Yogic Practices, Neuro linguistic Programming, Parenting Sense of Competence Scale, Cortisol, Heart rate, Mothers of adolescents.

1. INTRODUCTION

Stress is a widespread issue in contemporary society and has emerged as a major global public health concern[1]. Today, both parents are often required to work to meet their family's needs. Still, mothers frequently face the added responsibility of caring for children and managing household tasks, which can increase their stress levels[2]. Adolescence is a developmental stage where individuals explore new aspects of themselves and grow on multiple levels such as physically, mentally, socially, and emotionally[3]. Each new developmental stage can trigger anxiety for mothers, as they may worry about their child's behaviour and social growth. According to the DSM-V (APA, 2013)[30]**,** sustained anxiety manifests in indications such as restlessness, fatigue, irritability, muscle tension, and difficulty with sleep or concentration[4]. Coping strategies can be a valuable tool for managing stressful situations, and parents employ various approaches to handle stress[5]. The majority of mothers having stress strongly agreed that visiting a psychiatrist taking vacations and breaks, and having social support are some of the common strategies followed nowadays[6]**.** Yoga and Neuro-Linguistic Programming (NLP) are two distinct coping strategies that form the foundation of this study. Yoga is a holistic practice often used as an alternative treatment for preventing and addressing various health issues[7]. The traits of the modern lifestyle includes elevated levels of stress, anxiety, and sadness. Due to negative effect of medication of drugs researchers are seeking nonpharmacological remedies for anxiety and depression. The factors of self-description, psychological state, and quality of life were all enhanced by yoga practice[8]**.** Neuro-Linguistic Programming (NLP) works with the subconscious mind to develop cognitive skills. NLP is a psychological method that uses experience to connect language, behaviour patterns, and

neurobiology[9]. NLP has been used to treat emotional and anxiety problems in various context, has proven to be beneficial when used in conjunction with other therapeutic approaches[10]. Our previous work reported a positive impact of yoga and combined yoga with NLP on psychological management in mothers of adolescents[11] This study explored the methods for reducing stress and anxiety, improve psychological health condition among mothers having adolescence child through a combination of Yoga with NLP.

2. MATERIALS AND METHODS

2.1 Study Design:
This was a study which is randomized, parallel group, multiple arm trial with 3 groups
Group A (experimental group 1) : Yoga along with NLP practice
Group B (experimental group 2): Yoga alone
Group C (control group): Active rest

2.2 Sample Size:
The Subjects were mothers' having adolescent children (14-18years). The total sample size (90), was determined using power analysis method [25] Sample size calculation based on prevalence of the previous study [12] was carried out. The subjects were equally divided into three groups of 30 each.

2.3 Inclusion & Exclusion criteria:

2.3.1 Inclusion Criteria:

- ✓ Participation in the study and completion of the signed permission form.
- ✓ Mothers having adolescent children (Aged 14-18 years)
- ✓ The participants are mothers, who can verbally communicate, have no hearing problem

2.3.2 Exclusion Criteria:

- ✓ A history of psychosis, mania, brain damage.
- ✓ A History of severe anger, violence, or suicidal thoughts.
- ✓ Active clinically significant gastrointestinal, cardiovascular, hepatic, renal or other major clinically significant disorder/ disease.

2.4 Outcome measurement:
Outcome measures for this study were studied using Hamilton Anxiety scale and determination of Heart rate and estimation of cortisol levels in blood plasma.
Hamilton Anxiety Scale: It includes 14 questions. This questionnaire score accounts from 0-56. Mild anxiety is indicated by a total anxiety score of less than 17, moderate anxiety by score (18 to 24), and severe anxiety by score (25 to 30). According to studies, those who suffer from mental illnesses like depression or anxiety disorder have an aggregate value of anxiety greater than 20 on the HAM-A [17][31]**.**
Heart Rate: It was measured by using a standard pulse oximeter.
Cortisol: Cortisol level was measured from the plasma of the participants from all the groups (A, B & C). Blood sample was collected at 8 am in empty stomach from all the participants on 0 day and after 90 days of intervention.

2.5 Intervention:
Total duration of the study was 12 weeks. Experimental group A received yogic practice 4 days/week and 2 NLP sessions /month/person. Experimental group B received yogic practice 4 days a week. Control group was engaged with active rest. The yoga schedule included Loosening exercise, Cat-Cow Breathing (Marjariasana), Suksma vyama (Vakhsa Sakti Vikasa), Surya Namaskar (Bihar School of Yoga), Yastikasana, Ustrasana, Sashangasana (Child Pose), Matsyasana, Setubandhasana,Bhujangasana, Makarasana, Savasana, Abdominal breathing, Nadi sodhana Pranayama, Bhamari Pranayama, Shitali Pranayama, A-U-M Chanting[Mentally], Yoga Nidra[26-29]. Neuro-linguistic programming techniques mainly included anchoring, de-bursting, and swish technique along with time-line therapy[14-16]

2.6 **Data Calculation/Analysis:**
To check the difference between the groups ANOVA test was used. To compare pre and post-values of the groups paired "t-test" was applied in the calculation. Statistical significance was examined at $p<0.05$ level.

2.7 Declaration ethical & Ctri clearance
Our study is a combination of both NLP and Yoga. This study is approved from Institutional Human Ethics Committee Meenakshi Medical College Hospital & Research Institute, with Study Reference number MMCH & RI IEC/PhD/02/JAN/23. CTRI Registration Number CTRI/2023/06/053416 [Registered on: 01/06/2023]

RESULTS

Table 1: Comparison of pre and post outcome parameters between the groups

	Yoga with NLP N=30	Yoga Group N=30	Control Group N=30	P Value
Cortisol (mg/dl)				
Pre-intervention	16.82 ±1.37^{NS}	16.98 ±0.90 ^{NS}	17.16 ±1.02	0.6

Post- Intervention	14.17 ±1.91***	14.31±1.58***	16.43±1.38	<0.001
Percentage of Changes (%)	15.76	15.72	4.2	--
Heart Rate (bpm)				
Pre-intervention	102.07±8.48***	96.07 ±9.07***	94.17 ±6.77	0.001
Post- Intervention	74.90 ±8.86***	77.73 ±14.74)***	92.83 ±6.08)	< 0.001
Percentage of changes	26.64	19.08	1.41	
HAM-A				
Pre-intervention	28.70 ±2.96 NS	27.77 ±2.96 NS	27.30 ±3.72	0.238
Post- Intervention	16.67 ±2.55***	21.70 ±3.46***	28.30 ±3.69	< 0.001
Percentage of changes	41.91	21.86	0.35	

Note: * - p<0.05, **- p<0.01, *** - p<0.001 Level of Significant, N.S. – Not Significant
#bpm- beat per minute, HAM-A – Hamilton Anxiety Scale

The cortisol levels in plasma of the subjects were significantly reduced in both yoga with NLP and yoga groups when compared to the control group. However the cortisol level was almost same in both Groups A and B (ie yoga with NLP and yoga alone) . Hence NLP intervention has not made significant change in the reduction of cortisol level of the subjects.

A significant reduction in heart rate was observed with NLP intervention along with yoga group. While the reduction of heart rate was moderately altered in yoga-alone group when compared to the control group.

The Hamilton anxiety scale score was found to be doubled in yoga with NLP group when compared to yoga alone group. However, the score for yoga alone group was found to be moderately significant when compared to the control group.

The percentage changes of cortisol levels in blood plasma was calculated and it was found to be 15.76 and 15.72 respectively for yoga with NLP group and yoga group. The percentage reduction between both groups A and B almost same but was found to be altered significantly when compared to the control group.

The percentage changes in heart rate in yoga with NLP group was 26.64 while yoga group was 19.08 per se. This proves that the NLP intervention has a significant effect on the heart rate.

The percentage change in the HAM-A Scale indicated a significant improvement in the Yoga with NLP group, with a reduction of 41.91%, compared to a 21.86% reduction in the group receiving only Yoga intervention. This highlights a substantial positive impact on the psychological variable, demonstrating the enhanced effectiveness of combining Yoga with Neuro-Linguistic Programming.

The results are tabulated in the table -1

DISCUSSIONS AND CONCLUSION

This study provides valuable insights into stress and anxiety, both of which reduce the performance of mothers with adolescent children. The findings, supported by previous research[18-20]. indicate that combining Yoga and NLP effectively manages stress and heart rate. Yoga, when employed with NLP, effectively reduced anxiety and stress than the application of subjects with yoga alone. The yogic method had influenced the reduction of the hormonal level especially cortisol to reduce stress while NLP works with the subconscious mind**.** Since stress and anxiety are interrelated, both Yoga and NLP help to address them effectively.

Stress is a state in which the sympathetic nervous system is overactivated, leading to acute or chronic physical, psychological, and behavioural challenges that promote physiological changes[21]. In terms of anxiety, stress is an intense, persistent worry that disrupts daily life, often manifesting through symptoms like panic attacks, physical fear responses, and avoidance behaviours [22].

NLP as a psychological approach that helps to overcome challenging situations. NLP creates integration with positive and social psychology and recognize their role in developing brain re-winding and subconscious training technique to overcome stress with anxiety [23].

Yoga, as a comprehensive practice, involves physical poses (asanas), breathing techniques (pranayama), concentration, meditation (dharana and dhyana), and contemplative practices. Physiologically, Yoga helps to counteract the overactivation of the sympathetic nervous system, balancing it with the parasympathetic system.

Yoga is a great Solution for Anxiety and Stress Whereas Neuro Linguistic programming is a recent update on reduction of Stress. This study corroborate with the recent study conducted by Park & Slattery [24]. They explained Neuro Linguistic programming as a great coping strategy for anxiety. Our study result revealed the success of NLP intervention in normalizing the heart rate & HAM-A. NLP brings learning about how individual mind works and that can be changed to improve the quality of individual thereby proving how NLP works as a communication model representing interpersonal and intra personal wellbeing. It further explains as coping strategies for stress among mothers having adolescent children.

There are many positive responses from this study although this Study needs a refined process viz. more variables can be included, large number of Population to be included in the study and all categories including working and non-working women in comparison to Stress biomarkers.

This paper concludes that both Yoga and Neuro Linguistic programming as a best strategy for reducing Stress and Anxiety among mothers having adolescent children. Hence this technique may be used as a Coping technique for all mothers having adolescent children

CONSENT TO PUBLISH

All authors agreed to the content of the final paper.

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COMPETING INTEREST

No potential conflict of interest was reported by the authors.

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