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Effect of Yoga With and Without Meditation on Serum Cortisol and Stress Level among the Obese Women

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Abstract

The purpose of the study was to find out the effect of yoga with and without meditation on Serum Cortisol and Stress level among obese women. Thirty obese women who were (aged 30 to 45 years) living in Kondapur, Hyderabad selected as subjects. The selected subjects were randomly assigned into three experimental groups. Each group consists of ten (n = 10) and were treated for a period of 12 weeks. The first group treated with the Specific Ashtanga Yogic Practices (AYP) and the second group with the Specific Hatha Yogic Practices (HYP) and the third group considered as the Control group that did not receive any of the above treatments. Serum Cortisol level (blood samples) and Stress level assessment (Stress Questionnaire constructed by Latha Satish (1997)), were taken for all the three groups at the baseline and after a week of the treatment. Analysis of Covariance was applied for examining the hypothesis. Whenever the adjusted post test mean was found to be significant, the Scheffé S test was applied. After 12 weeks of the specific yogic practices it is evident that AYP and HYP have significant changes in selected criterion variables when compared with the control group. In the Serum Cortisol level, the AYP and HYP have shown the significant reduction over the Control group and in Stress level AYP shown significant reduction than the HYP and control group. The results suggest the importance of practicing AYP and HYP for reducing the Stress level and controlling the Serum Cortisol level among the obese women.

Keywords: Specific Ashtanga Yogic Practices, Specific Hatha Yogic Practices, Serum Cortisol level and Stress level.

Introduction

Stress is caused by both the physical and emotional behaviour. Especially in women, the stress factor is more as they are very emotional than men. Both working women and house wives are prone to stress. Working women are finding it more difficult to manage both the work and household activities and similarly the housewives in general, the family pressure make them prone to stress as well as doing their day to day job at home. It can also be caused by not knowing how to manage their time well or how to allot time for rest and relaxation. Few women are always under some fear and restlessness without any reason that is also a biggest factor for stress that also leads to the various health issues. These cannot be controlled only by medicine but needs treatment that relaxes their mind and body which is exactly what yoga does. Stress is one's body way of responding to any kind of demand. Stress induces imbalance of the autonomic nervous system with the decreased activity of the parasympathetic nervous system and increased activity of the sympathetic nervous system. Cortisol is one of the sterol hormones known as glucocorticoids secreted by the outer cortex of the adrenal gland. It is also considered as one of the stress hormones. It is secreted in large quantities over a long period of time when the body is under stress. Addison's disease (Hypocortisolism), also known as primary adrenal insufficiency, is a long term endocrine disorder in which the adrenal glands do not produce enough steroid hormones. Symptoms generally come on slowly and may include abdominal pain, weakness, and weight loss. Darkening in certain areas may also occur. Under certain circumstances an adrenal crisis may occur with low blood pressure, vomiting, lower back pain, and loss of consciousness. An adrenal crisis can be triggered by stress, such as from an injury, surgery, or infection. Cushing's syndrome (Hypercortisolism) is a collection of signs and symptoms due to prolonged exposure to cortisol. Signs and symptoms may include: high blood pressure, abdominal obesity but with thin arms and legs, reddish stretch marks, a round red face, a fat lump between the shoulders, weak muscles, weak bones, acne, and fragile skin that heals poorly. Women may have more hair loss and irregular menstruation. Occasionally there may be changes in mood, headaches, and a chronic feeling of tiredness. Yoga is the healthy and natural means of treating the imbalance of cortisol and reducing the stress level by

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inducing the parasympathetic nervous system. It is a holistic approach to treat both the physical and mental state of a person by not only reducing the obesity and will also help to live a healthy and peaceful life. Ashtanga Yoga or Raja yoga referring to the eight limbs leading to absolute mental control which include the moral and ethical guidelines, postures, breath work, sense withdrawal, concentration, meditation and self-absorption. These eight steps basically act as a guidelines on how to live a meaningful and purposeful life. The chief practice of Ashtanga yoga is meditation. "Yoga is the cessation of modifications of thought waves"-Yoga sutra 1.2. Hatha Yoga is a method to prepare the practitioner for the rigors of Raja yoga .The Hatha-Yoga gain control of the physical body and the subtle life force called Prana. When body and energy are under control Meditation comes naturally. "Hatha yoga is solely and exclusively for the attainment of Raja yoga". -Hatha yoga pradipika 1.2. The Pradipika is divided into four parts. The first explains the restraints on the behavior, observances, postures and food. The second describes the control or restraint of energy and the internal cleansing practices. The third deals with the seals, locks, channels of energy through which prana flows and the kundalini power. The fourth expounds the withdrawal of the senses from concentration, meditation and absorption. Being the first accessory of Haṭha Yoga, Asana is described first. It should be realized that the Hatha yoga pradipika is a major treatise with the practical guidelines. It takes the practitioner from the culture of the body towards the sight of the self.

Methodology

The purpose of this study was to find out the effect of yoga with and without meditation on Serum Cortisol and Stress level among the obese women.30 obese women(aged 30 to 45 years) living in Kondapur, Hyderabad were selected. Subjects were randomly assigned into three experimental groups. Each group of 10 were treated for a period of 12 weeks. The first group treated with the Specific Ashtanga Yogic Practices (AYP) and the second group with the Specific Hatha Yogic Practices (HYP) and the third group was considered as the Control Group that did not receive any of the above treatments. Serum Cortisol level (blood samples-morning 7-8 am, empty stomach) and Stress level assessment (Stress Questionnaire constructed by Latha Satish (1997)), were taken for all the three groups at the baseline (pretest) and a week after the treatment (posttest). Data were statistically analysed by using Analysis of Co-variance. Level of significance was set at p=0.05. Probability p value <0.05 was considered as statistically significant.

Statistical Analysis

The data collected on cortisol and stress among experimental and control groups were analyses and the results were presented in Table – I.

Table I. Analysis of covariance on selected criterion variables among exercise groups and control group

Variable Name	Group Name	Specific Ashtanga Yoga Practice Group	Specific Hatha Yogic Practice Group	Control Group	'F' Ratio
Cortisol (µg/dL)	Pre-test Mean ± S.D	13.07 ± 6.07	13.72 ± 4.76	12.85 ± 4.65	0.075
	Post-test Mean ± S.D.	10.27 ± 2.26	10.68 ± 4.27	14.62 ± 6.51	2.632
	Adj. Post-test Mean	10.360	10.380	14.849	5.697*
Stress (Points)	Pre-test Mean ± S.D	14.00 ± 7.07	14.50 ± 7.01	14.10 ± 5.28	0.017
	Post-test Mean ± S.D.	6.70 ± 5.84	12.00 ± 6.24	15.40 ± 5.80	5.415*
	Adj. Post-test Mean	6.857	11.764	15.479	19.391*

*Significant .05 level of confidence. (The table values required for significance at .05 level of confidence with df 2 and 25 and 2 and 26 were 3.385 and 3.369 respectively).

Results and Discussions

Table – I shows that pre and post test means 'f ratio of specific Ashtanga Yoga Practice group, specific Hatha Yogic practice group and control group on cortisol were 0.0.075 and 2.632, which is insignificant at 0.05 level of confidence. The adjusted post test mean 'f' ratio value of experimental groups and control group was 5.697, which was significant at 0.05 level of confidence. The pre and post test means 'f ratio of specific Ashtanga Yoga Practice group, specific Hatha Yogic practice group on stress were 0.017, which is insignificant and 5.415, which is significant at 0.05 level of confidence. The adjusted post test mean 'f' ratio value of experimental groups and control group was 19.391, which was significant at 0.05 level of confidence. After applying the analysis of covariance, the result of this study shows that there was a significant decrease in cortisol and stress levels.

Table II. Scheffĕ S Test for the Difference Between the Adjusted Post-Test Mean of Selected Criterion Variables

Adjusted Post-test Mean on Cortisol				
Specific Ashtanga Yoga Practice Group	**Specific Hatha Yogic Practice Group**	***Control group***	**Mean Difference**	**Confidence interval at .05 level**
10.360		14.849	4.489*	3.9804
10.360	10.380		0.02	3.9804
	10.380	14.849	4.469*	3.9804
Adjusted Post-test Mean on Stress				
6.857		15.479	8.622*	3.6048
6.857	11.764		4.907*	3.6048
	11.764	15.479	3.715*	3.6048

* Significant at .05 level of confidence.

Table – II shows that the Scheffĕ *S* Test for the difference between adjusted post-test mean on cortisol of specific Ashtanga Yoga practice group and control group (4.489) and specific Hatha Yogic Practice group and control group (4.469), which were significant at .05 level of confidence. There was a significant difference on stress between specific Ashtanga Yoga practice group and control group (8.622), specific Ashtanga and specific Hatha Yogic Practice group (4.907) and specific Hatha Yogic Practice group and control group (3.715) which was significant at 0.05 level of confidence after the respective training programme. After applying the Scheffé *S* test, the result of this study shows that there was a significant decrease in cortisol and stress levels due to the various modes of yoga practices.

Conclusion

The present study concludes the importance of AYP in reducing the Stress level over the Hatha yoga and control group. It is also noted that the AYP had a certain influence on controlling the Serum Cortisol level although not significant result due to the limitations of the sample size. Ashtanga yoga focuses mindfulness oriented practices which are essential for keeping one's mind in a balanced state. Whereas Hatha Yoga is more body oriented, no meditative and less pranayama which has its own physical benefits that may not help in controlling the Serum Cortisol and Stress level.

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