

**IMPACT OF YOGA ON STRESS AND WEIGHT OF MENOPAUSAL WOMEN****DR.B.JAYABHARATHI, M.SC (N), PH.D , YIC, DYT***Associate Professor, Department of Obstetrics & Gynecology Nursing, SRM College of Nursing, SRM University , Chennai, India***ABSTRACT**

Menopause is a normal occurrence in the life of every woman. This study aimed to assess the impact of yoga on stress and weight of menopausal women. The study was conducted in selected villages at Kattankulathur Block, Chennai. Simple random sampling technique was adopted to select 260 menopausal women (130 in study group and 130 in control group). The study group received yoga training programme (Yogasanas, pranayama and meditation) and they practiced yoga for 18 weeks. Assessments were made by Sheldon Cohen's Perceived Stress Scale and ISO certified weighing scale. After 18 weeks, the stress was reduced to a greater extent in study group than in control group at  $p=0.001$  level. The mean weight reduction was 3.58 from the base line weight in study group. This study concluded that yoga is an effective intervention in reducing the stress level and managing the weight of menopausal women.

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## INTRODUCTION

Menopause is a normal occurrence in the life of every woman. The term is derived from the Greek, which actually means 'cessation of periods'. Menopause occurs due to cessation of ovarian function. The age of menopause varies from 45 to 50 years. In some women, the age of menopause may be 51 or 52 years<sup>1</sup>. With the average lifespan of a woman increasing in the recent years (expected average lifespan of a woman in 2025 is 72 years), it can be concluded that a considerably large number of women will lead one third of their life in the postmenopausal stage<sup>2</sup>. During climacteric, ovarian activity declines. Initially ovulation fails, no corpus luteum forms and no progesterone are secreted by the ovary. Therefore the premenopausal menstrual cycles are often anovulatory and irregular. Later, graafian follicles also fail to develop, oestrogenic activity is reduced and endometrial atrophy leads to amenorrhoea<sup>3</sup>. The symptoms associated with menopause include: hot flush, excessive perspiration, mood swings, depression, anxiety, insomnia, urinary symptoms like frequency, nocturia, vaginal dryness, leucorrhoea, pruritis, backache, muscle weakness, joint pain, and memory loss etc. Many of the above symptoms are age related and aggravated by the stresses of life<sup>4</sup>. Stress is now considered a significant contributor to poor health and important factor in the development of heart diseases, cancer and several acute and chronic diseases<sup>5</sup>. Stress management techniques such as deep breathing exercises and other relaxation tools are one of the ways of managing anxiety during menopause. These techniques reduce the heart rate and blood pressure. Many women find the time around menopause stressful which may be partially due to hormonal changes and resulting bothersome symptoms such as hot flashes and disrupted sleep. Stress affects not only the health but also relationships, work performance, general sense of well-being, and quality of life<sup>6,7</sup>. Women at menopause often experience weight gain, particularly around the abdomen. Estrogens levels may influence body fat distribution. Many women in the early menopausal years gain fat mass as their oestrogen level drops. Apart from declining estrogen levels, other factors that may contribute to weight gain after menopause include: loss of muscle tissue with age, lowered metabolism, reduced physical activity and altered habits. As women get older, their risk of cardiovascular (heart and blood vessel) disease increases. This may be partly due to the postmenopausal tendency to put on weight around the abdomen<sup>8,9</sup>. Menopause does not really require medical treatment since it is a natural biological process. The menopause treatments actually focus on relieving the symptoms of menopause and in preventing any chronic condition that may occur during the postmenopausal years such as heart disease and osteoporosis. Exercising, proper diet, not smoking, and reduction of stress are also effective ways to make menopause more bearable and also facilitate in preventing any chronic ailments that can occur in the postmenopausal years<sup>10</sup>. Yoga's approach to holistic health is a powerful tool for helping the women experience the passage into menopause as a positive event, both physically and spiritually. Yoga stretches

can benefit both the body and the mind, bringing energy and balance. This is particularly helpful to women who are currently in menopause or in menopause transition because their hormonal levels and body chemistry may be fluctuating rapidly. Yoga exercises affect the physiological instability by relaxing and gently stretching every muscle in the body, promoting better blood circulation and oxygenation to all cells and tissues<sup>11,12,13</sup>. Lunny CA, et al conducted a study to examine the determinants and use of Complementary and Alternative medicine (CAM) therapies among a sample of 423 menopausal women in Canada. 91% of women reported trying CAM therapies for their symptoms. The most common treatments were vitamins (61.5%), relaxation techniques (57.0%), yoga/meditation (37.6%), soy products (37.4%), and prayer (35.7%). The most beneficial CAM therapies reported were prayer/spiritual healing, relaxation techniques, counseling/therapy, and therapeutic touch/Reiki<sup>14</sup>. Non-drug options have become increasingly popular with women and this has presented new challenges to the physicians. It should be viewed as a different approach to Hormone Replacement Therapy; it can be recommended to ensure the quality of life. The role as physicians is to offer the patients the best possible choices to manage their health and this should now include non-drug options that have been well-researched in terms of efficacy and safety<sup>15</sup>. The present study aims to evaluate the impact of yoga on stress and weight of menopausal women in selected villages, Kattankulathur Block, Chennai, Tamilnadu.

## METHODOLOGY

The present study was conducted in selected areas at Kattankulathur Block, Chennai. The Kattankulathur block has a total of 39 panchayat villages with a population of 1,97,596. Ten villages were selected for the study. Based on the survey report, there are 12,043 menopausal women residing in the villages selected for the study. Simple random sampling technique<sup>16,17</sup> (Lottery method) was used for the selection of menopausal women for the study. There were 15-20 menopausal women participated approximately from each village. Sample size was calculated based on the pilot study results and also computed through power analysis. The estimated sample size was 111 in each group. Considering the attrition rate of 10%, the sample size was rounded to 130 in each group. Out of 260 menopausal women, 130 of them were allotted to study group and 130 of them to control group.

### ***Inclusion criteria for sample selection includes***

- a) Women who attained permanent cessation of menstruation
- b) Women with age group of 45-55 years
- c) Women who are presenting with physical and psychological symptoms such as hot flushes, sweating, insomnia, anxiety, depression.

### ***Exclusion criteria are***

- a) Women with gynecological problems like fibroid uterus, Dysfunctional uterine bleeding, and prolapsed uterus

- b) Women who are on Hormone replacement therapy
- c) Who are on medical treatment for relieving symptoms of menopause
- d) Women who are practicing yoga and exercise
- e) Women who are taking soy products for menopausal problems.

#### **Ethical consideration**

Formal approval was obtained from the Institutional review board and Institutional ethical committee. Both written and verbal information about the study were given in local language to women who participated in the present study. Women were asked to participate voluntarily in the study. The objectives, practices, goodness, problems and time period involved in practice were explained in the consent form. Women who accepted to participate in the study have a right to withdraw at anytime during the course of the study.

#### **Data collection instruments**

Section I pertained information regarding demographic data like age, religion, marital status, type of family, availability of support system, age of menarche, parity and duration of attainment of menopause. Section II assessed the level of stress of menopausal women by Sheldon Cohen's Perceived Stress Scale (PSS)<sup>18</sup>. Perceived Stress Scale is the most widely used psychological instrument for measuring the perception of stress. The scale consists of 10 items pertaining to stress of menopausal women with a severity ranging from 0-4 (0- Never, 1 – Almost Never, 2- Sometimes, 3- Fairly often, 4-Very often). The participants were asked to indicate the level of severity of stress in the scale provided. The reliability of the tool was obtained by test-retest method and a reliability coefficient of 0.80 was found to be statistically significant. Section III comprised of ISO certified weighing scale to measure the weight of menopausal women. The weight was assessed initially before the intervention and also assessed subsequently at 6 weeks, 12 weeks and 18 weeks after intervention by calibrated weighing scale. Body weight was measured (to the nearest 0.5 kg) with the menopausal women standing motionless on the weighing scale, feet about 15 cm apart and weight equally distributed on each leg. They were instructed to wear light clothes while measuring the weight. No scores were allotted for the weight of the menopausal women. Mean scores were taken for the comparison of weight of menopausal women between the groups. The reliability of the tool was established by the test-retest method. The r value obtained was 0.82 for weight (positive correlation) and the tool was found to be reliable to proceed for the main study.

#### **Description of yoga intervention**

The study group received yoga training programme under the Investigator. The yoga programme comprised the following

- i. Yogasanas (Tadasana, Ardhakati Chakrasana, Badrasana, Paschimothasana, Bhujangasana, ArdhaSalabhasana, Ardhalasana, and Shavasana) for 5 times for 25–30 mins.
- ii. Pranayama breathing exercises (Nadhisodhana pranayama and Sitali Pranayama) were repeated 8–10 times for 5–10 mins.
- iii. Om meditation: Women were asked to chant Om during meditation for 5-10 mins. It is believed to contain cosmic energy that helps to relieve a person's individual suffering and helps to enhance memory function, better interpersonal relationships, more restful sleep, and significant stress reduction<sup>10</sup>.

Initially, intensive training on steps of yoga was taught to menopausal women in the study group for 5 consecutive days for 1½ hours per day. After the 5-day intensive yoga training, the menopausal women practiced yoga at home on their own for 35-40 mins a day, and they practiced group yoga for 2 days in a week under the supervision of investigator till 18 weeks. The investigator distributed instructional manual on steps of selected yoga practice for their self reference at home after the 5-days continuous yoga practice. Yoga practice diary was used to verify the regular performance of yoga by the menopausal women. The menopausal women in the control group did not participate in the yoga programme. But, after the course of the study, they also have been given with intensive yoga training for 5 days.

#### **Statistical package**

Statistical Package for Social Sciences (SPSS) version 16 (IBM, Chicago, USA), and InStat were used for data analysis. Independent 't' test was used for comparison of values of the study and control groups. P value less than 0.05 was considered statistically significant.

## **RESULTS**

Of 260 participants, 2 in the study group and 4 in the control group withdrew from the study due to change of residency, family functions and illness. Data analysis was done for remaining 254 participants (128 in the study group and 126 in control group). The baseline values were not significantly different between the study and control groups for all the demographic variables including age ( $p=0.94$ ), religion ( $p=0.74$ ), marital status ( $p=0.91$ ), type of family ( $p=0.67$ ), availability of support system ( $p=0.52$ ), age of menarche ( $p=0.40$ ) and parity ( $p=0.47$ ). The baseline stress level shows that, majority of menopausal women 90(70.4%) in study group and 80(63.5%) in control group had a very high level of stress. It reveals that, there was no statistically significant difference found in the stress level of menopausal women between study group and control group in the pre test. ( $t=0.58$ ,  $p=0.55$ )

**Table I**  
**Frequency and percentage distribution of post test level of stress of menopausal women in study group and control group**

Stress level	N=254				
	Study group (n=128)		Control group (n=126)		
	n	%	n	%	
Post test I	Very low	-	-	-	-
	Low	-	-	-	-
	Average	34	26.6	-	-
	High	68	53.1	48	38.1
	Very High	26	20.3	78	61.9
Post test II	Very low	-	-	-	-
	Low	34	26.5	-	-
	Average	66	51.6	6	4.8
	High	28	21.9	52	41.2
	Very High	-	-	68	54.0
Post test III	Very low	-	-	-	-
	Low	64	50.0	-	-
	Average	64	50.0	8	6.3
	High	-	-	50	39.7
	Very High	-	-	68	54.0

\*\*\* very high significance at  $p \leq 0.001$

It is inferred from the table I that, majority 53.1% of the women felt high level of stress at 6 weeks and most of them (51.6 %) had average level of stress and only 21.9 % of them experienced high level of stress at 12 weeks in study group. It was greatly reduced to low

level of stress (50%) and average level of stress (50%) in post test III (18 weeks) where as in the control group, maximum of menopausal women 61.9% in post test I, 54% in post test II and post test III had very high level stress.

**Table II**  
**Comparison of post test level of mean and standard deviation of stress level of menopausal women between study group and control group**

Stress level	Study group (n=128)		Control group (n=126)		Student's t-test	independent
	Mean	SD	Mean	SD		
Post test I	17.80	6.51	23.78	7.66	t=5.55	p=0.001*** df=252
Post test II	13.42	6.25	23.13	7.56	t=8.85	p=0.001*** df=252
Post test III	11.52	4.28	22.98	7.10	t=10.53	p=0.001*** df=252

\*\*\* Very high significance at  $p \leq 0.001$

The above table shows that, statistically very high significant difference was found in stress level of menopausal women between study and control group at  $p=0.001$  in post test I, post test II and post test III.

**Table III**  
**Effectiveness of yoga therapy on stress level of menopausal women in study group**

Groups	Min – max score	Pre test		Post test III		Mean difference with 95% CI	Proportion with 95%CI
		Mean score	SD	Mean score	SD		
Study group (n=128)	0-40	23.23	7.75	11.52	4.28	↓11.71 (10.16 -13.25)	29.3% (25.4%-33.1%)
Control group (n=126)	0-40	23.85	7.66	22.98	7.10	↓0.87 (-0.95 -2.68)	2.2% (-2.3%-6.7%)

SD= Standard deviation, CI=confidence interval

The table III depicts that, the stress was reduced to 29.3% with 95% confidence interval in the post test III from the base line value after intervention in study group, where as in control group it was reduced to only 2.2% from the base line. Baseline weight of

menopausal women shows that, there was no statistically significant difference observed in the mean weight of menopausal women between study group and control group. It was analyzed using independent t-test. (t=0.11 p=0.91)

**Table IV**  
**Comparison of post test mean and standard deviation of weight of menopausal women between study group and control group**

Weight	N=254				Student's t-test	independent	df
	Study group (n=128)		Control group (n=126)				
	Mean	SD	Mean	SD			
Posttest I	63.34	7.07	64.47	10.74	t=0.99	p=0.32	df=252
Post test II	62.05	6.90	64.42	10.72	<b>t=2.09</b>	<b>p=0.05*</b>	<b>df=252</b>
Post test III	60.83	7.01	64.38	10.84	<b>t=3.10</b>	<b>p=0.01**</b>	<b>df=252</b>

\* significant at  $p \leq 0.05$  \*\* high significance at  $p \leq 0.01$

The above table reveals that, there was no significant difference seen in the weight of menopausal women at post test I ( $t=0.99$ ). In post test II, there was significant difference noted at  $p=0.05$  level. There was high significance found at  $p=0.01$  level between study group and control group in the post test III.

**Table V**  
**Effectiveness of yoga therapy on weight of menopausal women in study group**

Groups	Pre test		Post test III		Mean difference with 95% CI	Proportion with 95%CI
	Mean score	%	Mean score	%		
Study group (n=128)	64.41	7.12	60.83	7.01	↓3.58 (3.22 -3.93)	5.5% (4.9%-14.4%)
Control group (n=126)	64.53	10.72	64.38	10.84	↓0.15 (-0.08 -0.38)	0.23% (-0.12%-0.59%)

*SD= Standard deviation, CI=confidence interval*

It is inferred from the table V that, the mean weight reduction was 3.58 from the base line weight in study group after the practice of yoga for 18 weeks, where as in control group it was only 0.15 from the baseline weight.

## DISCUSSION

With increased life expectancy, today, women spend one-third of their life after menopause. Thus more attention is needed towards peri and postmenopausal symptoms. Estrogen replacement therapy is the most effective treatment; however, it has its own limitations. The present need is to explore new options for the management of menopausal symptoms. Yoga has been utilized as a therapeutic tool to achieve positive health and control and cure diseases. There have been multiple studies that have combined many aspects of yoga into a general yoga session in order to investigate its effects on menopausal symptoms<sup>19</sup>. Richter DL, et al conducted a study on perception of alternative therapies available for women facing hysterectomy or menopause. Data are reported from 17 focus groups of peri- and menopausal aged women (n = 82) living in two southern U.S. coastal counties. Analysis showed that, emergent themes did not vary by race or surgery experience. Herbal preparations, vitamin supplements, "healthy living" (diet and exercise), and mind/body practices were mentioned as possible alternatives for managing symptoms<sup>20</sup>. The present study results show that, the majority 53.1% of the women felt high level of stress in post test I (6 weeks) which was greatly reduced to low level of stress (50%) and average level of stress (50%) in post test III (18 weeks). But in the control group, no significant difference was noted. The menopausal women had 13.6% reduction of stress score in post test I (6 week), 24.5% reduction in post test II, and 29.3% reduction of stress score in post test

III, where as in control group, the stress score were slightly decreased to 0.2% in post test I, 1.8% in post test II and 2.2% in post test III. The results were compared with the study done by Chattha, et al on effect of yoga on climacteric symptoms, perceived stress and personality in perimenopausal women. 120 participants were randomly divided in to 2 study arms, i.e yoga and control. The yoga group practiced an integrated approach to yoga therapy comprising of surya Namaskar with 12 postures, pranayama, and avarandhyan, whereas control group practiced a set of simple physical exercises under supervision for 8 weeks. The assessments were made by Greene Climateric scale, PSS and Eysenck's personality Inventory before and after intervention. The study results showed that, significant difference between groups ( $p < 0.05$ ) in the vasomotor symptoms, a marginally significant difference ( $p = 0.06$ ) in the psychological factors but not in somatic component. There was a significantly greater degree of decrease in perceived stress scale scores ( $p < 0.001$ ) in the yoga group compared with control group<sup>21</sup>. Many women have a difficult time maintaining their weight as they get older. About 90% of menopausal women experience some amount of weight gain. Although weight gain is a natural and common aspect of getting older, there are ways to reduce it. The hormonal changes that occur during menopause make this even harder. Although the average woman gains 2 to 5 pounds during menopause, some women gain as much as 5 to 15 pounds. It may be impossible for the women to totally prevent menopausal weight gain, but healthy lifestyle changes can minimize the amount of weight gain<sup>8,9</sup>. The menopausal women in study group had mean weight reduction of 1.07 kg in post test I, 2.36 kg in post test II, and 3.58 kg in post test III after intervention. There was very high statistical significance noted in the weight of menopausal women at  $p=0.001$  level between

pre test and post test level in study group. There was no statistically significant difference found in control group. Achieving hormonal balance during the menopausal years is essential to good health. Practicing yoga can help prevent or reduce the common symptoms that affect women specifically during the menopausal years by providing a form of treatment directed at the root causes that result in the breakdown of the healthy functioning of the body. It's important to bear in mind that all menopausal symptoms are related and using yoga to ease the unpleasant effect of one symptom generally leads to better health in the rest of the body<sup>5</sup>.

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## CONCLUSION

Thus, the present study has shown that, yoga practice for 18 weeks has reduced the stress level of menopausal women to greater extent in study group than in control group at p= 0.001 level. The mean weight reduction was 3.58 from the base line weight in study group. The study concludes that, yoga is an effective intervention in reducing the stress level and managing the weight of menopausal women.