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Research Article

EFFECT OF *SURYANAMASKARA*, SELECTED *PRANAYAMA* AND *YAVA SAKTU MODAKA* IN MENOPAUSAL SYMPTOMS

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ABSTRACT

Menopause is the term for the natural and permanent cessation of monthly female reproductive cycles. Menopausal women are known to experience physical, psychological, and vasomotor symptoms. In Ayurveda, menopause is not mentioned separately or as a disease but it is considered as *Rajakshaya*, the transition period of body from predominance of *Pittadosha* to *Vatadosha*. *Rajonivritti* (menopause) occurring in *Jarapakva Shareer* (aged body) at the age of 50 years. In modern science, hormone therapy has been used to control the symptoms of menopause. But long term use of this therapy had an increased risk for cardiovascular disease, stroke, breast cancer etc. A lifestyle modification is therefore an essential component in reducing menopausal symptoms, which includes a healthy diet, physical exercise, stress reduction and weight management. In this study 25 subjects with menopausal symptoms between the age group of 45 to 55 years were selected, from OPD of Govt. Ayurveda College Hospital, Tripunithura, as per the inclusion and exclusion criteria. The study subjects were advised to have two *Yava saktu modakas* of 10gm. each in morning at 7.30 a.m and the practice of *Suryanamaskara* and selected *Pranayamas* in the morning for 1 month. Assessment was done on 0th, 15th and 31st day of intervention. Along with this, the blood investigations like fasting blood sugar, post prandial blood sugar and serum cholesterol were assessed on 0th and 31st day of the study period. Results showed that *Suryanamaskara*, selected *Pranayama* and *Yava saktu modaka* have statistical significance in reducing menopausal symptoms.

INTRODUCTION

Menopause is not a disease but a natural process and one of the important physical milestones in a woman's life. When a woman's reproductive system slows down and eventually stops, that stage usually occurs between the ages of 40- 60 yrs which associated with hormonal, physical and psychological changes. These changes are more pronounced in women due to the special physiology of the female reproductive system – Hypothalamo-Pituitary-Ovarian axis (HPO axis) responsible for menstruation periodically every month in females and her ability to produce a child by bearing and providing nutrition to the developing fetus in her womb for nine months.

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Women's life stages are based on the reproductive cycle, beginning with menstruation, and ending with menopause. The term used for this transition of period in females is said as menopause. Menopause is defined retrospectively as the time of the last menstrual period followed by 12 months of amenorrhea. But the bodily changes leading upto menopause may take place over a decade. Menopause occurs as the ovaries stop producing estrogen, causing the reproductive system to gradually or abruptly shut down.

Many females are suffering from the menopausal and perimenopausal symptoms but because of lack of awareness they misinterpret the symptoms with some health problem and undergo severe anxiety and depression.

In Ayurveda menopause can be correlated as *Rajakshaya* which means end of *Arthava pravarthi*.[1] and it occurs in *Jarapakwasareera*. It is a transitional period from *Pitta* predominant state to *Vata*

predominant state. In Ayurvedic classical texts this is considered as a *Swabhavikavyadhi*[2] which results from gradual depletion of *Dhathus* and it occurs in *Jarapakwasareera*. Due to *Rasakshaya, Kshaya* of all Dhatus occurs as this is the first *Dhatu* in the *Dhatu Uttarottara Krama*[3] *Rasakshaya* occurs leading to *Artavakshaya* which is *Updhatu* of *Rasa*.[4]

After observing the symptoms found in menopausal women, *Vata* can be taken as major *Dosha* responsible though the role of *Pitta* and *Kapha* cannot be denied. Due to *Vata*, degenerative changes in female reproductive system, bone problems like backache, joint aches, psychological changes like anxiety, headache, insomnia, irritability, dysphasia, depression, dementia, mood swings, inability to concentrate, urinary symptoms like incontinence, urgency, dysuria, sexual dysfunction due to vaginal dryness, dyspareunia occur. Due to *Pitta*, hot flushes, night sweats, skin and hair changes like thinning, loss of elasticity, wrinkling of skin, loss of pubic and axillary hair, slight balding occur.

Since many menopausal women request complementary therapies in addition to or instead of Hormonal Therapy, yoga and diet can be clearly recommended as an adjunct intervention for menopausal women. Dietary changes should be made by adding *Krithannakalpana*, which has *Vatapitta shamaka, Sheetala* and *Balya* properties.

Yoga is one of the important mind body therapies, which is found to be more effective in improving quality of life with minimal health risks and no side effect. Previous studies also show that physical activities and yoga are effective in managing menopause. Yoga keeps body and mind in sound health. Women practicing yoga from their middle age period they hardly notice the onset as well as passing away of the menopause period. Yoga can help to eliminate many of the uncomfortable physical and emotional feelings associates with menopause.

Literal meaning of *Pranayama* is the breath control. The aim of practicing *Pranayama* is to stimulate, regulate and harmonise vital energy of the body. Just as a bath it is required for purifying the body, so *Pranayama* is required for purifying the mind and the body.

Hence, to evaluate a safe, potent and cost-effective intervention for menopause, the study titled "Effect of *Suryanamaskara*, selected *Pranayamas* and *Yava saktu modaka* in Menopausal Symptoms" was conducted.

AIM

To study the effect of *Suryanamaskara*, selected *Pranayamas* and *Yava saktu modaka* in menopausal symptoms.

OBJECTIVES

Primary Objective

To study the effect of *Suryanamaskara*, selected *Pranayamas* and *Yava saktu modaka* in somatic, vasomotor and psychological symptoms of menopause by Greene Climateric Scale.

Secondary Objective

To study the effect of *Suryanamaskara*, selected *Pranayamas* and *Yava saktu modaka* on weight, serum cholesterol and blood sugar level among menopausal women.

MATERIALS AND METHODS

In this study 25 Subjects with menopausal symptoms were selected, from OPD of Govt. Ayurveda college Hospital, Tripunithura, as per the inclusion and exclusion criteria.

Inclusion Criteria

Females of age group 45- 55 years having amenorrhea for the last one year and Females diagnosed having menopausal symptoms as per Greene climacteric scale score 21 or more out of 63 with informed consent were included in the study.

Exclusion Criteria

Known case of severe systemic illness and diabetic mellitus, any known case of malignancy, psychiatric disorders and pregnancy.

The study subjects were advised to have two *Yava saktu modakas* of 10gm each in morning at 7.30 a.m and the practice of *Suryanamaskara* and selected *Pranayamas* in the morning for 1 month. Assessment of menopausal symptoms as per Greene climacteric scale score was done on 0th, 15th and 31st day of intervention. Along with this, the blood investigations like fasting blood sugar, post prandial blood sugar and serum cholesterol were assessed on 0th and 31st day of the study period.

OBSERVATION

Table 1: Effectiveness of treatment on Greene Climateric Score

Total Greene Climateric Score	Mean	Std. Deviation	Std. Error	F value	P value
0th day	25.08	4.02	0.803	775.65	<0.0001
15th day	15.96	2.5245	0.504		
31st day	9.72	3.247	0.649		

The mean values at 0th day, 15th day and 31st day are 25.08, 15.09 and 9.72 respectively and the corresponding standard deviations are 4.02, 2.5245 and 3.247 respectively. The calculated F value is 775.65 with p value <0.0001. So we can conclude that there is a significant difference in Total Greene Climateric Score between the treatment stages.

Table 2: Analysis on Fasting Blood Sugar

FBS	Mean	Std. Deviation	Std. Error	Paired Mean Differences	t value	P value
0th day	90.04	14.82	2.963	-1.920	1.859	0.0753
31st day	88.12	12.82	2.563			

The mean value at 0th day is 90.04 with standard deviation 14.82 and the mean value at 31st day is 88.12 with standard deviation 12.82. The calculated t value is 1.859 with p value is more than 0.05. So we can conclude that there is no significant difference in FBS between 0th day and 31st day.

Table 3: Analysis on Postprandial Blood Sugar

FBS	Mean	Std. Deviation	Std. Error	Paired Mean Differences	t value	P value
0th day	116.3	21.29	4.258	-5.400	4.102	0.0004
31st day	110.9	20.81	4.161			

The mean value at 0th day is 116.3 with standard deviation 21.29 and the mean value at 31st day is 110.9 with standard deviation 20.81. The calculated t value is 4.102 with p value is <0.05. So we can conclude that there is significant difference in PPBS between 0th day and 31st day.

Table 4: Analysis on Serum Cholesterol

FBS	Mean	Std. Deviation	Std. Error	Paired Mean Differences	t value	P value
0th day	169.6	25.65	5.130	-8.200	5.155	<0.0001
31st day	161.4	22.44	4.488			

The mean value at 0th day is 169.6 with standard deviation 25.65 and the mean value at 31st day is 1161.4 with standard deviation 22.44. The calculated t value is 5.155 with p value is <0.0001. So we can conclude that there is significant difference in Serum Cholesterol between 0th day and 31st day.

RESULT

On statistical analysis of the data, it was observed that there was significant difference in the outcome variables. Hence the intervention seemed very effective.

DISCUSSION

Suryanamaskara

Suryanamaskara help in reducing both physical and mental symptoms related to menopause. The regular practice of *Suryanamaskara* which includes inverted pose are particularly important during menopause as they have a powerful effect on neuroendocrine system, allowing fresh oxygenated blood to flow to the glands in the head and neck. It improves calorie burn while also assisting in the loosening, stretching, massaging, and hence help in reducing the excessive weight gain during menopause. Due to toning of all the body's joints and muscles it found to be helpful in reducing joint and muscle pain. When *Suryanamskara* is practiced in conjunction with breathing exercises and mantras, it will unquestionably aid in the relief of psychological menopausal symptoms such as sadness, panic attacks, and anxiety attacks. It improves sleeping pattern also. By helping in calm mind, gives a better and more peaceful sleep at night and battles insomnia. So menopausal women should do *Suryanamaskara* to get relief from the symptoms of menopause. Study shows that *Suryanamaskara* can assist women avoid further issues throughout menopause if they perform it regularly at their respective times in equal sets starting at the age of 35.

In a study, a yoga intervention consisting of 25 minutes of *Suryanamaskara* along with other yoga postures and a deep relaxation technique in premenopausal women resulted in a significant decrease in diastolic blood pressure and hip circumference, and beneficial effects on glycemic outcomes.[5]

Pranayama

The Sanskrit word "*Pranayama*," which is frequently translated as "breath control," means "restraint of the *Prana* or breath." According to several researches, *Pranayama* practices are effective in treating a variety of stress problems. According to *Pranayama* practitioners, regular practice fosters mental clarity, willpower, and good judgment. These

positive effects seem to result from the improvement of cardio-respiratory and endocrine functioning as well as the control of autonomic nervous system activity.

Nadishuddhi Pranayama

Nadi Shuddhi Pranayama is a kind of yogic breathing, which involves using both nostrils alternately in a predetermined manner.[6] During *Pranayama* practice, it is said that the body's subtle energy channels, or *Nadis* will become clean. Additionally, both hemispheres of the brain are supposed to coordinate with it.[7] There is strong evidence that regular *Nadishuddhipranayama* leads to improvements in cognitive, physiological, and overall health concerns.

Studies have revealed that *Nadishuddhi pranayamais* connected with lower blood pressure and heart rates, providing strong evidence for its beneficial effects on cardiovascular function. *Nadishuddhi pranayama* increases parasympathetic activity. Slow and deep breathing itself has a calming effect on the mind and helps an individual to de-stress. This calming effect may also exert profound physiological effects on pulmonary, cardiovascular, and mental functions of the brain.

The respiratory rate is closely correlated with central nervous system states like "rest and digest," "fight or flight," or a preponderance of the parasympathetic or sympathetic nervous systems. This indicates that by controlling ANS, we can regulate our mental and emotional responses if we intentionally change how we breathe.

Additionally, it aids in regulating endocrine processes. The rhythmic modulation of cortical neuronal activity brought about by breathing affects sensory, motor, affective, and cognitive functions.

Nadi-shodhana pranayama balances the functions of both parasympathetic and sympathetic nervous systems, also releases serotonin, a tranquilizing hormone, in the brain which provides calmness to the body, arouses restful awareness, reduces aggressive behaviour as well.

Sheetali, Shitkari* and *Chandranulomana Pranayama

These are commonly referred to as cooling *Pranayamas*. In Sanskrit, *Sheetali* means calming or cooling breath, while *Sitkari* is the process of cooling or achieving coolness. In these Sanskrit definitions, the word 'cool' not only indicates a decrease in body temperature, but also signifies a calm mental state. As the name indicates *Sheetali* meaning cooling enhanced by mouth breathing technique, its cooling effects may also enhance the cerebral blood flow, oxygen delivery and overall enhancement of parasympathetics by modifying sympathovagal tone contribution to relaxation feeling.[8] This may be contributed in decreasing the psychological and vasomotor symptoms of menopause. In ancient text of *Hatha Yoga Pradipika,* Swami *Swatmaram* says that this *Pranayama* removes excess heat accumulated in the system which might have helped in reducing vasomotor symptoms of menopause like hot flushes, night sweat etc.

When the respiratory cycle of inhalation and exhalation is completed through the left nostril alone the practice is called as *Chandra anulomana Pranayama* which means dissipating or cooling liberating practice.

Particularly, it is believed that the hormonal changes during menopause are linked to a shrinking of the body's thermoregulatory zone, where the body's natural physiological response to induce warmth or cooling takes place. This narrowing indicates that when body temperature rises, hot flashes are more likely to occur.[9] A decrease in arousal of the ANS, hypothesized to be brought about by *Pranayama*, may thus lead to improved thermoregulation and hence help to reduce the vasomotor symptoms.

Yava Saktu Modaka

Yava is considered to have *Kashaya rasa, Madhurarasa, Katuvipaka, Sheetaveerya*, pacified *Kapha* and *Pitta*. *Yava* has properties like- *Lekhana*, *Medhya*, *Agnivardhak, Swarya, Balakar, Bahuvata-Malakar, Varnyasthairyakar*.[10] It is also known to decrease *Meda, Trishna* and does *Rakta prasadan*.[11] *Yava* is in combination with *Kashay- Madhurrasa*.[10] *Kashaya rasa* decreases *Pitta-kapha*, purifies blood, absorbs the *Kleda-meda* and performs as *Lekhanakarma*. The *Lekhana karma* of *Yava* may be due to beta-glucans in barley may help reduce the absorption of dietary fat, potentially leading to lower calorie absorption. *Madhurarasa* increases *Dhatubala*. These might be helpful in reducing the physical symptoms of menopause. The *Medhavardhakguna* of *Pitta* might helpful in reducing the psychological symptoms of menopause.

The prevalence of the metabolic syndrome increases with menopause including, increased body fat, increased triglycerides level and increase glucose level and insulin resistance. Barley's dietary fiber is high in beta glucan, which helps to lower cholesterol by binding to bile acids and removing them from the body via the feces. Investigation on the effect of barley on carbohydrate metabolism has reported that plasma glucose concentration in patients both with and without diabetes was lower after barley consumption. The phosphorus provided by barley plays a role in forming the mineral matrix of bone, hence it will be beneficial in osteoporosis.

The quality of *Yavasaktu* mentioned in *Bhojana Kutuhala* are *Sheeta, Dipana, Laghu, Kaphapittahra, Ruksha, Lekhana, Balakara, Vrushya, Brumhana*,

Tarpana, Madura, Kapha-pittahara, Gharma and Dahashamaka. Acharya Bhavamisra in *Bhavaprakash* described the qualities of *Yava Saktu* as *Kaphapittahara* and *Sheetaveerya* which might have reduced the symptoms like hot flushes and night sweat. The *Ruksh*, *Lekhana* quality have reduced the increased adiposity or increased weight during menopause.

The *Medhya* (memory) property of *Yava* and *Ghrita* in *Yava saktu modaka* might have reduced the psychological symptoms of menopause. *Madura rasa* of *Sharkara, Ghrita* and *Balakaraguna* of *Yavasaktu* might have contributed in reducing the symptom of feeling tired. The *Pittaharaguna* of *Yava saktu modaka* might have reduced the symptoms of hot flushes, night sweat and headache. Here *Yava saktu modaka* acts as a *Tridoshashamaka*. Due to the *Sheetaguna*, ghee mitigates *Pitta*, due to oiliness it mitigates *Vata* and due to *Kaphaharaguna* of *Yava*, it mitigates *Kapha*.

CONCLUSION

Yoga, Pranayama and healthy diet found effective in reducing the menopausal symptoms and should be considered as alternative therapy for the management of menopausal symptoms.

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