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Effect of Pranayama on premenstrual syndrome in the present scenario

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Abstract---The present investigation is aimed to conduct a comparative study that examine the effect of pranayama on premenstrual syndrome to gain insight on the role of pranayama. Total 100 females age range from 10 to 50 years participated in this study from Kapurthala, district of Punjab, India. Further the population was divided into two groups with equal number of participants (n=50), group A (no intervention) and group B (pranayama). The subjects of group A did not perform any type of breathing and yogic technique for past four to five months and group B used to perform pranayama exercise on regular basis. Results showed positive significant effect of pranayama practices on premenstrual syndrome ($t=58.26$, $p<.01$).

Keywords---Pranayama, premenstrual syndrome (PMS), yoga.

Introduction

Yoga is originally a word of Sanskrit language which means connection of the mind body and emotions. It can produce consistent physiological changes in the body and can also have the sound scientific basis. Many of the yoga deep breathing practices and meditation strengthens our muscles and also protects the spine and joints of the body. Several evidences in the study indicates that the mental health and physical health benefits from yoga can occur due to the negative moderation of the hypothalamus gland, pituitary gland and adrenal gland in association to sympathetic nervous system. Pranayama practices on

daily basis can regulate or balance the cardiac autonomic statuses and can also improve respiratory functions. Life style of women is significantly affected by menstruation directly or indirectly and on the other hand menstruation can also be influenced by diet, mental stress or physical work. Also, menstrual symptoms also have significant effect on the quality of life. Yoga techniques are helpful in reducing harmful inflammatory secretions that can lead to uncomfortableness to the women suffering with premenstrual syndrome. There are several Indian studies which resulted in showing positive effect of yoga exercises on females with premenstrual syndrome with decrease in heart rate, anxiety levels and bp. The role of serotonin in increasing premenstrual can also be a reason according to many studies. Few of the physical manifestations of the premenstrual syndrome are depression, forgetfulness or anxiety. Premenstrual syndrome is a psychologically stressed prompt disorder. It is also beneficial in stimulating endocrine glands of the body which helps to reach the state of gentle and complete relaxation of the mind and body. There is not a definite treatment for premenstrual syndrome pharmacologically. In spite of increasing awareness, still there is much deficiency of knowledge regarding the importance of consulting a doctor for seeking treatment for the PMS symptoms. Many previous studies have shown that the mean score and many symptoms of premenstrual syndrome have decreased after a time by regularly practicing pranayama and it can also be used as treatment.

Statement of the problem

The present investigation is centered on the “Effect of pranayama on Premenstrual syndrome”.

Premenstrual Syndrome (PMS)

Premenstrual syndrome is the set of physical and psychological symptoms which takes place and come in action before one or two weeks of menses. It generally affects a female's health in physical and emotional aspect and also behaviour during the menstrual cycle. It is a very common problem. Its symptoms affect more than 90 percent of menstruating females. The causes of PMS are unknown according to many studies.

Premenstrual syndrome can affect with every ovulatory cycle until the menopause. There can be variations in the severity of frequency of different symptoms over time. The average duration of occurrence of symptoms can be seen in six days each month and usually the severity of the symptoms can reach to peak before two days of the first day of menstrual flow. There are significant evidences of premenstrual syndrome in showing negative effect on relationships of many females and also their work life, productivity and health.

PMS can be diagnosed clinically if some specific symptoms occur during the luteal phase of the menstrual cycle which is generally one week before the menstruation cycle. Many females at their reproductive age most of the time experience poor quality of life and unhealthy sleep patterns during the weeks before menstrual cycle as compared to the actual week of menstrual cycle. This happens due to the increase in progesterone and oestrogen. According to several studies, females with

PMS suffer from more sleep disturbances and high risk of insomnia as compared to males. They also experience more daytime sleepiness at least twice to the females without PMS.

Treatment procedures including medications like fluoxetine, sertraline, etc are used to reduce several PMS symptoms. But medications such as alprazolam, fluoxetine, and gonadotropin-releasing hormone failed to show positive effects in women. Many researchers believed that change in sex hormones and serotonin level at beginning of menses can be a reason for PMS. As levels of oestrogen and progesterone increases at this period of time in the month thus, it can cause mood swings and irritability. Serotonin (chemical in our brain) that affect our mood, emotions and thoughts. Serotonin level affects mood.

Main symptoms of premenstrual syndrome are Abdominal bloating, Abdominal pain, Sore breasts, Constipation, Acne, Food cravings, Sensitivity to light and sound, Irritability, Anxiety, Depression, Emotional outbursts, Sadness, Changes in sleep patterns, Fatigue, Headaches, Diarrhoea, Insomnia, Depressed mood, Crying spells and mood swings, Loss of concentration, Restlessness, Dizziness. Severity of premenstrual syndrome can increase with age. During perimenopause females may experience intense PMS symptoms. Treatment for premenstrual syndrome differs according to person's respective symptoms. females can balance symptoms by taking medicines, making healthy eating habits, exercising, trying selfcare techniques and also by making many other changes in their lifestyle

Pranayama

In Sanskrit “prana” means “life energy” or “vital life force” and “Yama” refers to “control” and “ayama” means “extension or expansion”. Pranayama involves breathing patterns and exercises. It is the regulation of breath through certain exercises and techniques. Pranayama is an integral part of yoga which includes the techniques that harness and manipulate universal energy known as prana. The core of pranayama practices is breath controlling practices, breath retention, steady techniques for inhalation and exhalation for mental and physical benefits. There are several benefits of pranayama. Mainly, It helps to maintain healthy blood pressure, helps encouraging proper circulation of blood and plasma, cleans and clears the nasal passages, it promotes a healthy functioning heart and cardiovascular system, renews all the tissues of the body, reduces the breaths needed per minute by encouraging increased lung capacity, promotes keen awareness, memory, and concentration, supports the internal organs to perform their functions with less energy output, enhances cognitive performance, improves sleep quality.

Pranayama should not be practiced if an individual has a heart condition, fever, lung congestion, headache or psychological disorder. Pranayama is more beneficial when performed on an empty stomach and in early in the morning, ideally before the sunrise. As prescribed by experts one should practice pranayama in fresh air.

Types of pranayama

- **Dirga Pranayama:** -Dirga pranayama is a yoga technique which includes breathing technique of filling the lungs to the possible limit by using whole respiratory system. To practice it, person should sit in a comfortable posture having a straight spine and without compressing abdomen. The breath should fill up to the shoulders from pelvis while inhaling and doing it opposite while exhaling.
- **Nadi Shodhana:** -Nadi-shodhana pranayama is one of the breathing yoga exercise that is beneficial in clearing blocked energy or breathing channels and helps to calm the mind. To practice this breath exercise, we have to sit in a posture with straight spine then by assuming chin mudra by the left hand, place the ring finger on right nostril and exhale by the left and then repeat the exercise vice-versa.
- **Ujjayi Pranayama:** - Ujjayi pranayama is also named as ocean breath pranayama. It is known to increase the oxygen consumption by 50% during the process. By practicing this breathing technique, we can also calm our flight and fight response of our body. In this pranayama, both inhaling and exhaling are done through nose. The “ocean sound” is created during the process by moving glottis when the air pass in and out. The speed of the breath can be controlled by the diaphragm as a purpose of strengthening of this exercise.
- **Bhramari Pranayama:** - Bhramari pranayama is also known as “bee breath”. Bhramari pranayama is effective in instantly calming down the mind. It is one of the best breathing exercises to free the mind of agitation, frustration or anxiety and get rid of anger to a great extent. The exhalation in this pranayama resembles the typical humming sound of a bee, which explains why it is named so. To practice this, sit up straight, keeping your eyes closed, place your index finger on your ears, place other fingers on the cartilage between cheek and ear, take a deep breath in and as you breath out, gently press the cartilage while making a loud humming sound like a bee.
- **Bhastrika Pranayama:** -Bhastrika pranayama is an important breath exercise in pranayama. It is sometimes treated as ‘cleansing action’. Bhastrika pranayama includes the process of fast and forceful inhalation and exhalation that is powered by movement of the diaphragm. The movement of air is accompanied by an audible sound. One inhale and exhale equal one round of Bhastrika, and it may be repeated for many consecutive rounds.To perform this, sit in vajra asana or sukhasana position with your spine straight, make a fist and fold your arms, placing them near your shoulders, inhale deeply, raise your hands straight up and open your fists, exhale slightly forcefully, brings your arms down next to your shoulders and close your fists, repeat the process.
- **Villoma Pranayama:** -This pranayama exercise develops conscious breathing and the ability to use the lungs fully. It is revitalizing. As you fill the lungs in three sections, visualize filling a glass of water. First the bottom part fills, then the middle, and then it fills up to the brim.To practice this pranayama, lie down on your back, with your head on your pillow, and close your eyes, let your breath fall into a regular rhythm. Just notice your breathing for a

few moments, remembering to breath not just in your chest, but also in your belly. Take an easy breath in and exhale all the air out.

- Inhale to fill a third of your lungs, then pause and retain breath for a moment.
- Inhale to fill two thirds, then pause.
- Inhale to fill the lungs completely, then exhale a smooth, steady, deep breath out.

Operational definition

Premenstrual syndrome

Premenstrual syndrome is a set of symptoms that are experienced by most of the females before some days of the menstrual cycle. Is usually affects women's physical as well as psychological health during that period of time.

Research Objectives

- 1.To identify the effect of pranayama on PMS (premenstrual syndrome).
- 2.To study the symptoms of PMS (premenstrual syndrome) among females.

Research Hypothesis

There will be positive effect of pranayama in experimental group as compared to control group.

Method

Subjects

Participants of the current study comprises of 100 females. They were selected on the basis of purposive random sampling. Subjects were divided on the basis of control group and -----group. Out of 100 females 50 females were from group A (no intervention) and group B(pranayama). Inclusion and exclusion criteria are included in the study. Data was collected from the area across Kapurthala district, Punjab. They were selected through selective random sampling.

Tool

Premenstrual syndrome scale developed by Gencdogan in 2006 comprised of 40 questions with three subscales (physiological, psychological and behavioural symptoms). This 5- point Likert scale having 40 items. The measurements on the scale were set according to this scoring system: the response NEVER as "1", RARELY as "2", SOMETIMES as "3", VERY OFTEN as "4", and ALWAYS as "5" points. In addition, the total score obtained from the sub-scales established the "PMMS total score". If the scale's total score reached 80 points or above, this indicates the occurrence of PMS. Increase in the scores indicates the increase in severity of PMS. Five categories were graded as "no symptoms" (range 1-40), "mild" (41-80), "moderate" (81-120), "severe" (121-160), and "very severe" (161-200).

Procedure

Before the data collection permission was taken from the subjects as this is an interventional study and permissions are required. The subjects were informed about the main objectives of this study. And then informed verbal consent was taken from the participants who agreed to give their responses. The questionnaire was completed by the subjects under supervision. There was a guarantee of confidentiality from us to the participants before conducting the study. 50 females were assigned to the experiment group and 50 were assigned to the controlled group. Then all the data was collected through questionnaires. The data was computed then on suitable statistics methods. Through this procedure we will try to find out the effectiveness of pranayama.

Data Analysis

Means, standard deviations and other appropriate descriptive statistics will be calculated to make the data tangible.

Results and Discussions

Table 1.1 and 1.2 represents the details of the sample (N = 100). The sample is divided into two categories as Group A- 'without pranayama' (n = 50) and Group B- 'with pranayama' (n =50). The age range for the whole sample is 10 to 60 years. In each respective group of samples 10 females will be from the age range of 10-20, 10 will be from the age range of 20-30, 10 will be from the age range of 30-40, 10 will be from the age range of 40-50 and 10 will be from the age range of 50-60.

Table 1.1: shows the details of the participants (N= 100)

Group A	Group B	Total Females
50	50	100

Table 1.2: details of the participants

Age ranges	Group A	Group B
10-20 years	10	10
20-30 years	10	10
30-40 years	10	10
40-50 years	10	10
50-60 years	10	10

Scoring procedure

The levels of premenstrual symptoms are distributed in five categories based on the percentage of scores. They are as: "no symptoms", "mild", "severe", "moderate", and "very severe".

Table 2: shows scoring details

Level of symptoms	Actual scores	Percentage of the scores
No symptoms	1-40	<20
Mild symptoms	41-80	21-40
Moderate symptoms	81-120	41-60
Severe	121-160	61-80
Very severe	161-200	>80

Table 3: shows marks obtained from the subjects

Group no.	Frequency	Mean score
Group A	7160	143.2
Group B	3342	66.84

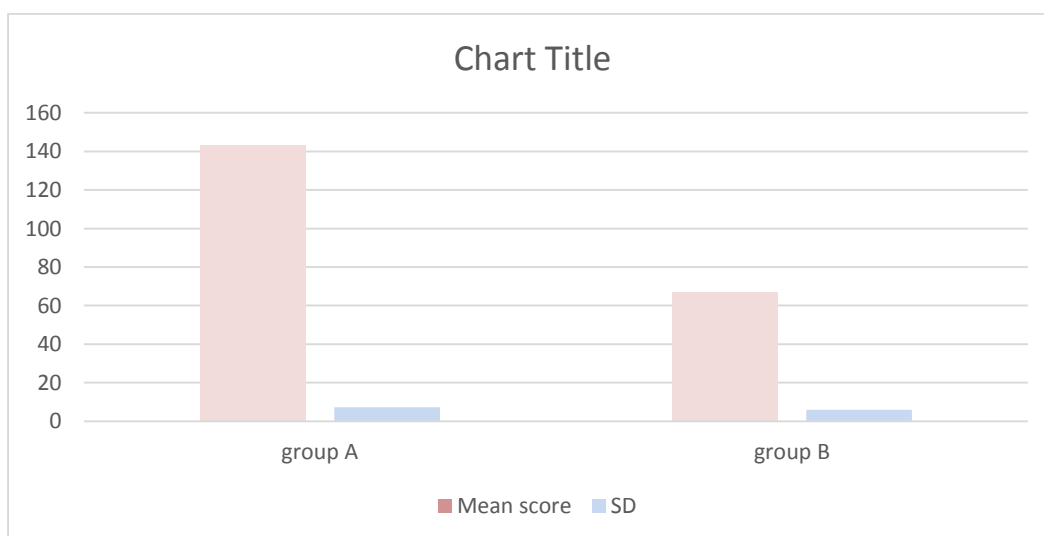
Average scores obtained by subjects from group A were higher than those by subjects from group B (table 4)

Table 4: showing mean, standard deviation, t-ratios among both groups

Group no.	Category	Mean	SD	t-value	p-value
Group A	Without pranayama	143.2	7.20	58.26	0.00001
Group B	With pranayama	66.84	5.83		

As shown in table no. 4, standard deviation, paired sample t-test was performed to calculate the results. As a result of the calculation done, the t ratio for the group A and group B came out to be as $t=58.26$, where when calculated the p value it came as $p < .01$.

Chart 1: mean, Sd, t-ratio and p-value



Conclusion

Premenstrual syndrome is a most avoided condition among females. There were many participants who denied giving their responses regarding premenstrual syndrome. They even rejected to talk about it because of the pre-made stereotypes. This is the reason premenstrual syndrome is still an unaddressed topic. Premenstrual syndrome can affect females from their age of reproductivity by affecting their psychological and physical health. Many studies were administered in several countries which claimed that the average frequency of premenstrual syndrome between 23.8% to 75.4%.

According to this study the prevalence of PMS is 51.3%, which can be cleared by the result of this study in which the mean value and value of standard deviation was higher among group A (without pranayama) than group B (with pranayama). Till date many western remedies could not provide enough satisfaction to females dealing with premenstrual symptoms. But several researches have proved an important and positive effect of pranayama on many symptoms of PMS as they were reduced and also it has been beneficial in relaxing the nervous system. In this study we have seen a positive effect of regular practice of pranayama exercises which resulted in relaxing the mind, body and also helped to reduce the muscle tension and stress. It also improves sleeping with fewer amounts of anxiety. In this study many symptoms of premenstrual syndrome got reduced in the experimental group which includes anger, irritability, anxiety, stress, crying, hopelessness, depression, concentration problems, aggression and many more symptoms.

Many other researchers discovered that regular exercise habits decrease many physical and psychological symptoms of PMS. Among these symptoms, pain is one of the most common one that bothers the behaviour and mood of a female with PMS. Also, other studies have shown that yoga practices among females with premenstrual syndrome helped to improve their attention span and helped them feel better after doing the exercises. The symptoms of premenstrual syndrome decrease with the increased rate of doing exercises. In this current study the result came out as pranayama exercises improved many physiological, psychological and behavioural symptoms of PMS. These symptoms include insomnia, overeating, sleep disturbances, feeling of confusion, irritability, etc. In many researches it came out that premenstrual syndrome significantly affects the quality of life among females. It can negatively affect their academic performance, interpersonal relationships, work life, daily activities, home responsibilities and social life. The regular practice of yoga and pranayama exercises helped to enhance their quality of life and helped them to calm their mind better in day-to-day situations.

As shown in many studies, PMS can cause several problems without treating it and it can affect the life of females thus, it is necessary for them to cure it or reduce its symptoms with treatment. Since, this study has shown a positive effect of pranayama on PMS thus, we can suggest that females should practice it because it does not show any side effects until and unless it is practiced with all precautions and also it is safe. It can also be practiced anytime and anywhere with precautions.

Benefits of the study

This study is going to help find the effect of pranayama on PMS and:

- This study will help the female members of our society and others too, to adapt a healthy lifestyle.
- This study may help different NGO's and different INGO's which are working in health sector so that they can figure out a program related to a healthy lifestyle.
- The main thoughts and ideas presented in this study can be used as reference data that can help to conduct new studies in testing the validity of the other related outcomes.

This study will also help people in getting aware of benefits of breathing practices and PMS.

Future research suggestions

Research sample size could be increased for the results to be generalized.

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