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RESEARCH ARTICLE

Study of the effect of 61-point relaxation therapy in premenstrual syndrome

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ABSTRACT

Background: Premenstrual syndrome (PMS) in a constellation of physical and emotional symptoms during a women's menstrual cycle. PMS is most common in women between the age group of 25 and 45 years. The estimate is that 80% of women experience some type of premenstrual change during their reproductive period. The definite cause of PMS is still not identified, but several studies have proved that PMS is a stress-induced psychophysiological disorder and stress is a cause of the symptoms of PMS. Some simple stress-relieving exercises perform on a regular basis can bring a feeling of peace and calm. **Aims and Objectives:** This study aims to study the effect of 61-point relaxation (61-PR) therapy in PMS. **Materials and Methods:** The protocol was approved by the institutional ethical committee before starting the study. The study group consisted of 40 females suffering from PMS in the age group of 18–40 years, having regular menstrual cycles of 28–34 days. The study group was divided into two groups - Group A consisting of 20 subjects having no intervention and Group B also consists of 20 subjects performing 61-PR. Control group consisted of 30 healthy female subjects. An automated sphygmomanometer was used to record a baseline diastolic (DBP) and systolic blood pressure (SBP) from the right arm. An automated biofeedback apparatus Relax 701 was used to record heart rate (HR/min), galvanic skin response (GSR; kΩ), electromyogram (EMG; mV), respiratory rate (RR/min), and peripheral temperature (T;°F) simultaneously. The subjects in Group B performed 61-PR exercises. It was started 7 days before the due date of menstruation for 3 successive menstrual cycles. On the past day, the parameters were again recorded. **Results:** We observed SBP, DBP, HR, EMG, GSR, and RR in Group B showed a very significant reduction ($P < 0.001$) while T increased significantly ($P < 0.001$) in the 3rd menstrual cycle, on comparing with the baseline levels. In our study, the females with PMS showed decrease in the high baseline sympathetic activity. On comparing Group B with Group A, we found an increased relaxation response in Group B. **Conclusion:** In this study, the females with PMS showed a decrease in the high basal sympathetic activity and an increased relaxation response in Group B.

KEY WORDS: 61-point Relaxation; Meditation, Premenstrual Syndrome

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INTRODUCTION

Premenstrual syndrome (PMS) affects women's emotions, physical health, and behavior in particular days of the menstrual cycle. Its symptoms begin 5–11 days before menstruation and go away when menstruation starts. The symptoms are varying in severity depending on individual

and month to month. The symptoms of PMS are constipation, diarrhea, headache, anxiety, depression, sadness, emotional outbursts, appetite change, abdominal bloating, abdominal pain, food craving, acne, sore breasts, etc.

PMS is found commonly in women in the age group of 25 to –45 years. It is observed that 80% of women suffer some type of premenstrual changes during their reproductive period.[1] Women suffering from PMS must have one mood-related symptom and four somatic symptoms for 2 consecutive menstrual cycles including mild psychological symptoms, bloating, weight gain, breast tenderness, swelling, aches and pains, poor concentration, sleep disturbance, and appetite change. It must be restricted to the luteal phase of the cycle, ceasing around menstruation, the symptoms must not be present in the week between menstruation and ovulation.[2]

The exact cause of PMS has not been identified. Studies suggest that symptoms of PMS are probably due to complex interaction between ovarian hormones, central neurotransmitters, and the autonomic nervous system. The causes of PMS are psychological disturbances, nutritional deficiencies, dysfunctions in the renin-angiotensin-aldosterone axis, altered prostaglandin activity, hormonal imbalances, and alterations in activity of endogenous opioid peptide.

Research has proved that PMS is a stress-induced psychophysiological disorder and that cause of symptoms is stress. Stress affects a person in his/her daily life. Depending on individual reactions on the stress factors, this may be beneficial or harmful. Stress is made up of three factors. The first is the stressor, the second is the individual makeup of the affected person, and the third is the individual reaction. All together create stress.[3,4]

There are more than 300 modalities of the treatments for PMS including lifestyle changes, psychotherapy, and medications. Till date, there is no definite pharmacological treatment of PMS, but non-pharmacological interventions such as aerobic exercise, relaxation, and meditation are helpful in relieving premenstrual symptoms. Relaxation techniques and psychotropic therapies have been advocated in most of the recent advances in the treatment of PMS. Some simple exercises relieve exercises stress when performed regularly and can bring a feeling of peace and calm.

Symptoms of PMS are restricted to a post-ovulatory phase of the menstrual cycle that disturbs some aspects of life.[5] Some women with premenstrual tension have such disturbing symptoms on the days prior tobefore onset of menses that they can not do their usual activities. Therefore, we planned to evaluate the effects of 61-point relaxation (61-PR) in subjects with premenstrual tension.

MATERIALS AND METHODS

The protocol was approved by the institutional ethical committee before starting the study. The study was conducted in the yoga laboratory of the Department of Physiology, Subharti Medical College, Meerut. Approval of the study was taken from the research and ethics committees of the institute. On the basis of a premenstrual distress questionnaire, developed under guidelines from previous research publications,[6,7] 40 females suffering from PMS (study group) and 30 healthy controls, of the 18–40 years of age, with regular menstrual cycles of 28–34 days, were chosen from the students and teaching and non-teaching staff members of Swami Vivekanand University Subharti, Meerut.

One major mood symptom and four somatic symptoms for 2 consecutive cycles which include mild psychological symptoms, bloating, weight gain, breast tenderness, swelling, aches and pains, poor concentration, sleep disturbance, and appetite change should be present for a subject to be diagnosed as PMS. It must be limited to the secretory phase of the cycle, ceasing around menstruation and must be asymptomatic for 1 week during proliferative phase of menstrual cycle.[8]

Informed written consent was taken from each subject before starting the study. The study group was further subdivided into two groups each consisting of 20 subjects.

Group A - No intervention.

Group B - Performed 61-point relaxation (61-PR).

Inclusion Criteria

Healthy females with regular menstrual cycles of 28–34 days were included in the study.

Exclusion Criteria

The subjects with any physical (musculoskeletal problem), psychiatric illness, or on medication were excluded from the study.

Methods

The subjects reported to the yoga laboratory, in the morning between 9 am and 11 am, 7–8 days before the expected date of onset of menstruation. Subjects were then made to lie down on a couch in a comfortable position. After the rest of 10 min, an automated sphygmomanometer (Panasonic Omron) was used to record baseline values of the diastolic blood pressure (DBP) and systolic blood pressure (SBP) from the right arm. Relax 701 an automated biofeedback apparatus was used to record heart rate (HR), respiratory rate (RR), electromyogram (EMG), galvanic skin response (GSR), and peripheral temperature (T).

The subjects were asked to report to the yoga laboratory daily, empty stomach at 9 am where they performed the 61-PR exercises, guided by a trained yoga instructor. At the end of 7 days, parameters were recorded again in each menstrual cycle.

Protocol

Group B - The subjects performed 61-PR 20–25 min.

Procedure

Figure 1 depicts 61 points on the body. To do 61-PR exercise, we need to memorize the sequence of point. Exercise begins at the forehead, travel down and then go up the right arm, then across to the left arm, down to the torso, down and up the right legs, then back up the torso to the forehead.

Focus Attention on One Point at a Time

Subject was asked to start from forehead, and focus attention between the eyebrows and asked to imagine blue light at this point. Then, keep attention fixed for several seconds till the subject becomes aware of the location. At this point, subject must feel a sense of warmth, before moving onto the next point.

Move through each Point in Sequence

In the same manner, successively focus attention on each of the first 31 points. Proceed slowly and imagine being located at each point. Feel the sense of warmth before moving on. Do not allow mind to wander. Occasionally, we abruptly forget about the exercise and start thinking about something else.

Extend practice to include all 61 points.

Steps 1 and 2 are then repeated at all 61 points. Practice until it can be done at all points without losing focus.

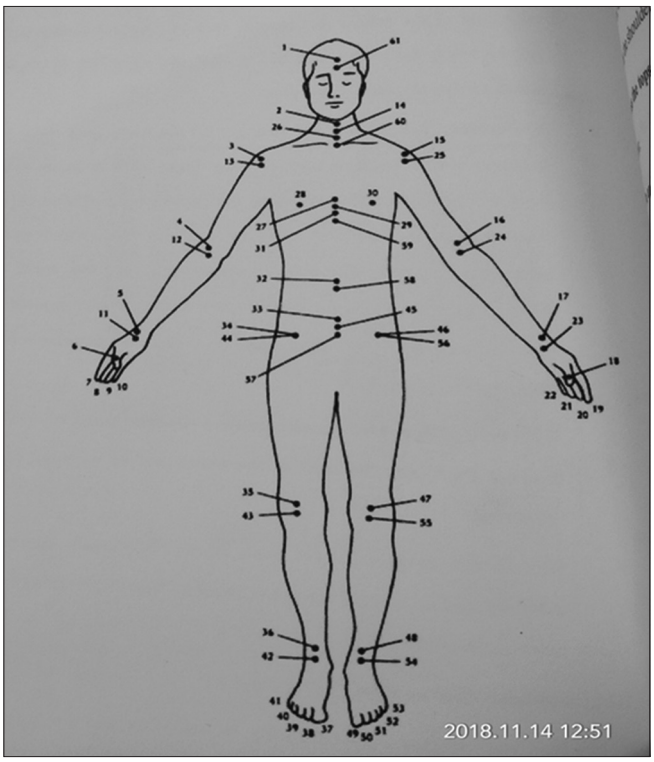

Figure 1: 61 points on the body

Statistical Analysis

GraphPad Instat 3.10, 32 bit (Graph Pad software Inc.) created July 10, 2019, was used to analyze the data. We calculated mean and standard deviations (±) of all the observations.

RESULTS

In Table 1, comparison of PMS and control group shows statistically significant difference ($P < 0.05$) in HR, GSR, and RR, while a very significant difference (<0.01) was found in the DBP, EMG, and T. No statistically significant difference was observed in SBP.

In Table 2, on comparing pre with post-values in PMS group without intervention statistically significant difference ($P < 0.05$) observed in SBP and RR, while a very significant difference ($P < 0.001$) was found in the GSR and T. No statistically significant difference was observed in EMG, DBP, and HR.

In Table 3, in the PMS group performing 61-PR, a significant change was observed in all the parameters. On comparison with the basal levels, in the 3rd menstrual cycle, HR, EMG, GSR, SBP, DBP, and RR showed a significant reduction ($P < 0.001$) while T increased significantly ($P < 0.001$).

DISCUSSION

In our study, we observed that subjects suffering from PMS performing yogic exercises (Group-B), on comparison with

Table 1: Comparison of basal parameters of PMS (n=40) and control group (n=30)

Parameters	Control group	PMS	*P*
HR (beats/min)	79.06±8.78	85.26±14.19	0.0313
SBP (mmHg)	120.60±9.38	119.68±6.92	0.6017
DBP (mmHg)	74.30±8.58	79.78±8.06	0.0038
EMG (mV)	149.10±66.4	97.71±47.86	0.0112
GSR (μV)	412.76±58.42	436.51±37.84	0.0223
RR (breaths/min)	23.93±6.85	79.78±8.06	<0.0001
T (˚F)	98.58±0.09	97.33±0.49	<0.0001

Data presented are mean±SD. Analysis of data done by unpaired *t*-test. P<0.05 **significant, P<0.01 ***Highly significant.
HR: Heart rate, DBP: Diastolic blood pressure, SBP: Systolic blood pressure, EMG: Electromyogram, GSR: Galvanic skin response, RR: Respiratory rate, T: Temperature, SD: Standard deviation

Table 2: Comparison between basal and post-values of the subjects in Group A, PMS group without any intervention (*n*=20)

Parameters	Basal	3rd menstrual cycle	*P* value
HR (beats/min)	83.75±11.16	82.60±10.20	0.3350
SBP (mmHg)	118.35±8.13	121.30±7.49	0.0489
DBP (mmHg)	76.70±4.96	78.60±4.68	0.0512
EMG (mV)	82.90±41.52	80.25±41.50	0.4156
GSR (μV)	80.25±41.50	438.65±28.00	<0.0001
RR (breaths/min)	24.10±5.01	25.40±5.53	0.0328
T (˚F)	97.45±0.55	97.96±0.39	<0.0001

Data presented are mean±SD. Analysis of data done by unpaired *t*-test. *P*<0.05 **significant, *P*<0.01 ***highly significant.
HR: Heart rate, DBP: Diastolic blood pressure, SBP: Systolic blood pressure, EMG: Electromyogram, GSR: Galvanic skin response, RR: Respiratory rate, T: Temperature, SD: Standard deviation

Table 3: Basal parameters and post-relaxation parameters in Group B (*n*=20) performing 61-PR

Parameters	Basal	3rd menstrual cycle	*P*
HR (beats/min)	86.55±16.75	68.95±14.45	<0.0001
SBP (mmHg)	124.75±10.45	107.85±5.06	<0.0001
DBP (mmHg)	84.00±11.92	69.85±8.14	<0.0001
EMG (mV)	130.85 ±89.37	55.40±26.01	<0.0001
GSR (μV)	448.05±22.05	368.80±60.40	<0.0001
RR (breaths/min)	28.25±14.70	20.35±12.83	<0.0001
T (ºF)	97.15±0.41	98.54±0.19	<0.0001

Data presented are mean±SD. Analysis of data done by paired *t*-test. *P*<0.05 **significant, *P*<0.01 ***highly significant.
HR: Heart rate, DBP: Diastolic blood pressure, SBP: Systolic blood pressure, EMG: Electromyogram, GSR: Galvanic skin response, RR: Respiratory rate, T: Temperature, 61-PR: 61-point relaxation, SD: Standard deviation

those who are not practicing yogic exercise (Group-A). On applying paired t-test, a very significant difference was found among all groups. GSR, SBP, DBP, HR, EMG, and T showed a very significant difference.

The 61-PR exercise is a yogic technique of relaxation, which relieves all types of stress and has been found to be useful as adjuvant therapy of PMS and other stress-related conditions. This exercise relieves muscular tension, decrease stress, and anxiety and improves sleep.[9,10] Since 61-PR relives stress, it will also produce relaxation in PMS. In this study also, we got an extremely significant reduction in sympathetic activity in PMS group performing 61-PR. Similarly, in 2008, Dvivedi *et al*.[11] observed a decrease in sympathetic activity by 61-PR, the high basal sympathetic activity in PMS group due to stress is also reduced. These observations suggest that this measure individually influences the anxiety levels favorably. Other studies have also reported similar results showing a significant relief from anxiety after meditation[12] and breathing exercises[13] and from anxiety following muscle relaxation techniques and listening of music.[14] Similarly, a lifestyle intervention had altered the biochemical parameters - the serum lipids and fasting plasma glucose in 98 subjects.[15] The improvement in anxiety scores along with biochemical parameters is clinically important in spite of difference in patient profile. Psychological stress is the risk factor for majority of diseases[16-18] makes this improvement important as a primary prevention. Psychiatric patients showed maximum improvement because greater reduction was possible due to higher anxiety scores. However, the result was statistically significant even after the subjects with low anxiety scores were pooled along with the psychiatric subjects. In 2018, the experimental study done by Joice *et al*. suggests that daily yoga practice for a short duration helps to improve attention, concentration, and memory of medical students.[19] In another study done by Vanita *et al*. found significant changes in the resting cardiovascular parameters (such as SBP, DBP, and HR) and anthropometric parameter (such as weight and BMI) among the polycystic ovarian syndrome patient after 12 weeks yoga nidra intervention.[20] This further proves the physiological and clinical importance of those observations.

The regular yoga practice benefits us in many ways. Different aspects and dimensions in our life are enriched and benefited by earnestly practicing yoga. We are a seamless combination of the mind, body, and spirit. An body ailment affects the mind a similar restlessness of mind manifests as a diseased body. We are benefited by yoga by providing harmony in our system. Even an issue of consumer reports suggests yoga for stress relief.

We can say in nutshell that yoga is not promising the easy arithmetic of "do this will happen." The promise of yoga is a path for self-discovery.

CONCLUSION

In the present study, the relaxation response in the females suffering from PMS showed a decrease in a very high baseline sympathetic activity and relaxation response is increased in the study group.

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