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IMMEDIATE EFFECT OF CYCLIC MEDITATION ON COGNITIVE FUNCTIONS IN FEMALES WITH PRE MENSTRUAL SYNDROME

Physiology

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ABSTRACT

The present study assesses the immediate effect of cyclic meditation on cognitive functions in women with PMS by using six letter cancellation test. Cyclic meditation is a technique of 'moving meditation', which combines the practice of yoga postures with guided meditation. 37 healthy females with PMS were included in the study. The participants acted as self-controls. After recording baseline values, cyclic meditation was performed by the participants. Each participants was assessed before and after sessions. Thus the effect of CM on cognitive domain was assessed using six letter cancellation test. Paired t test was applied to find out the significant difference before and after tests. It was observed that cognitive functions were elevated after the cyclic meditation. This study suggests that the yogic relaxation technique can be helpful in improving cognitive domains in women with PMS immediately after the practice.

KEYWORDS

INTRODUCTION

National Institute of Mental Health defines the premenstrual syndrome (PMS) as "the cyclic occurrence of syndromes that are of sufficient severity to interfere with some aspects of life and which appear with consistent and predictable relationship to menses."[1] About 95% women of reproductive age suffer from mild physiological symptoms, in the two weeks before the onset of menstruation.[2] Among the more than 300 different premenstrual changes reported, most commonly found are irritability, headaches, depression, tension, fatigue, mood swings, anxiety, breast tenderness, lack of concentration, weight gain, bloating, swelling, aches, pains, sleep disturbances and changes in eating patterns are the few other changes experienced by women. [3,4] The therapeutic interventions for PMS include serotonergic antidepressants, combined oral contraceptives, physical exercise, lifestyle modification, cognitive-behavioral therapy, supplements and herbal medicine.[5] The exact cause of PMS is not yet clear. Although PMS is said to be a stress– induced psycho-physiological disorder.[4] Existing literatures support that stress management and relaxation techniques are beneficial in the management of PMS.[1]

Practitioners may learn meditation directly whereas non practitioners initially pass through other stages such as yoga postures (asanas) and regulated breathing (pranayamas). According to Mandukya Upanishad, if a non-practitioner attempts to meditate directly, there could be two responses based on the quality of the mind. They are (i) a rajasic – active (personality) mind would be restless all through the session and (ii) a tamasic – a mind with inertia could fall asleep. Thus to overcome this situation a technique of 'moving meditation', which combines the practice of yoga postures with guided meditation was evolved by H.R. Nagendra. It is described as cyclic meditation (CM) and has its' origin in an ancient Indian text, Mandukya Upanishad. CM induce a quiet state of mind.[6] During yoga posture phases of cyclic meditation sympathetic activation occurs and then parasympathetic stimulation followed by it.[7] Recent supports that CM enhances the cognitive processes.[8]

Lezak explains cognition as an elaborate concept regarding mental processes that are used to obtain knowledge or to become aware of the environment and the use of this knowledge for comprehension and problem-solving. Theoretically cognition can be classified into four major classes as follows: 1) receptive functions - the abilities to perceive information; 2) memory - the ability to learn and remember information; 3) thinking - relating pieces of information; and 4) expressive functions - the functions through which a person expresses him or herself.[9]

Letter cancellation test has been used in neuropsychological assessment for a long time. It is a paper-and-pen test generally used to assess subject's ability to visually search for an identifiable target and to either cancel or circle all such target items in an array. Also, the test assesses the capacity for sustained attention, concentration, visual scanning and rapid response activation and inhibition.[10]

It is proven that yogic relaxation techniques are useful in improving various cognitive domains in health and disease.[11] The present study investigate the effect of cyclic meditation on cognitive functions in females with PMS. So that cyclic meditation can be adopted for the management of PMS.

METHODOLOGY

The present experimental study was conducted at Department of Physiology, Little Flower Institute of Medical Science and Research, Angamaly, Kerala. The study was approved by the institutional ethical committee. Convenient sampling was used to collect the samples. From the population females with PMS was screened using PMS questionnaire. [6,7] 37 healthy females with PMS were included in the study after obtaining written informed consent. The mean age of the participants was 22.35 ± 3.19. The participants acted as self-controls. After recording baseline values, CM was performed by the participants.[5] Each participants was assessed before and after sessions. The relaxation technique was administered for the duration of 30 minutes.

INCLUSION CRITERIA

- Females with PMS between age groups of 18 - 35
- Not suffering with any complications
- Not following any stress management method
- Not under any kind of medication
- Willing to practice yogic relaxation
- Not following any other yoga therapies

EXCLUSION CRITERIA

- The participants with any physical problem, psychiatric problem or on medication including contraceptives will be excluded from the study.
- Those with weakness of the upper limb which may interfere with performance in the test.

Letter Cancellation Test:

The 26 letters of the English alphabet were jumbled and printed in black color on a white sheet of paper. All the letters were evenly spaced out. The six letter cancellation task consisted of a test worksheet which specified the six target letters to be cancelled and had a working section which consisted of letters of the alphabet arranged randomly in 22 rows and 14 columns. The participants were asked to cancel as many of the six target letters as possible in the specified time, *i.e.*, 1 min, 30 seconds. There were two possible strategies such as cancelling all six letters at a time or cancel any one selected letter at a time. Participants were free to follow any path; vertical, horizontal or random pathway. The total number of cancellations and wrong cancellations were

scored. The net score was calculated by subtracting wrong cancellations from the total cancellations.[8] The test involve visual scanning, attention concentration, concentration and activation and inhibition of rapid responses.[13]

DATA ANALYSIS

Data was analyzed by IBM SPSS Statistics for Windows, IBM Corp. Armonk, NY: Statistical tests used are paired t test. $P<0.05$ was considered statistically significant.

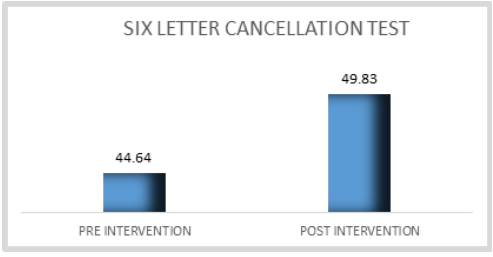
RESULT

Comparison of the pre-test and post-test values of six letter

TYPEOF INTERVENTION	Mean	Standard deviation	Mean difference	t- value	P value
PRE INTERVENTION	44.65	10.17	5.19	4.66	0.00004
POST INTERVENTION	49.84	9.711			

cancellation test

The value of t is 4.66. The value of p is 0.0004. The result is significant at $p < 0.05$.



The mean column in the t test table displays the average six letter cancellation test score in the pre-test and post-test. Mean values of six letter cancellation before and after test are 44.65 and 49.84 respectively. The standard deviation column displays the standard deviation of six letter cancellation scores in the pre-test and post-test. Mean difference 5.19 is the difference between mean pre-test and post-test. Since the significance (p-value) is less than 0.05, we can conclude that there is significant change in the six letter cancellation test scores after cyclic meditation.

DISCUSSION

In the present study the post test is highly statistically significant. The cyclic meditation lead to the elevation of six letter cancellation test scores, when assessed immediately after the practice. Thus it is evident that the cognitive functions are improved immediately after the practice of cyclic meditation In an earlier study, the performance in the letter cancellation task immediately after yogic relaxation sessions was observed. They found that the magnitude of change in the net score after CM was 14.5%. The subjects in the study had undergone a seven day training program.[10]

In a similar study there was a 24.9% improvement in the net score. This difference of change could be due to the fact that the subjects had undergone an average experience of 15.3 ± 13.3 month. These shows, that the average duration of the practitioners had an influence on the outcome measures.[14]

208 children were assessed on SLCT before and immediately after yoga-based relaxation techniques. Authors pointed out that the total and net scores were significantly elevated, irrespective of gender and age.[10] A single session of cyclic meditation had improved the scores of six letter cancellation in medical students.[15] In the present study the scores obtained after the session of cyclic meditation was highly statistically significant. The scores have a mean difference of 5.19. Above described literatures also agrees with the findings of the present study.

CONCLUSION

This study suggests that the cyclic meditation can be helpful in improving cognitive domains in women with PMS immediately after the practice. If continued daily may also help to retard the process of cognitive decline that occurs due to the premenstrual syndrome.

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