WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.084
Volume 12, Issue 17, 922-931. Research Article ISSN 2277–7105

AN OPEN LABELLED CONTROLLED CLINICAL TRIAL ON THE EFFECT OF BRAHMI AND PRANAYAMA IN PREMENSTRUAL DYSPHORIC DISORDER

[*1]Dr. Tejashwini, [2]Dr. Shrilatha Kamath and [3]Dr. Arpana Radhesh

[1]Post Graduate Scholar, [2]Professor, HOD and Guide, [3]Yoga Physician
Department of Kayachikitsa and Manasaroga, Shri Dharmasthala Manjunatheshwara College of Ayurveda and Hospital, Udupi.

Article Received on
16 August 2023,

Revised on 05 Sept. 2023,
Accepted on 26 Sept. 2023

DOI: 10.20959/wjpr202317-29823

***Corresponding Author**
Dr. Tejashwini
Post Graduate Scholar, Department of Kayachikitsa and Manasaroga, Shri Dharmasthala Manjunatheshwara College of Ayurveda and Hospital, Udupi.

ABSTRACT

Objective: To compare the efficacy of *Brahmi* and *Pranayama* in Premenstrual dysphoric disorder. **Methodology**: An open labelled controlled clinical trial on the effect of *Brahmi* and *Pranayama* in Premenstrual dysphoric disorder. The study was conducted on 30 patients from OPD and IPD of Shri Dharmasthala Manjunatheshwara college of Ayurveda, Udupi. Patients fulling the diagnostic criteria of Premenstrual dysphoric disorder were only selected. Permuted block randomization was done and patients were allotted to two group. Each group had 15 patients. Group A Control group was advised to practice *Nadi Shodhana Pranayama* for 10 cycles and *Brahmari Pranayama* for 5mins every day at 7am on empty stomach for 60days. Group B Study group was advised to take Cap. Brahmi, 6 capsules on empty stomach only in the morning with warm water for 60 days. Cap. Brahmi were prepared in SDM pharmacy. Assessment was done 0^{th} day, 30^{th}, 60^{th} day, 90^{th} day and 120^{th} day. Subjective and objective parameters were scored by standard method and were assessed before and after treatment on 0^{th} day and on 60^{th} day. All the parameters were analyzed statistically using paired t test for numerical data and Wilcoxon signed rank test for ordinal data comparing on 0^{th} day and 60^{th} day within the group. In between the group the numerical data was compared using unpaired t test and ordinal data was compared using Mann- Whitney U test. **Result**: Both the groups had statistical significance in most of the parameters. There is no statistically significant difference in between the groups except for

Mood swing. **Conclusion:** Both the groups treated with Brahmi and Pranayama were efficient enough to reduce the symptoms of Premenstrual Dysphoric Disorder**.**

KEYWORDS: Premenstrual Dysphoric disorder, Chittodvega, Brahmi, Pranayama.

INTRODUCTION

Man is said to be *swastha* when there is equilibrium in *Dosha, Agni* and *Mala,* along with mental and spiritual health.[1] World health Organization has defined health as a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity. Women play a multidimensional task by taking responsibility in family life, occupationally, socially, emotionally, physically, biologically. Prevalence of psychiatry disorder is more common in women than in men. Most women report to have severe mood swings and Behavioral changes during their reproductive age.

Premenstrual dysphoric disorder is a condition with unknown aetiology. It is most probably related to the endocrine events of the ovarian cycles with inferred evidence, so an attempt could be made to co-relate it with few theories like sodium and water retention and estrogen and progesterone imbalance. Typically, the symptoms start after few days of ovulation characterized by physical and emotional changes. Mood disturbance includes anxiousness, irritability, loss of concentration, affective lability, sleep disturbance, decreased interest and depression. Physical symptoms such as breast tenderness, bloating of abdomen, headache, joint and muscle pain are seen. The symptoms resolve quickly at or within a few days of onset of menstruation.[2] The prevalence of PMS was 18.4%. Moderate to severe PMS was 14.7% and PMDD was 3.7%.[3] Chittodvega is one among the *manasika roga* in which vitiation of *manasika dosha* i.e., *Rajas* and *Tamas*.[4] The imbalance is caused by *Ayoga, Atiyoga* and *Mityayoga* of *indriya* along with *Manas*[5], leading to *Udvega avastha* of *manas*. Udvega is *Anavastita chetasa*.[6] *Chittodvega* is explained in very few contexts. This *udvega* of *manas* is responsible for the presentation of symptoms as seen in Premenstrual dysphoric disorder. In the management of *Manasaroga* threefold treatment modalities have been explained, which are *Daivavyapashraya Chikitsa, Yuktivyapashraya Chikitsa and Satvavajaya Chikitsa. Satvavajaya Chikitsa* is a unique treatment mentioned in the management of *Manasikarogas,* which aims to keep the mind away from unwholesome activities *and attaining Manonigraha* from *Ahitarthas* through *Dhi, Dhairya* and *Atmadi Jnana*, which includes *Yoga,* relaxation and counselling techniques.[7] *Pranayama* is having an effect which triggers neuro hormonal mechanisms that brings health benefits by changing

sympathetic activity and improves autonomic functions. It reduces stress and anxiety, improves higher neural centre functioning leading to positive impact on overall health quality.[8] Considering the *Yuktivyapashraya Chikitsa* for the same, multiple *Shamana Yogas* have been mentioned which are *Medhya, Balya, Rasayana* such as *Brahmi* (Bacopa Monnieri Linn). *Brahmi* has *Medhya, Rasayana, Vayasthapana* and *Smritivardhaka* properties.[9]

METHODOLOGY

Ethical Committee clearance has been done.

Reference number SDMCAU/ACA-49/ECH 12/20202-21.

OBJECTIVE OF THE STUDY

- To evaluate the effect of *Brahmi* in Premenstrual Dysphoric Disorder.
- To evaluate the effect of *Pranayama* in Premenstrual Dysphoric Disorder.
- To compare the efficacy of *Brahmi* and *Pranayama* in Premenstrual Dysphoric Disorder.

Study Design

- Study Type : Interventional
- Allocation : Randomized controlled
- Endpoint Classification : Efficacy Study
- Intervention Mode : Double Group Assignment
- Primary Purpose : Treatment
- Masking : Open label

Participants: A special proforma was prepared with all points of history taking followed by assessing the signs and symptoms with visual analogue scale of Premenstrual dysphoric disorder. 30 patients fulfilling the diagnostic criteria irrespective of caste, socio-economic status was taken for the study from O.P.D and I.P.D of Sri Dharmasthala Manjunatheshwara Ayurveda Hospital, Kuthpady.

Intervention: 30 patients were allocated into group A and Group B of each 15 using permuted block randomization.

- Group 1- Control Group

Treatment advised was *Nadi shodhana pranayama* for 9 cycles.[10]

followed by *Bhramari pranayama* for 5 minutes.[11]

Time-Early morning at 6-7 am on empty stomach.

Duration-60 days

- Group 2- Study Group

Treatment advised -*Cap. Brahmi 500mg* 6 OD with warm water on empty stomach

Time-Early morning at 7am

Duration-60 days

Duration of the study

Total duration: 120 days

Intervention: 60 days

Follow up period: Two menstrual cycles.

Diagnostic criteria

Diagnostic criteria for Premenstrual Dysphoric Disorder (DSM-5)

- Marked affective lability.
- Marked depressed mood, feeling of hopelessness.
- Marked anxiety, tension.
- Decreased interest in usual activities.
- Difficulty in concentration.
- Lethargy.
- Hypersomnia or insomnia.
- Sense of being overwhelmed.
- Physical symptoms like breast tenderness, joint or muscle pain, a sensation of bloating or weight gain.
- The symptoms are associated with clinically significant distress or interference with work, school, usual social activities, or relationship with others.
- The disturbance is not merely an exacerbation of the symptoms of another disorder such major depressive disorder, panic disorder, persistent depressive disorder, or a personality disorder.

Inclusion Criteria

- Subjects fulfilling the diagnostic criteria of PMDD
- Subjects ranging from 18-40 years.
- Subjects with regular menstrual cycles.
- Subjects ready to sign informed consent.

Exclusion Criteria

- Subjects suffering from other psychiatric illness and complications of substance abuse.
- Subjects suffering from any other gynecological illness, systemic illness and psychosomatic illness.
- Subjects who were under hormonal medications.

Assessment Criteria

Subjective parameters were scored by standard method and were assessed before and after treatment on 0^{th},30^{th},60^{th},90^{th} and 120^{th} day. Statistical analysis was done by using paired t test and Wilcoxon signed rank test by comparing from 0^{th} to 60^{th} day within the group and in between the group was compared using unpaired t test and Mann Whitney test.

Subjective criteria

1.Hamilton Scale for Depression.[12]

2.Hamilton Scale for Anxiety.[13]

3.Visual analogue scale for PMDD.

- Mood swing
- Feeling sad
- Sensitivity
- Irritability
- Anger
- Interpersonal affliction
- Hopelessness
- Self-deprecating thoughts
- Anxiety
- Tension
- Feeling keyed up
- Decreased interest
- Difficulty in concentrating
- Lethargy
- Easy fatigue ability
- Hypersomnia
- Insomnia

- Sense of out of control
- Breast tenderness
- Joint pain
- Muscle pain
- Sensation of bloating

OBJECTIVE PARAMETERS

1.Blood pressure

2.Pulse

RESULTS

Effect of treatment on Hamilton Anxiety scale

EFFECT ON GROUP -A The effect of pranayama on Hamilton anxiety rating scale before and after treatment in 15 patients is given below. Statistical analysis revealed that the mean score of Hamilton anxiety rating scale which was 24.53 has been reduced to 22.85 after the treatment. By adopting Wilcoxon Signed rank test, it is found that P<0.001.

EFFECT ON GROUP -B The effect of Brahmi on Hamilton anxiety rating scale before and after treatment in 15 patients is given below. Statistical analysis revealed that the mean score of Hamilton anxiety rating scale which was 25 has been reduced to 23.86 after the treatment. By adopting Wilcoxon signed rank test, it is found that the improvement recorded was statistically significant with P=0.031

Table no. 1: Showing statistical analysis within the group on the effect of Brahmi and Pranayama on Hamilton anxiety rating scale.

HAM-A	MEAN		BT-AT	% Relief		SD	SEM	MEDIAN	Z	P
	BT	AT								
Group-A	24.53	22.85	1.68	6.8%	BT	1.727	1.727	25.000	-2.971	P<0.001
					AT	1.642	0.424	23.000		
Group-B	25.00	23.86	1.14	4.5%	BT	2.035	0.526	26.000	-2.214	P=0.031

Effect of treatment on Hamilton Depression scale

Effect on group -A The effect of pranayama on Hamilton Depression rating scale before and after treatment in 15 patients is given below. Statistical analysis revealed that the mean score of Hamilton depression rating scale which was 23.867 has been reduced to 22.533 after the treatment. By adopting Wilcoxon Signed rank test, it is found that P=0.002

Effect on group -B The effect of Brahmi on Hamilton depression rating scale before and after treatment in 15 patients is given below. Statistical analysis revealed that the mean score of Hamilton depression rating scale which was 24.267 has been reduced to 22.267 after the treatment. By adopting Wilcoxon signed rank test, it is found that the improvement recorded was statistically significant with P= 0.004.

Table no. 2: Showing statistical analysis within the group on the effect of Brahmi and Pranayama on Hamilton depression rating scale.

HAM-D	MEAN		BT-AT	% Relief		SD	SEM	MEDIAN	Z	P
	BT	AT								
Group-A	23.867	22.533	1.334	5.5%	**BT**	2.973	0.768	24.000	-2.848	P=0.002
					AT	3.091	0.798	21.000		
Group-B	24.733	22.267	2.473	9.9%	**BT**	2.344	0.605	25.000	-2.694	P=0.004
					AT	5.861	1.513	24.000		

BETWEEN THE GROUP

Effect of treatment on Hamilton Anxiety scale in between the groups.

Table no. 3: Showing statistical analysis in between the group on the effect of Brahmi and Pranayama on Hamilton Anxiety rating scale.

GROUP	MEAN	SD	SEM	MEDIAN	Mann Whitney U test		
					t VALUE	U VALUE	P VALUE
Group-A	1.600	1.404	0.363	2.000			
Group-B	1.067	1.580	0.408	0.000	262	83	0.205

Effect of treatment on Hamilton Depression scale in between the groups.

Table no. 4 Showing statistical analysis in between the group on the effect of Brahmi and Pranayama on Hamilton depression rating scale.

GROUP	MEAN	SD	SEM	MEDIAN	Mann Whitney U test		
					t VALUE	U VALUE	P VALUE
Group-A	1.533	1.125	0.291	2.000			
Group-B	1.267	1.223	0.316	0.000	245	99.5	0.590

Based on symptoms

Group A- There was 10.8% reduction in the complaint of mood swing. 19.5% reduction in the complaint of irritability.13.9% reduction the complaint of depressed feeling.8.6% reduction seen the symptom of anxiousness.22.9% of reduction in the symptom of decreased interest in routine. 7.9% of reduction in symptom of difficulty concentration.16.6% of reduction in the symptom of Insomnia.11.5% of reduction in the symptom of fatigue. 17% of reduction in the symptom body pain. 12.8% of reduction in the symptom of bloating. 8.3%

reduction in the symptom of breast tenderness. 8.4% reduction in the complaint of change in food intake.

Group B- There was 18% reduction in the complaint of mood swing. 16% of reduction in the symptom of irritability. 14.4% reduction in the complaint of depressed feeling. 20% reduction in the complaint of anxiousness. 22.9% reduction in the complaint of decreased interest in routine. 2% reduction in the complaint of difficulty in concentration. 18.5% reduction in the complaint of complaint of insomnia.1% reduction in the complaint of fatigue. 19.7% reduction in the complaint of body pain. 12% reduction in the complaint of breast tenderness. 11.7% reduction in the complaint of change in food intake.

Based on Pulse rate and Blood pressure

Group-A There was 2.8% reduction in the measurement of systolic blood pressure and 9.6% reduction in the measurement of diastolic blood pressure. 3.8% reduction in pulse rate.

Group-B There was 3.34% reduction in systolic blood pressure. 5% reduction in diastolic blood pressure.1.46% reduction in pulse rate.

There is no statistical significance in between the group upon comparing the HAM-A scale, HAM-D scale, feeling of irritability, depression, anxiousness, decreased interest in routine, decreased concentration, insomnia, fatigue, body pain, bloating, breast tenderness, change in food intake.

There was statistical significance in between the group in mood swings with p value=0.03.

On comparing Hamilton anxiety rating scale, diastolic blood pressure, Pulse rate, Irritability, depressed feeling, fatigue, better response was seen in Group A. Parameters like Systolic blood pressure, mood swing, anxiousness, body pain, breast tenderness, change in food intake Group B had better response. Both the interventions were seen beneficial in relieving the symptoms of PMDD. No adverse effect was reported during the study and follow up in both the interventions.

OVERALL EFFECT OF THERAPY

Overall effect of therapy shows that minimum improvement is seen in 86.6% of subjects in Group A and 40%in Group B. There is Mild improvement seen in 13.3% of subjects in Group A and 60% in Group B after the treatment.

DISCUSSION

Chittodvega being the vata predominant disease, *Ahara* and *Vihara* along with appropriate treatment has to be adopted for *Vata upashaya*. One can prevent the disorder even with risk factors like genetic susceptibility by doing *sadvrutta palana*, following *Achara Rasayana* and by *Nidana parivarjana.*

The ultimate goal of *Rasayana* is the attainment of the excellence in *Rasadi dhatu.* There is description that a person who undergoes *Rasayana* therapy achieves longevity, improved memory, intelligence, freedom from disease, youth, excellence in brightness, complexion and voice. Optimal physical strength and mastery of the senses over language, respectability and brilliance. *Rasayana* works through the level of rasa *dhatu* which helps to promote the nutritional value of the plasma. By acting through the level of *Agni*, *Rasayana* improves digestion and metabolism. Through the *srotas*, the effect of *Rasayana* reaches the micro channels leads to a better perfusion in the tissue. By gaining the longevity, immunity and mental competence, the regulation of the body and mind system will be improved.

Brahmi has *tikta*, *kashaya*, *madhura rasa*, *laghu* and *sara guna*, *sheeta virya* and *madhura vipaka. Brahmi is Vata hara* as it is *Madhura* in v*ipaka*, *Pitta hara* because of *Madhura rasa* and *Sheeta virya* and *Madhura vipaka.*[14]

Pranayama is having an effect which triggers neuro hormonal mechanisms that bring health benefits by changing sympathetic activity and improves autonomic function. It reduces stress and anxiety, improves higher neural centre functioning leading to positive impact on overall health quality. *Pranayama* helps in the regulation of the pineal, pituitary, and adrenal glands, which play an important role in the regulation of metabolism.

CONCLUSION

Overall effect of therapy shows that minimum improvement is seen in 86.6% of subjects in Group A and 40%in Group B. There is mild improvement seen in 13.3% of subjects in Group A and 60% in Group B after the treatment. During follow up with no intervention, sustained effect of Brahmi was seen in mood swings, depressed feelings, decreased interest in routine, Hamilton depression scale. Effect of *Pranayama* as an intervention, the effect sustained during follow up in features like irritability, diastolic blood pressure and pulse rate. Both the interventions were seen beneficial in relieving the symptoms of PMDD. No adverse effect was reported during the study and follow up in both the interventions.

REFERENCES

1. Sushrutha. Sushrutha Samhita Jadavji Trikamji Acharya editor, Sushrutha. Varanasi: Chaukhamba Sanskrit Sansthana, 2012; p75.Pp824.
2. Benjamin James Sadock, Virginia Alcott Sadock, Pedro Ruiz, editors. Kaplan & Sadock Synopsis of Psychiatry. 10th edition. Philadelphia: Wolters Kluwer, pg867.
3. Raval CM, Panchal BN, Tiwari DS, Vala AU, Bhatt RB. Prevalence of premenstrual syndrome and premenstrual dysphoric disorder among college students of Bhavnagar, Gujarat. Indian J Psychiatry, 2016 Apr-Jun; 58(2): 164-70. doi: 10.4103/0019-5545.183796.PMID: 27385849;PMCID:PMC4919960.
4. Agnivesha. Charaka Samhita. Jadavji Trikamji Acharya editor.Varanasi:Choukamba Prakashan, 2010; p248.Pp738.
5. Agnivesha. Charaka Samhita. Jadavji Trikamji Acharya editor.Varanasi:Choukamba Prakashan, 2014; P47.Pp738.
6. Shastri. J Ayurveda Shabda kosha. P123.
7. Charaka Samhita. Jadavji Trikamji Acharya editor.Varanasi:Choukamba Prakashan, 2015; P57.Pp738.
8. Md. Nazia, M.V. Muralidhar. Effect of Pranayama on Depression Score and Physical Fitness Index in Pre and Post Menstrual Phase in Young Females. IOSR Journal of Dental and Medical Science (IOSR-JDMS), 2018 July [cited 2021 may 26]; 17(7): 27-33.
9. Pandey. G. S, editor, Commentary by Chunekar. K.C on Bhavaprakasha Nighantu of Bhavamishra, Guduchyadi varga; Verse 279-281. Varanasi: Chaukhamba Bharathi Academy, 2010; pg447.
10. K.V. Dilip Kumar. Clinical Yoga and Ayurveda. 1st edition. Delhi: Chaukhamba Sanskrit Pratishtan, 2011; pg82
11. Rao. V. Mangalagowri. The Essence of Yoga. 1st edition. Varanasi: Chaukhamba Ayurveda Pratishthan, 2011; pg138
12. Benjamin James Sadock, Virginia Alcott Sadock, Pedro Ruiz, editors. Kaplan & Sadock Synopsis of Psychiatry. 10th edition. Philadelphia: Wolters Kluwer, pg314-315.
13. Benjamin James Sadock, Virginia Alcott Sadock, Pedro Ruiz, editors. Kaplan & Sadock Synopsis of Psychiatry. 10th edition. Philadelphia: Wolters Kluwer, pg314-315.
14. Mathur D, Goyal K, Koul V, Anand A. The Molecular Links of Re-Emerging Therapy: A Review of Evidence of Brahmi (Bacopa monniera) [Internet].Frontiers in Pharmacology. 2016 [cited 13 April 2022]. Available at: https://www.frontiersin.org/articles/10.3389/fphar.2016.00044/full