Original Article

Effect of Shakthi bandhasanas on Primary Dysmenorrhea – A Study Protocol of a Randomized Controlled Trial

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ABSTRACT

Primary dysmenorrhea (PD) is recurrent lower abdominal pain that happens during the menstrual cycle and is not associated with any other pelvic pathology. In India prevalence of dysmenorrhea is 87.87% and incidence is 33.5% among adolescent girls. Yoga seems to be effective in regulating the various physiological functions. *Shakthi bandasanas* is a dynamic group of asanas which may have effect on abdominal region. Hence, we have planned this study to find the effect of *shakthi bandasanas* on primary dysmenorrhoea. A total of 80 subjects between 14 to 25 years will be recruited. This study adopted a randomized controlled trial. Study has 2 groups with 40 subjects in each group. Study group subjects will be recommended to practice *shakthi bandasanas* and control group will be rest in supine position for 21 days. Baseline and post intervention assessments will be done for all subjects. Outcome variables are Menstrual symptom Questionnaire and Visual Analogue Scale. Data will be analysed using the Statistical Package for Social Sciences. Version 16. In this study, we will consider *p* (probability) value of 0.05 to be statistically significant. The result will be represented in bar diagram using the mean value of the dependent variables. If this study provides significant changes, then *shakthi bandasanas* may be adjuvant therapy in the management of primary dysmenorrhea. Ethical clearance was obtained (IEC-IIYNMS/Approval/014/2023) and registered in a clinical trial (CTRI/2023/10/059308).

Key words: Primary Dysmenorrhea, Yoga therapy, Shakthi bandasana, Menstrual Pain, Women's health, Adjuvant therapy.

Dysmenorrhea is a common menstrual disorder defined by the presence of painful cramps during menstruation [1]. Dysmenorrhea can be classified as primary and secondary. Primary dysmenorrhea (PD) is recurrent lower abdominal pain that happens during the menstrual cycle and is not associated with any other pelvic pathology. Secondary dysmenorrhea is associated with pelvic pathology [2]. PD usually presents at the age of adolescence, within three years of menarche. The experience of pain will be sharp, intermittent spasms, usually in supra-pubic area. Pain may radiate into the lower back and inner aspects of the thighs and associated with nausea, vomiting, diarrhoea, fatigue, fever, headache or light-headedness [3].

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In India prevalence of dysmenorrhea is 87.87% and incidence of 33.5% among adolescent girls [4]. The common risk factors are a family history of dysmenorrhea, smoking, severe bleeding, shorter/longer menstrual period interval, stress, and menstrual cycle irregularity [5]. The etiology of PD is release of uterine prostaglandins, particularly prostaglandin (PGF2α). This stimulates myometrial contraction, ischemia and sensitization of nerve endings and thus causing pain [6]. Nonsteroidal anti-inflammatory drugs may be used to decrease the production of prostaglandins [7]. Patient may also seek complementary and alternative medical therapies like acupuncture and acupressure, yoga therapy, biofeedback, heat treatments, transcutaneous electrical nerve stimulation [8] [9]. Yogic practices provide a way to alleviate mental and physical issues. Yoga relieves physiological issues like menstrual

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discomfort and irregular periods as well as psychological ailments including stress, tension, depressions, and anxiety [10]. Modern medicine prescribes yoga as a simple, non-invasive method of causing pain alleviation that is safe, affordable, and free of side effects. Yogic techniques have a favourable effect on one's physical health by down-regulating the hypothalamo-pituitary-adrenal axis and sympathetic nervous system [11].

As per asana pranayama mudra bandha text, *Shakti bandhasanas* is concerned with improving the energy flow within the body and breaking down neuro-muscular knots. They also eliminate energy blockages in the spine, activate the lungs and heart, and improve endocrine function. The series is especially useful for menstrual problems and toning the pelvic organs and muscles [12]. We have done intense literature search on Shakthi Bandhasanas and primary dysmenorrhea. There was no previous study done, hence we have planned this study to explore the effect of *shakthi bandhasanas* on primary dysmenorrhea.

MATERIALS AND METHODS

Study Setting

The present study will be a randomized controlled trial. Subjects will be recruited from out-patient department of International Institute of Yoga and Naturopathy Medical Sciences, Chengalpattu. The study is planned to start from August 2024. Institutional Ethical Committee (IEC) approval has been taken, vide letter numbers Ref N0.446/ME-II/2023. The Clinical Trial registration number is CTRI/2023/10/059308.

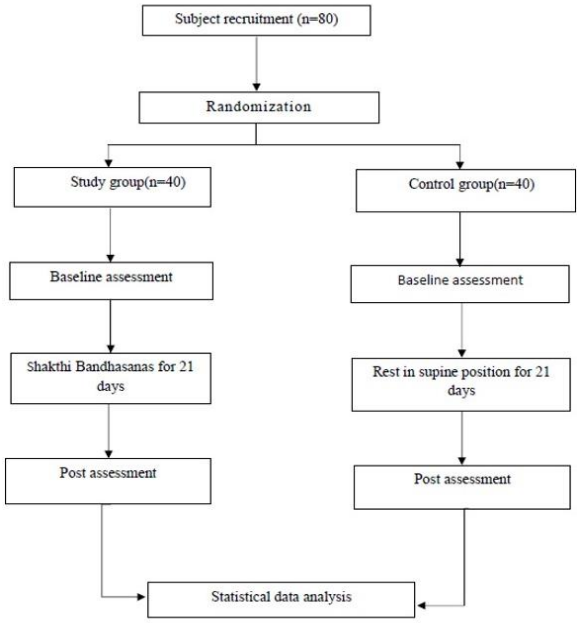


Figure 1: Trail profile

Sample size

In a feasibility trial, estimation of formal sample size calculation is not required [13]. It is recommended to recruit minimum 50 participants in a feasibility trial. Thus, in this trial we have planned to recruit 80 participants after taking into consideration of drop out or loss of follow-up.

Randomization and blinding

All the subjects will be randomly allocated to either subject or control group (1:1 ratio) using computerized randomization. Random concealment will be done using SNOSE (Sequentially numbered, opaque, sealed envelope) technique. The participants will not be blinded to the study and control group. Trial profile of this study is represented in figure 1.

Selection of Participants

Inclusion criteria: Subject must be female on regular menstrual cycles with primary dysmenorrhea aged between 14 to 25 years.

Exclusion criteria: Subject with differently abled, any congenital anomalies, pregnant, lactation, any hormonal imbalance and during menstruation.

INTERVENTION

Study group

Subjects will be instructed to practice shakthi bandasana sequence for 45 minutes daily once for 21 days, from the 5th day of menstruation.

Procedure of Shakthi Bandhasanas [12]

General Instructions

Subjects will be asked to wear loose garments and empty their bowels. They will be instructed not to have any food before 3 hours, except water. Entire Shakthi Bandhasanas practice will be done on the floor with yoga mat.

1. ***Rajju Karshanasana*** (Pulling the rope)

Subject will be asked keep the legs together. Imagine that there is a rope hanging in front. Hold the rope using the right hand, breathe in rise the right hand to the highest point without bending the elbow. While breathing out, slowly pull the right hand down. Repeat the same practice with the left hand to complete the first round. Both arms do not move at the same time. Practise 5 rounds.

2. ***Gatyatmak Meru Vakrasana*** *(*Dynamic spinal twist)

Subject will be asked to open the legs to their maximum, without bending the knees. Stretch the both hands sideways at shoulder level. Keeping the arms straight, inhale twist the trunk towards left side and bring the right hand towards the left big toe. Stretch left arm behind the back at shoulder level. Gaze the left palm. Keep both arms in one straight line. Exhale, bring the trunk and hand to neutral position. Repeat the practice towards right side. Practise 5 rounds. Start slowly and then gradually increase the speed with breath synchronization.

3. ***Chakki Chalanasana*** (Churning the mill)

Similar like Gatyatmak Meru Vakrasana, subject will be asked to open the legs to the maximum. Interlock the fingers and straighten the hands without bending elbow in front of the chest. Subjects will be instructed to lean forward from waist and move the interlocked fingers towards the right foot and continuously move the interlocked fingers to left foot and bring the interlocked finger towards the trunk by tilting of the spine back. Breathe out, while move the interlocked finger towards the foot and breathe in while bring the fingers towards the body. Practise 5 rounds clockwise and 5 rounds anti-clockwise. Breathing: Inhale while leaning back, Exhale while moving forward.

4. ***Nauka Sanchalanasana*** (Rowing the boat)

Subject's legs to be in together. Imagine the action of rowing a boat. Clench the hands as though grasping oars, with the palms facing down. Breathe out and bend forward from the waist, straightening the arms. Breathing in, lean back as far as possible, drawing the hands back towards the shoulders. This is one round. The hands should make a complete circular movement in every round, moving up the sides of the legs and trunk. Knees should not be bend throughout the practice. Practise 5 rounds. Reverse the direction of the rowing movement as though going in the opposite direction. Practise 5 rounds.

5. ***Kashtha Takshanasana*** (Chopping wood)

Subject will be asked to Squat with the feet flat on the floor about 45 cm apart. The knees should be fully bent and separated. Clasp the fingers of both hands together and place them just above the floor between the feet. Straighten the arms and keep them straight throughout the practice. The elbows should be inside the knees. The eyes should remain open. Imagine the action of chopping wood. Inhale while raise the arms over the head by stretching the spine. Gaze the interlocked fingers. Make forceful downward stroke of the arms, as if chopping wood. Expel the breath making a *'Ha'* sound. This is one round. Practise 5 rounds.

6. ***Namaskarasana*** (Salutation pose)

Subject will be asked to Squat with the feet flat on the floor about 60 cm apart. The knees should be wide apart and the elbows pressing against the inside of the knees. Bring the hands together in front of the chest in a gesture of prayer. This is the starting position. Inhale, push the knees outwards using the respective elbows with neck extension. Maintain in this position for 3 seconds with internal retention. While exhalation, bring the knees close to each other and straighten the arms directly in front of the chest. The head should be bent forward with the chin pressed against the chest. Hold this position with external retention for 3 seconds. Return to the starting position. This is one round. Practise 5 rounds.

7. ***Vayu Nishkasana*** (Wind releasing pose)

Subject will be asked to squat with the feet about 60 cm apart. Grasp the inner foot, placing the fingers under the soles with the thumb above. Inhale, press the inner thigh slightly using elbows. Exhale, straighten the knees, try to rise the hip and flex the head reach the knees as much as possible. Hold the breath for 3 seconds. Inhaling, return to the starting position. This is one round. Practise 5 rounds.

8. ***Kauva Chalasana*** (Crow walking)

Subject will be asked to squat with the feet apart, bring the right knee to the ground towards left foot. Place the palms on the knees. Subjects must turn the trunk towards left side. After left tun, take bring the right foot front and bring the left knee to right heel and turn to right side. Similarly, Subjects will be advised to move 50 steps forward. Breathing should be normal throughout the practice.

9. ***Udarakarshanasana*** (Abdominal stretch pose)

Subject will be asked to squat with the feet apart and the hands on the knees. Inhale deeply. Exhale, bringing the right knee to the floor near the left foot. Using the left hand as a lever, push the left knee towards the right, simultaneously twisting to the left side. Keep the inside of the right foot on the floor. Try to squeeze the lower abdomen using both thighs. Hold the breath out for 3 seconds in the final position. Inhale when returning to the starting position. Repeat on the other side of the body to complete one round. Practise 5 rounds.

Control group: Subject in the control group will be asked to rest in supine position for 45 minutes daily once for 21 days.

Outcome measures: The assessment tools are Menstrual Symptoms Questionnaire and visual analogue scale.

Menstrual symptom Questionnaire (MSQ): MSQ includes 24 items, rated as 1 = "never" to 5 = "always". Spasmodic factor has 12 items, symptoms reflect during menstruation and congestive factor has 12 items, symptoms reflect in the premenstrual phase. The range of scores is12–52 for both the Spasmodic factor and the Congestive factor [14].

Visual analogue scale (VAS): VAS is a tool widely used to measure pain. The VAS using a 10-points line represented degree of pain. Point 1 to 3 represents no or mild pain, 4 to 7 represents moderate, 8 to 10 represents severe pain [15].

DISCUSSION

The current study is first of its kind to explore the effect *Shakti bandhasanas* Practice on primary dysmenorrhea. Previous literature suggests that yoga reduces the intensity of pain and by relieving stress, tension, fatigue and underlyingly relaxing the body and mind. Yoga is believed to reduce pain by helping the brain's pain center to regulate the gate controlling mechanism located in the spinal cord and the secretion of natural painkillers in the body [7]. Myometrial hyperactivity and subsequent tissue ischemia may be caused by an aberrant

increase in vasoactive prostanoids in the endometrium and menstrual fluid. Yoga improves blood flow at pelvic level and stimulates the release of B endorphin act as nonspecific analgesics [16].

Yoga improves spinal flexibility and to relax the pelvic muscles and act as an effective treatment for spasmodic dysmenorrhea [12]. Yoga also plays an important role in reducing stress and activity of sympathetic nervous system, increasing parasympathetic activity, improving quality of life, and reducing psychological symptoms levels [17]. The major movements involved in the shakthibandhasana is pelvic region. It may loosen the pelvic girdle and tones the pelvic muscles. It also has a special effect on the inaccessible muscles of the back, between the shoulder blades, as well as the shoulder joints and upper back muscles. It helps io release frustration and lighten the mood [12].

CONCLUSION

The present study findings will provide high quality clinical evidence on the efficacy of *shakthi bandasanas* on primary dysmenorrhea. If the observations of this study ascertain positive results, it could be recommended as an adjuvant therapy for primary dysmenorrhea subjects along with conventional care.

REFERENCES

1. López LR, Torres ÁL, Vega FA, *et al*. Efficacy of Physiotherapy Treatment in Primary Dysmenorrhea: A Systematic Review and Meta-Analysis. International Journal of Environmental Research and Public Health. 2021; 18(15):7832.
2. Burnett M, Lemyre M. Primary Dysmenorrhea Consensus Guideline. Journal of Obstetrics and Gynaecology Canada. 2017; 39(7):585–95.
3. Coco AS. Primary dysmenorrhea. American family physician. 1999; 60(2):489–496.
4. Shah M, Monga A, Patel S, *et al*. The Effect of Hypnosis on Dysmenorrhea. International Journal of Clinical and Experimental Hypnosis. 2014; 62(2):164–78.
5. Azagew AW, Kassie DG, Walle TA. Prevalence of primary dysmenorrhea, its intensity, impact and associated factors among female students' at Gondar town preparatory school, Northwest Ethiopia. BMC Women's Health. 2020; 6;20(1).
6. Agre S, Agrawal R. Comparative effect of lower limb and abdominal isometric exercises and yoga poses on primary dysmenorrhea. Indian journal of public health research and development. 2021; 12(4):356–63.
7. Rakhshaee Z. Effect of Three Yoga Poses (Cobra, Cat and Fish Poses) in Women with Primary Dysmenorrhea: A Randomized Clinical Trial. Journal of Pediatric and Adolescent Gynaecology. 2011; 24(4):192–6.
8. Kannan P, Claydon LS. Some physiotherapy treatments may relieve menstrual pain in women with primary dysmenorrhea: a systematic review. Journal of Physiotherapy. 2014; 60(1):13–21.
9. Thakur P, Mohammad A, Rastogi YR, *et al*. Yoga as an intervention to manage multiple sclerosis symptoms. J Ayurveda Integr Med. 2020; 11(2):114-117.
10. Kanchibhotla D, Subramanian S, Singh D. Management of dysmenorrhea through yoga: A narrative review. Front Pain Res (Lausanne). 2023; 4:1107669.
11. Chhikara A, Jain M, Vats S, *et al*. Role of yoga in minimizing stress and anxiety in women experiencing dysmenorrhea. J Lifestyle Med. 2023; 13(2):90–6.
12. Saraswati SS. Asana pranayama mudra bandha. 2008. Munger, Bihar: Yoga Publications Trust. Pg No.60 – 73.
13. Thabane L, Ma J, Chu R, *et al*. A tutorial on pilot studies: the what, why and how. BMC Med Res Methodol; 2010; 6(10):1.
14. Chesney MA, Tasto DL. The development of the menstrual symptom questionnaire. Behav Res. 1975; 13(4):237–244.
15. Delgado DA, Lambert BS, Boutris N, *et al*. Validation of Digital Visual Analog Scale Pain Scoring with a Traditional Paper-based Visual Analog Scale in Adults. JAAOS: Global Research and Reviews. 2018; 2(3):e088.
16. Ko HN, Sun LS, Dol Kim S. Effects of Yoga on Dysmenorrhea: A Systematic Review of Randomized Controlled Trials. Altern Integr Med. 2016; 5(4):226.
17. Daley AJ. Exercise and Primary Dysmenorrhoea. Sports Medicine. 2008; 38(8):659–70.

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