



EFFECT OF YOGA IN THE MANAGEMENT OF PRIMARY DYSMENORRHEA IN FEMALES BETWEEN 18-25 YEARS.

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Abstract:

Aim: To study the effect of yoga in the management of primary dysmenorrhea in females between 18-25 years.

Background: Dysmenorrhea is the most common gynecological problem and frequently identified etiology of pelvic pain in females. It interferes with women functional activity thus Yoga when performed as part of an exercise program helps in improving general health, improves flexibility, strengthens muscles and reduces pain.

Procedure: This experimental study was conducted on 35 subjects between the age group 18-25 years according to the inclusion criteria. They were selected through convenient sampling and instructed to perform five yoga poses: Supta Svaticasana , Supta Baddhakonasana , Adhomukha virasana , Adhomukha Svaticasana , Paschimottanasana followed by Shavasana. Selected subjects received treatment for 8 weeks. Pre and post assessment were taken using two outcome measures that is WaLIDD score and NPRS. Data was analyzed using paired t-test.

Result: using paired t test, p value was less than 0.005 for NPRS and WaLIDD score considered to be statistically significant thus results of this study suggests that yoga is effective in reducing pain and its interference in functional activities in females with primary dysmenorrhea between 18-25 years

Conclusion: The study concluded that yoga is effective in the management of primary dysmenorrhea in females between 18-25 years.

Keywords: Yoga, Primary Dysmenorrhea.

I. INTRODUCTION

Dysmenorrhea is defined as the cramping pain accompanying menstruation.¹Dysmenorrhea is one of the familiar gynecological problems in all women regardless of age or race. It is said to be the most frequently identified etiology of pelvic pain in females. Its prevalence can vary between 16% to 91% in women of reproductive age, with severe pain observed in 2% to 29%. In adolescents prevalence is about 80%.And about approximately 40% had severe dysmenorrhea.²

Hippocrates stated that cervical obstruction and subsequent stagnation of menstrual blood was the reason for painful menstruation.Dysmenorrhea is caused by excessive production of hormone vasopression which is responsible to stimulate muscle contraction in the uterus.³They are further classified into two types based on pathophysiology.⁴**Primary dysmenorrhea** is generally not associated with any identifiable pelvic pathology **Secondary dysmenorrhea** generally implies to the one that is associated with the presence of organic pelvic pathology i.e. Fibroids, adenomyosis, PID and Endometriosis.Spasmodic pain is due to increased PGF2a which is secreted under progesterone effect which is attributed to myometrial contractions ⁴

Primary dysmenorrhea is widely prevalent; more than 50% of teenagers and 30–50% of menstruating women suffer from varying degrees of discomfort. The severe incapacitating type which interferes with a woman's daily activities affects only about 5–15% of the population.¹ Rates are as high as 67% to 90% for those aged between 17–24 years. In a cross-sectional study conducted among 1000 healthy females aged 11-28 Indian girls showed a prevalence rate of 70.2%.⁵ The increased levels of prostaglandins (F2a) in the menstrual fluid are responsible for both local and systemic symptoms. Primary dysmenorrhea occurs in ovulatory cycles; hence, it makes its appearance a few years after menarche with at least 6–12 months of painless periods. It is most intense on the first day of menses and progressively lessens with menstrual flow.⁴ It is one of the most important causes of absenteeism among adolescent girls as it affects their academic performance and also has a negative impact on quality of life.⁵ The International Association for the Study of Pain has estimated that at each menstrual period, approximately 10% -15% of dysmenorrheic women are not able to work for 1 to 3 days.⁵ Backache, abdominal bloating fatigue and breast heaviness are the most common symptoms. These levels are highest during the first two days of menses, when symptoms peak.¹

Based on this understanding, pharmacological therapies for primary dysmenorrhea focus on alleviating menstrual pain and relaxing the uterine muscles by using non-steroidal anti-inflammatory drugs (NSAIDs) or oral contraceptive pills.¹ One study showed that a majority (98%) of adolescents used non pharmacologic methods such as heat, rest, and distraction to treat dysmenorrhea, with perceived effectiveness of 40% or less. Other forms of non - pharmacological treatments such as aromatherapy, acupuncture, massage, topical heat, transcutaneous electrical nerve stimulation, behavioural interventions, dietary therapies, are increasingly attracting attention.⁵ Non –pharmacological treatment like physical exercises has been suggested rather than pharmacological treatment. It is seen that exercises have analgesic effect¹ such as core strengthening and active stretching to be beneficial in coping with menstrual pain. ⁵Abdominal and pelvic floor muscles are stretched and strengthened with the help of physical therapy. Other techniques such as taping and aerobics are also used for the participants with PD which effectively could reduce pain and discomfort.⁶

In prevention of many health problems yoga is now used as an optional therapy.¹ When Yoga is performed as part of exercise program it helps in improving general health, improves flexibility, strengthens muscles and also reduces pain. Therefore one can feel relaxed and calm while adapting the body and mind to yoga as it relieves stress.⁵ Certain yoga postures has controlled the stress and pain of dysmenorrhea according to few studies. Cat pose, tiger pose ,cobra pose ,fish pose and bow pose these postures if practiced regularly helps in stretching and strengthening the back and pelvic floor muscles and also has positive effect in female with PD.⁶ Yoga's potential mental and physical health benefits are reductions in sympathetic nervous system tone, increases in vagal activity and lowering inflammation; all of which could have favorable endocrine and immune consequences.¹ Thus, the aim of the study is to see the effect of yoga in the management of primary dysmenorrhea in females between 18-25 years.

Purpose of Study:

Primary dysmenorrhea results in uterine cramping which causes pain and it interferes with a woman's daily activities. The physical benefits of yoga are linked to the release of alpha endorphins and the shift in neurotransmitter levels linked to the emotions such as dopamine and serotonin. Therefore, the purpose is, to study the effect of yoga in management of primary dysmenorrhea in females between 18-25 years.

Aim of the study:

To study the effect of yoga in the management of primary dysmenorrhea in females between 18-25 years.

Objectives of study:

- To assess the effectiveness of yoga on pain in females with primary dysmenorrhea between 18-25 years.
- To assess the effectiveness of yoga on functional activities in females with primary dysmenorrhea between 18-25 years.

Hypothesis:

Yoga has an effect in the management of primary dysmenorrhea in females between 18-25 years.

Null Hypothesis:

Yoga has no effect in the management of primary dysmenorrhea in females between 18 -25 years.

MATERIALS AND METHODOLOGY

1. Type of Study – Experimental study
2. Method of Sampling –Convenient sampling
3. Study setting – OPD'S in and around Nashik
4. Study Population- Females with primary dysmenorrhea between 18-25 years of age.
5. Sample Size- 35
6. Study Duration- 6 months
7. Materials required-

- Informed consent form
- Pen
- Paper
- Mat
- Bolster



Figure No 1: Bolster



Figure No 2: Mat

8. Outcome Measures-

- i. WaLIDD Score (Working ability , Location, Intensity of pain ,Days of pain)
- ii. NPRS (Numerical Pain Rating Scale)

9. Statistical Test-

Paired t-test.

SELECTION CRITERIA

- **Inclusion criteria :**

1. Age group : 18 -25 years old ^{5,7}
2. WaLIDD score : 1-7 (mild to moderate dysmenorrhea) ^{8,9}
3. Females suffering from primary dysmenorrhea ¹⁰
4. Dysmenorrheal pain interfering with functional and daily activities.

- **Exclusion criteria :**

1. Taking any medications ^{11,12}
2. Secondary dysmenorrhea
3. Recent gynecological related surgeries ^{13,3}

PROCEDURE

- According to inclusion criteria the subjects were taken.
- Prior to the commencement of procedure, the purpose of the study was explained to the subjects and a written consent were taken from all the participants who were willing to participate in this study.
- Subject were instructed to perform five yoga poses:-Supta Svastikasana , Supta Baddhakonasana , Adhomukha virasana , Adhomukha Svastikasana , Paschimottanasana followed by Shavasana ¹
- Pre and post assessment were taken using two outcome measures that is WaLIDD score and NPRS.
- total treatment was given for 8 weeks :4 session/week
- Prior to the beginning of the study, subjects were assessed on the bases of the outcome measures.
- Assessment was taken on the first day of menstruation cycle.
- The treatment was started on the next day after the menstrual cycle was completed.
- Total duration of the daily session was 30 minutes
- Each asana was held for 10 seconds and rest period between two asanas were 30 seconds each.

YOGA ASANAS

- **SUPTA SWASTIKASANA (Cross – legged pose) :** ¹⁴
 - Subject was in supine lying with pillow supporting the head and then ask the subject to cross her legs in supine position.
 - If needed, position blankets under the thighs to support femoral heads.
 - Hold each cross of the legs for 10 seconds and repeat this asana 5 times.



Figure no 3: Supta Swastikasana

- **SUPTA BADDHA KONASANA (RECLINING BOUND ANGLE POSE)** ¹⁵

- Subject was asked to be in supine lying position While exhaling, ask the subject to spread her arms and feet, supporting your head and neck on a blanket roll or bolster if needed.
- Now ask the subject to bring both her knees together and ankles touched each other in such a way that it gives stretch to the groin and inner thighs.
- After this slide your arms down along the inner thighs, from the knees to the groins. Imagining that the inner groins are sinking into your pelvis. Then push the hip joints together, so that the subject will experience widening to the back pelvis and narrowing of the front pelvis. Then spread the arms on the floor, on the sides of her torso and palms facing in upward direction.
- Hold this asana for 10 seconds and repeat this asana 5 times.



Figure no 4: Supta Baddha Konasana

- **ADHOMUKHA VIRA ASANA : (DOWNWARD FACING HERO'S POSE)** ¹⁶

- Start the pose by asking the subject to sit on her knees
- Then rest the forehead on the bolster and extend the elbow and pronate the forearm.
- Relax the abdomen.
- While performing the pose continue to breathe in and out calmly.
- Hold this asana for 10 seconds and repeat this asana 5 times



Figure no 5: Adho Mukha Vira Asana

- **ADHO MUKHA SWASTIKASANA : (DOWNWARD – FACING CROSS –LEG POSE)** ¹⁷
 - Sit on your mat in Swastikasana and bend forward.
 - Stretch arms out in front of you and place your hands on the bolster.
 - Keeping your sitting bones firmly grounded, walk your hands out even more and place your head on the floor or on a bolster
 - While breathing elevate the torso and come to the swastikasana or in cross- legged position.
 - Hold this asana for 10 seconds and repeat this asana 5 times.



Figure no 6: Adho Mukha Swastikasana

- **PASHCHIMOTTANASANA : (SEATED –FORWARD BEND POSE)** ¹⁸
 - Initial position was long sitting position slowly inhale
 - Exhale and grab the big toes with the corresponding hands.
 - bend forward to rest the forehead on the knees .
 - After bending forward, it is important to ensure the heels, calves and thighs are resting completely against the floor and that the spine is straight.
 - Rest the forehead gently on the knees and continue breathing.
 - Slowly raise the head and body.
 - Maintain this asana for 10 seconds and repeat this asana 5 times.



Figure no 7: Pashchimottasana

- **SHAVASANA : (CORPSE POSE)** ¹⁸
- Initial position : Supine position
- Spread the legs a distance of one or one and half feet apart, allowing the toes to fall outside.
- Move the hands a slight distance away from the body
- Turn the neck to any side and relax it Keep the eyes closed. Continue slow breathing.
- This asana should be maintained for 4 minutes.



Figure no 8: Shavasana

DATA ANALYSIS

- **Table no: 1** – Intra group comparison of pain (NPRS) values using paired t test

Table no 1

PARAMETERS	MEAN \pm SD (NPRS)	p-value	t-value	Significance
PRE-TREATMENT	7.3 \pm 0.91026	<0.0001	20.58	Statistically significant
POST-TREATMENT	4.2 \pm 0.66737			

- **Table no : 2** – Intra group comparison of WaLiDD Score values using paired t test

Table no 2

PARAMETERS	MEAN \pm SD (WaLiDD)	p-value	t-value	Significance
PRE-TREATMENT	5.4 \pm 1.06274	<0.0001	10.89	Statistically significant
POST-TREATMENT	3.4 \pm 0.50543			

RESULTS

The results of this study suggests that yoga is effective in reducing pain in primary dysmenorrhea in females between 18-25 years.

- Using paired t test mean value of pre is 7.3 with p value <0.0001 considered to be extremely significant.
- Using paired t test mean value of post is 4.2 with p value <0.0001 considered to be extremely significant.

The results of this study suggests that yoga is effective in reducing its interference in functional activities in primary dysmenorrhea in females between 18-25 years.

- Using paired t test mean value of pre is 5.4 with p value < 0.0001 considered to be extremely significant.
- Using paired t test mean value of post is 3.4 with p value < 0.0001 considered to be extremely significant.

DISCUSSION

The purpose of the study was to study the effect of yoga postures in the management of primary dysmenorrhea in females between 18-25 years. 35 samples were screened and selected by convenient sampling .Pre value of all outcome measures were noted. The selected samples were given different yoga postures as intervention.

The selected samples were asked not to perform the yoga postures during their menstrual cycle. The average menstrual cycle length in the selected samples during this study was 5 days. On statistical analysis a significant decrease was found in pain intensity (NPRS) and also its interference in daily functional activities (WaLiDD score) during the menstrual period.

As shown in table 1 and table 2, there is significant difference ($P < 0.0001$) in all the outcome measures of the selected samples. This suggests that yogic exercises are helpful in reducing menstrual pain. The study showed that menstrual pain intensity ($P < 0.0001$) and its interference in functional activity ($P < 0.0001$) measured using NPRS and WaLIDD score decreased significantly. Study conducted by Padmaja GuruPrasad (2019) said that yoga is believed to reduce pain by helping brain's pain center to regulate the gate controlling mechanism located at spinal cord and secretes natural pain killers in the body. A similar study by Nag U et al. studied the effect of yoga on progesterone levels and pain relief in dysmenorrhea, revealed that there is significant reduction in pain.¹

Shraddha Prabhu Et Al. (2019) proposed that yoga is known to play an important role in reducing stress and sympathetic activity increasing parasympathetic activity improving once quality of life and also by decreasing psychological symptoms levels it also Has beneficial Effects on physical and mental health problems through downregulation of hypothalamic pituitary adrenal axis and sympathetic nervous system which may also be useful for managing primary dysmenorrhea by reducing menstrual pain.⁵

Alyson Ross et.al (2010) stated that Yoga may improve physical and mental health through downregulation of HPA axis and sympathetic nervous system (SNS) .The HPA axis and SNS are triggered as a response to stress leading to rapid physiological, behavioral and psychologic effects which primarily results in release of cortisol and catecholamines that is epinephrine and non-epinephrine that leads to mobilization of energy needed to combat the stressor through flight or fight syndrome .This rapid firing causes dysregulation of system . So yoga reverses the negative impact of stress on immune system by increasing the levels of immunoglobulin A12 and also natural killer cells .It as also been found that yoga decreases the markers of inflammation such as high sensitivity C reactive protein and also inflammatory cytokines such as interleukin-16 and lymphocyte -1B.¹⁹

These postures helps in stimulating the nervous system from which the sensory input from all over the body is stimulated. The asanas used in this study help in the following ways:

Supta Svastikasana : ^{14,17}

- This asanas helps in relaxation.
- When the legs are folded have immediately calming effect on body and nerves.
- Savasana involves discipline focus of attention.

Supta Baddha Konasana:^{15,17}

- This pose relaxes the belly.
- Abdominal soreness is reduced.
- reduces heavy blood flow.

Adho Mukha Svastikasana: ¹⁷

- Reduces stiffness in the hips and massages abdominal organs.
- This pose induces relaxation..
- Reduces low back pain, removes fatigue, relieves migraine headache and calms the mind.

Adho Mukha Virasana:¹⁷

- In this pose nerves are soothed.
- It relaxes the muscles of lower back.
- Constipation, abdominal bloating, flatulence and hypertension are relieved by this pose.

Paschimottanasana:^{17,18}

- Lengthens the spine and stretches the hamstrings.
- Pelvic organs are supplied with abundant flow of blood and problems caused by sluggish digestion and constipation are eliminated.

Shavasana: ¹⁸

- It helps the body to completely relax and awareness of the body develops.

Shraddha Prabhu et al (2019) stated that during menstruation weak core musculature creates an inability for the body to handle forces required for normal movements and functions causing improper biomechanical function of structures adjacent to the lumbar spine .If the lumbar spine is weak or not able to handle function stress then it can result in pain throughout the abdomen, low back and thighs. These also happen to be the area affected by the females during menstruation⁵

Julaecha et al (2019) stated that there is a decrease in the pain scale during menstruation because while doing yoga respondents feel relaxed so that the body secrete the hormone endorphine which can reduce uterine contractions and abdominal cramps this is consistent with the theory that the relaxing effect causes an increase in parasympathetic nerve response resulting in vasodilation effect of vessels uterine blood so that uterine blood flow increases and uterine contraction decreases. Yoga also leads to decrease in the scale of dysmenorrhea pain because when the respondent moves, the skeletal muscle relaxed.¹⁰

Gayathry Nayak et al (2014) stated that yoga increases the absorption of calcium from the intestine, stimulate bone remodeling and maintain the load bearing capacity of the bone, reduces the pain in the back of the head, neck, lower back and headache by influencing limbic system modulation of endogenous pain control system.²⁰

The statistical analysis revealed that significant difference in reduction of pain and its effect on functional activity has seen ($p < 0.0001$ for NPRS and $p < 0.0001$ for WaLIDD). So yoga helps in reducing pain and its interference in daily activities in the subjects. The result from the statistical analysis of present study supported the hypothesis which stated that yoga is effective in the management of primary dysmenorrhea in females between 18-25 years.

CONCLUSION

The study concluded that yoga is effective in the management of primary dysmenorrhea in females between 18-25 years.

LIMITATIONS

- The results cannot be generalized to all age groups.
- Detailed history of menstruation was not taken including number of pads used per day and rate of flow.
- Long term follow up of patients was not taken

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