



Review Article

Role of Yoga in Minimizing Stress and Anxiety in Women Experiencing Dysmenorrhea

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Primary dysmenorrhea is characterized by recurring, crampy lower abdominal pain occurring during menstruation in the absence of pelvic pathology. It is the most common gynaecological complaint among adolescents. According to the literature, young females with primary dysmenorrhea experience stress, anxiety, lower-back pain, and depression. Yoga is widely practiced to improve health and promote relaxation. It includes breath regulation, simple meditation, and practicing particular body postures. Regular Yoga practice can serve as an adjunct to the primary treatment of dysmenorrhea symptoms. This study focuses on the impacts and benefits of yoga in young females with dysmenorrhea and associated physiological changes.

Keywords: Dysmenorrhea, Menstruation, Yoga

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INTRODUCTION

Primary dysmenorrhea (PD) is characterized as pain occurring in conjunction with menstruation. It is a common gynaecologic condition commonly seen among young and middle-aged women. Menstrual pain and cramps are significant concerns affecting women of reproductive age on a regular basis [1]. Prevalence rates exhibit variability across diverse populations, encompassing different demographics and age cohorts. Studies and estimations have indicated that PD is prevalent among a significant proportion, ranging from 45% to 95%, of individuals who experience menstruation. Nevertheless, it is important to note that these statistics may vary based on factors such as cultural norms, socioeconomic status, healthcare accessibility, and the methodology employed in research studies [2].

Physiological manifestations following normal menstruation have a wide range of biopsychosocial consequences. Adolescents with dysmenorrhea struggle to develop their biological, social and cognitive abilities [3]. It is well documented that the pathophysiology of monthly pain results from an aberrant increase in the production of vasoactive prostaglandins in the endometrium, causing myometrial hyperactivity, uterine tissue ischemia, and discomfort [4]. Potential causes of uterine hypercontractility have been presented including ovarian steroids, cervical blockage, pituitary hormones, and most significantly prostaglandins [5]. Further it is thought that the endometrium produces prostaglandins throughout an ovulatory cycle, which cause pain experienced just before or during menstruation. The uterus contracts as a result of prostaglandins, which cause the endometrial lining to shed [6]. A family history of dysmenorrhea, high menstrual flow, an early age at menarche and a long menstrual cycle are risk factors for menstrual discomfort [3].

According to a survey, dysmenorrhea was evident in 68.7% of 5,609 secondary school females between the ages of 11 and 20 years in a North Iranian country [7]. A cross-sectional study on PD in Iranian medical students associated with psychological distress concluded women experiencing significant menstruation pain not only report different psychographics from their peers in terms of their mental well-being but also express greater dissatisfaction with their physical appearance when compared to others with normal menstruation [3].

Interventions that address both physical and mental health, such as yoga, tai-chi, and meditation, are referred to mind-body interventions (MBI). MBI not only induces physiological changes such as parasympathetic activation, decreased cortisol secretion, decreased inflammation, and delayed aging, but it also induces psychological changes such as decreased anxiety and sadness [8].

Yoga is a practice done to achieve mental and physical wellbeing, with roots dating back to ancient Indian philosophy [9]. Yoga assists the mind and body with countless benefits focusing on coping with stress, which in turn helps one feel peaceful and at ease [10]. In today's world, yoga is prescribed as a non-invasive technique conveniently used for inducing pain relief that is secure, economical, and has no adverse effects [1]. Yoga combines breathing exercises, mental meditation, and physical exercise to build muscle and reduce stress. Yoga helps the human body and mind cope with stress, worry, and sadness, resulting in a peaceful and relaxed state of being [6]. Yoga poses are effective in reducing menstrual pain symptoms [10]. Surya Namaskar and yoga nidra are among the yoga practices that have been modified for use with clients who have PD [1]. In particular, yoga nidra, also known as "psychic sleep," is a relaxation technique. It is advantageous for women struggling with psychological issues related to menstrual concerns [11]. Yoga nidra differs from regular sleep in several ways, i.e., the mind is in a deeper phase than it is during regular sleep during yoga nidra practice, the consciousness maintains a "blissful awareness," and an intense state of relaxation is attained [11]. It produces disciplined thought as well as physical and mental calm. Thus, an easy and secure intervention for controlling psychological issues connected to menstrual illnesses may be yoga nidra. Regular practice of cat position, tiger stance, cobra pose, bow pose, and fish position helps to stretch and strengthen muscles of the back and pelvic floor, which is beneficial for women with PD [12]. A randomized controlled trial in India found that practicing Yoga nidra had a positive effect on people with hormone imbalances [9]. A variety of methods have been used, including employing medicinal herbs, medications, and complementary and alternative therapies to reduce the pain experienced during menstruation. The emphasis on pain treatment is the most crucial component of menstrual pain therapy [4].

YOGA ASANA'S AND THEIR TARGET BENEFITS

1. Psychological

There is growing evidence showing mental health issues like stress, anxiety, and depression coexist with dysmenorrhea and are associated with long-term pain [13]. Emotional and behavioral concerns are likely to exacerbate following dysmenorrhea and problems related to the menstrual period. For example, smoking during depression and/or anxiety has a negative impact on menstruation, resulting in dysmenorrhea [14]. Yoga offers help to the body and mind to deal with stress, making one feel calm and at ease [10].

Evidence supports mind-body practices including yoga, meditation, and mindfulness to lessen and/or manage the psychological impacts of stress and anxiety [15]. Meditation, yoga, hypnosis, visualization, and muscle relaxation are just a few of the stress-reduction techniques available in the past [16]. In adults, yoga has been extensively explored as a supplemental therapy for a variety of physiological illnesses and psychiatric disorders [15].

Literature states that in addition to yoga nidra, a rhythmic breathing technique called Sudarshan Kriya and Pranayama emphasize breathing in three different rhythms. Sudarshan Kriya Yoga is an advantageous, low-risk, and affordable supplement for the treatment of stress, anxiety, post-traumatic stress disorder, depression, and stress-related disorders [17]. Sitalikarana Vyayama, Surya Namaskar, Asanas, Pranayama, and Yoga Nidra practices (integrated yoga module) should be used for eight weeks as a treatment for anxiety they deliver promising effects [18]. Ujjai Pranayama and Bhastrika come before Sudarshan Kriya and Pranayama and the procedures how to perform are mentioned below in Table 1 [19]. Researchers have found Sudarshan Kriya and Pranayama to improve the body's antioxidant defenses, aiding in the alleviation of depression [20].

2. Physiological

Physiological signs and symptoms following PD comprise breast soreness, nausea, headaches, exhaustion, diarrhea, and tenderness [11]. Studies show practicing asanas has a favorable effect on one's physical health by down-regulating the hypothalamo-pituitary-adrenal axis and sympathetic nervous system [15].

Asanas have physiological benefits for the immune system and particular neurotransmitter activities. In a study by Franklin et al. [21], Gamma-aminobutyric acid levels in the brain were compared between subjects in the control group who performed reading and experienced yoga in an asana-focused session. Participants who practiced Ashtanga's asana-heavy style of yoga showed improvement in their diastolic blood pressure, perceived stress reduction, and advancement of their health, flexibility, upper body, and trunk muscular strength and endurance [21]. As modern yoga includes Surya Namaskar, which can be done either slowly or quickly, numerous scientific studies on short- and long-term Surya Namaskar yoga practice have produced positive physiological effects on the human body [22]. Following one month of yoga practice, women reported normalized heart rate, oxygen consumption (VO_2 sub-max), and minute ventilation (VE sub-max) [23].

3. Musculoskeletal

Yoga has been reported in studies to help people with lower back pain reduce pain and disability [24]. Yoga is advised as a non-invasive technique conveniently used for the management of musculoskeletal pain of diverse origins because it is secure, economical, and has few to no adverse effects [1]. Yoga, when combined with breathing exercises, meditation, and physical exercise, builds muscle and reduces stress. It helps the mind and body adjust to stress, anxiety, and depression, resulting in a calm and relaxed state of being [6]. Moving forward, persistent musculoskeletal discomfort is frequently caused following low back pain in PD. According to longitudinal studies, the practice of yoga is linked to greater exercise tolerance, increased muscle strength, improved flexibility, and a higher maximum aerobic capacity [25]. With hundreds of authorized studios worldwide, Bikram yoga is a particular form of practice well-liked by individuals across the globe. In total, it consists of 26 postures performed in a certain manner, sequence, and timing. A standard instructor dialogue guides posture attainment [25]. Based on previous research, a manualized 75-minute weekly hatha yoga practice was administered for the 12-week therapeutic phase. In addition, breathing and relaxation drills were also instituted with yoga [26].

Iyengar yoga is a popular and safe form of yoga that is based on the teachings of the yoga master B.K.S. Iyengar. Iyengar used therapeutic adaptations of traditional poses to treat a variety of health issues, including lower back pain. Iyengar yoga as a treatment for low back pain has received support from narrative reports, but as far as is known, there has only been one published scientific review [27]. Finally, in women with PD, yoga has demonstrated a decrease in the intensity and duration of pain [28].

4. Respiratory

A study reported that 30%-40% of asthmatic women experience worsening of their asthma symptoms before and during menstruation [29]. One third of women with asthma experience a large peak expiratory flow rate throughout the premenstrual and menstrual periods [30]. As a safeguard, there is growing evidence that practicing breathing techniques is good for the respiratory system [31]. Breathing exercises are a set of voluntarily performed breathing exercises that govern the respiratory frequency, inhalation (puraka), retention (kumbhaka), exhalation (rechaka), and body locks (bandhas) [32]. Pranayama practice enhances cardiac sympathovagal balance and respiratory function, two crucial psycho-physiological stress-related factors [32].

Bhastrika pranayama is a comprehensive yoga breathing technique that alternates periods of gradual inspiration and

Table 1. Procedures of different yoga asanas used for treatment of primary dysmenorrhea

| Yoga name | Position | Procedure |
|---|---|--|
| Ujjai pranayama | Take a comfortable meditation position | <ul style="list-style-type: none"> • Eyes should be closed and relax your entire body • Bring your attention to the air entering your nose, and let it settle and become rhythmic after some time, turn your attention to your neck • Feel or visualize drawing air in and out of the body through the throat rather than the nostrils, as if there is a tiny hole in the throat • Gently tighten the glottis as the breathing slows and deepens to induce a gentle snoring sound in the throat that resembles a sleeping baby. When performed correctly, the abdominal muscles will naturally contract without any effort being done • Long, deep, and controlled breaths should be taken both in and out • Focus on the sound your breath makes in your throat while you practice yoga breathing • Only the practitioner should be able to hear the sound of the breath |
| Bhastrika pranayama | Take a comfortable meditation position | <ul style="list-style-type: none"> • Place your hands in the jnana or chin mudras on your knees • Close your eyes, keep your spine straight, and relax your entire body. Inhale deeply, then exhale quickly through your nose • The next moment, inhale with the same power • Full abdominal muscle expansion causes powerful breathing and strong abdominal muscle constriction causes forceful expiration • Avoid tension • The diaphragm lowers and the abdomen expand during breathing • The diaphragm rises and the abdomen recedes during exhalation • There should be a slight exaggeration in the movements • Count 10 breaths while continuing in this manner • Inhale deeply, then exhale gradually |
| Sudarshan Kriya | Vajrasana or thunderbolt pose | <ul style="list-style-type: none"> • Firstly, start performing ujjai pranayama and after completing ujjai pranayama then practise bhastrika pranayama. Then next step is you have to chant the word om for three times and then repeat all the steps again |
| Surya Namaskar | Divided into 12 positions | <ul style="list-style-type: none"> • Before starting with Surya Namaskar consider the contra-indications for each of the seven component postures before beginning the Surya Namaskar and make sure you can perform them comfortably • In the section of forward bending known as padahasthasana variation, positions 2 and 3 are merged • The vajrasana and backward bending portions each have a separate description of positions 4 and 7 (Ashwa Sanchalanasana and Bhujangasana) • The first five poses are repeated in reverse order from positions 8 to 1 and 2 |
| | 1st position - Pranamasana (prayer pose) | <ul style="list-style-type: none"> • Keep the eyes closed • Maintain your upright position and touch your toes • Slowly bend the elbows and make the Namaskara mudra (palms together in front of the chest) to pay respect to the sun, the creator of all life • Relax your entire body and breathe normally in the entire process |
| | 2nd position - Hasta Utthanasana (raised arms pose) | <ul style="list-style-type: none"> • Hands should be separated, and both arms should be raised and stretched shoulder-width apart over the head • Backbend the upper body, arms, and head slightly • Individual have to inhale while raising the arms |
| | 3rd position - Padahasthasana (hand to foot pose) | <ul style="list-style-type: none"> • From the hips, sag forward until the palms or fingers of both hands are in contact with the floor on either side of the feet • As comfortably possible, bring the forehead as close to the legs • Avoid tension. Knees should remain straight and individual have to exhale while bending forward |
| 4th position - Ashwa Sanchalanasana (equestrian pose) | <ul style="list-style-type: none"> • Place the hands next to the feet on the ground • With the right leg extended as far back as it is comfortable, touch the floor with your toes • While holding the left foot in the same spot on the floor, simultaneously bend the left knee • Arms should remain straight • The body should be held in the ultimate position by both hands, the left foot, the right knee, and the right foot's toes • The inner glance should be directed upward into the middle of the brows while the back should be arched and breathing pattern will be individual will inhale while stretching the right leg back | |

Table 1. Continued

| Yoga name | Position | Procedure |
|-----------|---|---|
| | 5th position - Parvatasana (mountain pose) | <ul style="list-style-type: none"> • Take the left foot back next to the right foot while keeping the hands and right foot stationary • Raise the buttocks and drop the head such that the back and legs are the two sides of a triangle • In the final position, the arms and legs straighten, and the heels point downward • Bring the head and shoulders down toward the knees • Don't strain and the breathing pattern will be exhalation while taking the left leg back |
| | 6th position - Ashtanga Namaskara (salute with eight parts or points) | <ul style="list-style-type: none"> • Hold your hands and feet firmly in place • The feet will rise up onto the toes as you bend your knees, lower your torso, and chin to the floor • In the final posture, the floor is only touched by the chin, hands, chest, hands, and toes • The chin, chest, and knees should all strike the floor at the same time • If this isn't possible, lower the knees, chest, and chin in that order • The abdomen, hips, and buttocks should all be elevated • Breathing pattern is, individual has to hold out the breath in this pose |
| | 7th position - Bhujangasana (cobra pose) | <ul style="list-style-type: none"> • Hold your hands and feet firmly in place • Sliding the chest forward and lifting the head, shoulders, and elbows while maintaining a straight back creates the cobra stance • The hips and buttocks will be brought to the floor as a result turn your head back and look up at the middle of your brows • The arms support the trunk while the thighs and hips are still on the floor. The arms will continue to be slightly bent unless the spine is extremely flexible • The breathing pattern will be inhalation while raising the torso and arching the back |
| | 8th position - Parvatasana (mountain pose) | <ul style="list-style-type: none"> • The hands and feet stay in position 7 throughout • Assume parvatasana from bhujangasana • Utilizing the strength of the arms to lift the buttocks and lower the heels to the ground while maintaining straight arms and legs • Breathing pattern will be exhalation while raising the buttocks |
| | 9th position - Ashwa Sanchalanasana (equestrian pose) | <ul style="list-style-type: none"> • Keep the right foot in place and the palms flat on the ground • Bring the left foot forward in front of the hands while bending the left leg. Push the pelvis forward while simultaneously bringing the right knee to the floor • Look at the centre of the eyebrows with your head tilted back and your back arched • Breathing pattern will be Inhalation while assuming the pose |
| | 10th position - Padahastanasana (hand to foot pose) | <ul style="list-style-type: none"> • Next to the left foot, bring the right foot forward • Set both legs straight • Without straining, bring the forehead as near to the knees as you can and you have to exhale while performing the movement |
| | 11th position - Hasta Utthanasana (raised arms pose) | <ul style="list-style-type: none"> • Maintain a straight line with the arms and spine • Stretch the arms out above the head while raising your torso • Maintain shoulder-width separation between your arms • Head, arms, and upper body should all slightly sway backward and have to inhale while straightening the body |
| | 12th position - Pranamasana (prayer pose) | <ul style="list-style-type: none"> • Bring both the palms in front of the chest and exhale while being in the final position |

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expiration through one nostril with quick, shallow breathing employing the expiratory muscles, as well as inspiratory apneas connected to additional chest inspiratory muscle activation and the procedure how to perform is mentioned below in Table 1 [19,31].

CONCLUSION

The present review concludes that yoga delivers a powerful impact by lowering stress, anxiety, depression, lower back pain, and premenstrual asthma and can be viewed as supplementary medicine, lowering the cost of medical care by minimizing medications and hospital stays in women experiencing dysmenorrhea. Yoga has historically been shown to improve well-being, mood, attention, mental

focus, and stress tolerance. Yoga offers numerous benefits that extend beyond its direct impact on health, making it a comprehensive approach for addressing the challenges associated with PD. According to reports, yoga is a versatile method for managing the interaction among various aspects of well-being, including psychological, physiological, musculoskeletal, and respiratory components. By employing practices such as Sudarshan Kriya and meditation, individuals can effectively alleviate symptoms of tension, anxiety, and depression. Regular physical exercise offers several benefits to the human body. Firstly, it enhances flexibility, allowing individuals to achieve a wider range of motion in their joints. Secondly, it contributes to improved cardiovascular health, promoting the efficient functioning of the heart and circulatory system. Lastly, exercise plays a role in regulating blood pressure through physiological mechanisms. Yoga modalities such as Bikram and Iyengar are renowned for their musculoskeletal benefits, particularly in the realm of alleviating lower back pain. Pranayama breathing techniques have been found to have positive effects on respiratory health, particularly among women with asthma who are experiencing menstruation. Yoga offers a comprehensive approach that effectively tackles the diverse challenges associated with dysmenorrhea.

NOTES

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