



Original Research Article

Reduction of anxiety and pain in primigravida mothers with modified Iyengar yoga: A clinical study



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ABSTRACT

Background: In primigravidas, childbirth, although physiological can be a frightening event. Two factors that accompany labor are anxiety and pain. This study aims to investigate the benefits of Iyengar yoga for anxiety and labor pain in primigravida women.

Material and methods: The study involved 59 female primigravida subjects, which were divided into 29 controls (without the provision of yoga exercises) and 30 people who received Iyengar yoga exercise. Anxiety and the degree of labor pain will be measured using the Hamilton Scale Rating for Anxiety (HSRA) and visual analog scale (VAS), respectively.

Results: Iyengar yoga significantly reduced VAS and HARS values compared to controls ($p < 0.05$).

Conclusion: It was concluded that Iyengar yoga in primigravida women was beneficial in reducing labor pain and anxiety. Thus, the Iyengar yoga technique can be a method for supporting the success and safety of labor.

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1. Introduction

Primigravida is a woman who is pregnant for the first time or has been pregnant once. Physiological symptoms of pregnant women in seeking a general practitioner include nausea, vomiting, pelvic cavity pain, and back pain. These symptoms can appear simultaneously, even triggering anxiety in primigravida [1]. Anxiety during pregnancy triggers an increase in nausea and vomiting [2,3]. Epidemiologically, anxiety disorders occur in 15–50% of pregnant women and may have an impact on mothers and children born [4,5]. Anxiety disorders will determine the type of delivery chosen [6]. Previous studies have stated that anxiety tends to decrease in multigravida women [7].

In addition to anxiety, labor pain as a result of cervical dilatation and uterine contractions will gradually increased in intensity in the partum period [8]. Although physiologically valuable, the extreme degree of pain will trigger changes in cardiopulmonary function, neuroendocrine response, changes in acid-base blood, and uterine contractility. This pain can affect postpartum conditions and events

[9–11]. Efforts to suppress labor pain have become one method of making labor safer. Some attempts include analgesics and epidural analgesia, but there are still side effects and are expensive [12–14].

Yoga is an ancient complementary technique that has become popular in the world. Yoga is practiced regularly for several purposes, such as to increase energy, increase immune function, improve health, and prevent disease [15]. The safety of yoga in the first trimester of pregnancy has been demonstrated in a previous study [16]. Yoga exercises are more effective than walking exercises or prenatal standard exercises because Yoga intervention decreases incidences of prenatal disorders, small gestational age, pain and stress [17]. Yoga is recommended for the management of pregnancy-related low back pain and pelvic pain [18,19]. However, its benefits are not yet known for labor pain.

Iyengar yoga is a type of Hatha yoga, originally developed by Iyengar. Iyengar yoga's focus is on strength, balance, breathing, and alignment of body postures [20]. This yoga technique provides the opportunity to use additional tools (such as chairs or wood) to help balance and stretch. This is easy to apply at all ages and fitness levels and is suitable for beginners [21]. Previous studies have shown that Iyengar yoga can reduce low back pain and pediatric pain [22–25]. Iyengar yoga can also suppress depressive symptoms [26]. A study into the benefits of Iyengar yoga in suppressing pain and anxiety is still limited to the non-pregnant population or other diseases, none of which has been applied to primigravida women.

Abbreviations: ACC, Anterior cingulate cortex; HARS, Hamilton scale rating for anxiety; VAS, Visual analog scale.

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Therefore, this study aims to investigate the benefits of Iyengar yoga for anxiety and pain in primigravida labor.

2. Material and methods

2.1. Subjects

This study was true experimental design with a post-test only control group. This study's patients were primigravida women in their third trimester who were separated into two study groups: the control group and the yoga group. The inclusion criteria for this study were age 20–35 years, primigravida, gestational age of 30 weeks, and with no prior yoga experience [27], and no analgesic treatment in labor. Exclusion criteria included women with multiple pregnancies, having medical limitations on exercise, using analgesics, and participating in other physical exercises. The setting of this study was private practice midwifery in Bantul Region, Special Region of Yogyakarta, Indonesia.

The sample size was calculated based on the change in anxiety level from a prior study in which 29 postpartum women were randomly assigned to yoga or a control group and demonstrated significant reduction in anxiety level [28]. Considering dropout rate of 10%, each group had a minimum of 32 subjects.

2.2. Iyengar yoga

Iyengar exercise was adopted and modified from previous studies [29]. Modified Iyengar yoga exercises were given to pregnant women in exercise classes led by certified yoga instructors with pre-natal gentle Yoga qualification. The practice of yoga was done once a week; the duration of the exercise is 90 min each time. The total duration of training was twelve weeks (three months). Previous studies found yoga to be recommended for low-risk women during pregnancy [30]. Besides, regular and long-term Hatha yoga exercise (90 min per week, for 8 weeks) was able to reduce perceived stress [31]. The details of the yoga exercise are shown in Fig. 1 and Table 1.

The subjects were assisted in adopting the sequence of poses and using selected breathing techniques. The exercise sequence included standing poses, front extension, inversion, backbend, and bends. Assistance can include props according to individual needs. Subjects start with a simplified version and progress to a more advanced version. Subjects were prohibited from taking sports

classes or practicing yoga outside the classroom. We conducted interviews about pregnancy and exercises before and after yoga practice.

2.3. Measurement of the degree of pain

Measurement of the degree of pain was done using a visual analog scale [32].

2.4. Measuring the degree of anxiety

Degree of anxiety was measured using the Hamilton Scale Rating for Anxiety (HSRA) method [33,34]. Each of the 14 items was graded from 0 to 4, with 4 being the most severe. The overall score varies between 0 and 56. A score of 17 suggests mild anxiety, a score of 18–24 indicates mild to moderate anxiety, and a score of 25–30 indicates moderate to severe anxiety.

2.5. Ethics

This study was approved by the ethics committee of the Faculty of Health Sciences, Achmad Yani University, Yogyakarta, Indonesia (Number SKep/031/KEPK/IV/2019).

2.6. Statistical analysis

The pain and anxiety levels from each group were recorded and expressed as mean standard deviation. The t-student test was used to check if there were any significant differences in pain and anxiety levels between the control and yoga groups. All p values < 0.05 was considered to be statistically significant.

3. Results

The level of education, working status, and frequency of antenatal care are shown in Table 2.

Table 3 shows the characteristics of pregnancy outcome. There was no statistically significant variations in age between the two study groups ($p > 0.05$). All of the subjects had normal vaginal delivery. There were no postpartum complications for the mother and baby. Yoga did not result in a significant difference in weight of the baby when compared to the control group ($p > 0.05$).



Fig. 1. The details step of Yoga exercise.

Table 1
The goal and details about Modified Iyengar yoga exercise.

Type of position	Goal	Details of exercise
CAT-COW POSE	This exercise has several goals, including reducing baby's pressure on the spine, optimizing baby's occiput posterior to occiput anterior, relaxing the spine, helping balance the pelvis, and strengthening the uterine support muscles and uterus.	Take a table pose position. Looking towards the front, open the chest and extend the back. Arch your back, look towards your stomach. Keep your hands in a straight position. Put the pelvis down, tighten the abdominal muscles.
CHILD-POSE	This step has several goals: relaxing the body, reducing pressure on the spine so that it is comfortable for the spine, and opening the pelvic cavity.	Take a table pose. Open your knees as wide as the mat and bring the backs of your feet together. Place the buttocks on the heels. On inspiration, raise both hands up and stretch the spine. When exhaling, fold the body forward and then head to the mattress or block. In the holding position, lengthen the spine by pulling the hands upwards while continuing to breathe. On inspiration, raise both hands up along with the body. When expiration lowers both hands.
ADHO-MUKA SVANASANA	This exercise has several goals, including helping breech babies to head position, stretching hamstrings, calves, heels, and hands, preventing twisting of the umbilical cord, and optimizing the baby from occiput posterior to occiput anterior.	Take a table pose position. On inspiration, look forward, open the chest and extend the back. On expiration, lift the pelvis up, extend the spine and align the ears with the arms. When holding, then keep breathing. When exhaling, return to the table pose.
SAVASANA	The goal of this study is to relax the body to boost the mood	Take a left side sleeping position. Straighten the left leg and slightly bend the right leg. Relax the body by regulating the breath.

Table 2
The level of education, working status, and antenatal care in all subjects.

Characteristics	Category	Group		p value*
		Control group (n = 29)	Yoga group (n = 30)	
Level of education	Senior high school	3 (10.34%)	5 (16.66%)	0.2732
	Diploma/bachelor	16 (55.17%)	20 (66.68%)	
	Master	10 (34.48%)	5 (16.66%)	
Working status	Non-working	16 (55.18%)	21 (70.00%)	0.2390
	Working	13 (44.82%)	9 (30.00%)	
Antenatal care	5–10	14 (48.28%)	17 (56.67%)	0.5187
	>10	15 (51.72%)	13 (43.33%)	

Note: *Chi-square test.

Table 3
The characteristics of age and pregnancy outcome.

	Control group (N = 29)	Yoga group (N = 30)	p value
Age (years)	27.827 ± 2.713	27.266 ± 2.377	p > 0.05
Vaginal delivery (%)	29 (100%)	30 (100%)	p > 0.05
Postpartum complications	None	None	p > 0.05
Baby weight (gram)	3040.862 ± 138.667	3051.333 ± 100.609	p > 0.05

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The visual analog score scores between the two study groups is shown in Fig. 2. The visual analog analog scores in the Yoga group was significantly lower than the control group (p < 0.05).

The HARS scores for the two study groups are shown in Fig. 3. The Yoga group's HARS score was significantly lower than that of the control group's (p < 0.05).

4. Discussion

This study aimed to investigate the benefits of Modified Iyengar yoga in suppressing labor pain and anxiety. It involved 59 female primigravida subjects, divided into 29 controls (without training) and 30 people who received the Modified Iyengar yoga training. There was no age difference between the two groups. In addition, all subjects had normal vaginal delivery, normal baby weight, and no postpartum complications. Our finding is consistent with previous studies that found yoga was acceptable for young pregnant women [35–38].

Iyengar yoga is a combination of the essential elements of yoga, namely the position (asana) and breath control (pranayama) accompanied by the use of stone tools (belts, wood, ropes, and blankets). This tool serves to maintain the position [39]. The pain in the first stage of labor is visceral and not localized. Pain is more strong and focused in the lower abdomen during the second stage of labor [40]. In this study, labor pain scores were significantly

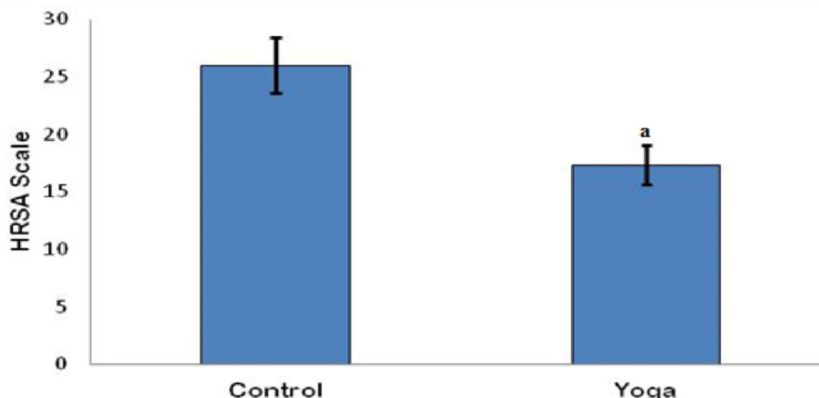


Fig. 2. The visual analog scale in the control and Yoga group. Note: data presented as mean ± standard of deviation; ^a: p < 0.05 when compared to the control group.

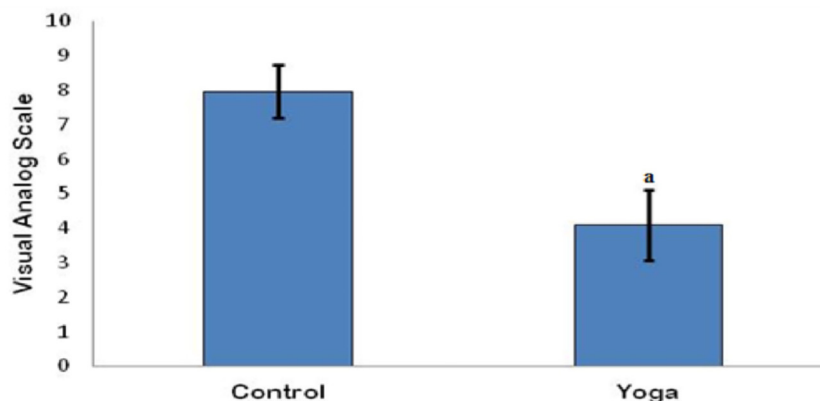


Fig. 3. The visual analog scale in the control and Yoga group. Note: data presented as mean \pm standard of deviation; ^a: $p < 0.05$ when compared to the control group.

lower in the Modified Iyengar yoga group than controls ($p < 0.05$). This finding shows that the practice of modified Iyengar yoga can reduce labor pain in primigravida mothers. This study is consistent with previous findings that yoga can suppress labor pain [17,36]. In this study, the Yoga group's HARS score reduced much more than the control group's. This result indicates that anxiety in the group following Iyengar yoga is lower than control. This study extends previous findings that yoga can reduce anxiety throughout pregnancy by decreasing salivary cortisol levels [41]. Overall, we hypothesized that the mechanism of reducing pain and labor anxiety was caused by Iyengar yoga's capacity to increase pain tolerance, decrease unpleasant feelings, suppress of anxiety, and pain-related distress. These effects in the brain are based on decreased activation of the contralateral primary sensory, orbitofrontal, and thalamus (cortex) and increased activity of the ACC and anterior insula [42].

5. Conclusions

It was concluded that Iyengar Yoga in primigravida women was beneficial in suppressing labor pain and anxiety. Thus, the Iyengar Yoga technique can be a good method for supporting the success and safety of labor. In addition, the capacity to relieve pain through yoga practice can be a viable option in various therapeutic situations. Other applications necessitate a more in-depth investigation.

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Declaration of competing interest

No competing interest.

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