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THE EFFECTIVENESS OF PRENATAL YOGA AS COMPLEMENTARY THERAPY ON BIRTH OUTCOMES

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Abstract

Chilbirth may be a life-changing experience for women that can have an impact on them both emotionally and physically and leave them with lifelong memories. Preparing for childbirth from the beginning of pregnancy helps women manage their prenatal anxiety and produce healthy birth outcomes. The study literature is reviewed on databases from 2017-2023 of Science Direct, Cochrane Library, PubMed, and Google Scholar with inclusion and exclusion criteria. The result of analysis from 15 articles selected, it is concluded that prenatal yoga is significantly helping to shorten the labor duration in vaginal birth, lessen labor pain, decrease premature delivery, and significantly decrease the possibility of perineal tear, and improve the neonatal wellbeing.

Keywords: *prenatal yoga, birth outcomes, complementary therapy*

Abstrak

Persalinan dapat menjadi peristiwa yang mengubah hidup seorang wanita dan memengaruhi mereka baik secara fisik maupun emosional dan akan menciptakan kenangan seumur hidup. Mempersiapkan persalinan sejak masa kehamilan memungkinkan wanita untuk mengatasi kecemasan kehamilan dan menciptakan hasil kelahiran yang positif. Tinjauan pustaka ini bertujuan untuk mengetahui mangfaat prenatal yoga terhadap hasil kelahiran. Literatur studi ditinjau pada database dari 2017-2023 Science Direct, PubMed, Cochrane Library dan Google Scholar dengan kriteria inklusi dan eksklusi. Hasil analisis dari 15 artikel terpilih, disimpulkan bahwa prenatal yoga secara signifikan membantu mempersingkat durasi persalinan pervaginam, mengurangi nyeri persalinan, mengurangi persalinan prematur, dan secara signifikan mengurangi kemungkinan robekan perineum, dan meningkatkan kesejahteraan neonatal.

Kata Kunci: Yoga Prenatal, Hasil Kelahiran, Terapi Komplementer

INTRODUCTION

For women, giving birth may be a life-altering experience that could have an impact on them both emotionally and physically as well as leave them with lifelong memories (Lundgren et al., 2009; National Institute for Health and Care Excellence, 2014). One of the biggest transformations in a woman's life is the transition from being a woman to becoming a mother (Slomian et al., 2021).

Preparing for childbirth from the beginning of pregnancy helps women to manage pregnancy's anxiety and achieve positive birth outcomes (Madhavanprabhakaran et al., 2016; Mousavi et al., 2021). American College of Obstetricians and Gynecologist (ACOG) recommend pregnant women to do exercise during pregnancy because it has health benefits. Exercise habits during pregnancy could affect a woman's health for the rest of her life (American College of Obstetricians and Gynecologist, 2020). Childbirth has a dynamic and continuous process which is influenced by many factors including the force of labor, fetus, the anatomy of birth canal, mental and physiological factors of maternal. Pregnant women typically seek out complementary therapies, including prenatal yoga, pregnancy massage, meditation, tai chi, acupuncture, and acupressure, to facilitate normal delivery process and improve birth outcomes (Rong et al., 2021).

Yoga originates from India and has a meaning which are balancing and harmonizing the body, mind and emotions combining breathing techniques, relaxation, meditation, and physical postures (Raveendran et

al., 2018; Rong et al., 2020). Yoga becomes popular nowadays as complementary therapy in pregnancy because it helps pregnant women to cope with physiological discomforts during this period, such as low back pain, nausea and vomiting, insomnia, heartburn, fatigue, striae gravidarum, constipation, lower limb edema, hemorrhoids, and varicose veins. These modifications may have an impact on the pregnant women's everyday activities and quality of life, which may then influence the health of the fetus. (Rong et al., 2021).

Prenatal yoga helps strengthen some important muscles for labor and improve a mother's posture. (Jahdi et al., 2017a). In some research, doing yoga in pregnancy can be a non farmacological therapy for managing labor pains and significantly reduce the duration of labor and delivery (Bolanthakodi et al., 2018; Jahdi et al., 2017; Mohyadin et al., 2021). Doing yoga in pregnancy will help pregnant women preparing for a positive birth and neonatal outcomes, such as shorter labor duration in normal delivery, lessen labor pain, reduce premature delivery, and significantly decrease the possibility of perineal tear, and give birth to baby with normal birth weight (Bolanthakodi et al., 2018; Daniyati & Mawaddah, 2021; Evrianasari & Yantina, 2020; Franciska et al., 2021a; Mohyadin et al., 2021). In this study, the researcher is interested in doing a literature review based on background information about the efficacy of prenatal yoga on birth outcomes.

METHOD

This study used a literature review with

inclusion criteria : (1) Participants were healthy expectant mothers who experienced no pregnancy problems.; (2) interventions : prenatal yoga; (3) Regular prenatal care or other forms of exercise served as the control group or comparative; (4) birth outcomes : percentage of vaginal births, or Caesarean section rate, premature delivery rate, newborns's birth weight, birth weight of newborn, APGAR score, length of labor, and labor pain; (5) randomized controlled trials, quasi-randomized controlled trials, and non-randomized controlled trials are all types of experimental study designs will be selected.

The study literature is based on databases from 2017-2023 of Science Direct, Cochrane Library, Google Scholar, and PubMed with advanced search only research articles included. There was no restriction on languages. The keyword strategy was as follow:

#1 birth outcomes OR birth outcomes OR delivery outcomes OR childbirth outcomes

#2 prenatal yoga OR antenatal yoga OR yoga during pregnancy OR yoga

#1 AND #2

The following restrictions were not included in this study: (1) non experimental study design; (2) The description of research design and implementation was unclear; (3) The following birth outcomes were not present: rate of vaginal delivery, or Caesarean section rate, premature delivery rate, newborns's birth weight, APGAR score and the length of labor, and labor pain.

RESULTS

There were 1096 publications total, however 1081 research were disregarded because they were duplicates or unrelated.

15 papers that met the inclusion criteria were reviewed the entire texts of the articles (Figure 1). Six randomized controlled trials and nine non-randomized controlled trials are included in the literature studies about the effect of prenatal yoga on delivery outcomes.

In the 15 selected articles, researchers found that pregnant women that doing yoga during pregnancy will give positive birth outcomes, such as increasing the rate of normal delivery, reducing labor pain, shortening the duration of labor, and reducing the possibility of tears in the birth canal and reducing the incidence of caesarean section. Prenatal yoga also significantly decreases the prevalence of low birthweight and preterm newborns.

DISCUSSION

Prenatal Yoga and Labor Pain

Labor pain is the most painful experience for a woman in her lifetime reported in the literature. Labor pain involves sensory dimension of pain. Yet it is still a contradictory experience of pain for women, it is painful but also desirable for childbirth process (Whitburn, 2013).

Management of labor pain is the strategy to improve maternal satisfaction on childbirth experience, increase maternal fetal bonding, and require the use of analgesics and anesthesia drugs. Even the usage of analgesics and anesthesia drugs are effective, but also affect negative side effect for both mother and fetus (Jahdi et al., 2017).

To manage labor pain, it is advised to take a multidisciplinary approach and combine pharmacological and

nonpharmacological methods as desired by the individual (Bolanthakodi et al., 2018).

Yoga becomes complementary therapy in pregnancy to improve maternal strength and flexibility and enhance women's ability to become in tune to her body and response of labor (Sun et al., 2010). Yoga is thought to increase comfort during labor pain by encouraging deep relaxation, various asana postures, slow, controlled breathing technique (pranayama), mind calming technique practice such as meditation and chanting. Yoga has been speculated as non-pharmacological labor management which produces physiological changes by altering the pain experience of pregnant women to be mindful and become more comfortable. Yoga has been considered to decrease heart rate (sympathetic nervous system activity), reduce inflammatory markers (e.g., tumor necrosis factor, interleukin-II, CRP) and stress markers (e.g., cortisol); while concurrently enhance flexibility, strength, circulation, and cardiorespiratory capacity (Bolanthakodi et al., 2018; Songporn. et al., 2008).

According to seven of the papers below (Table 1), practicing prenatal yoga for 60 to 90 minutes each time can greatly lessen pain during the first and second stages of labor.

Prenatal Yoga dan Duration of Labor

The strength, length, and coordination of uterine contractions change during labor because of a physiological rise in maternal hormones such as catecholamine. Consequencely, delaying the duration of labor as well as decreasing newborn's APGAR scores

(Songporn. et al., 2008). Mostly women feel the fear of childbirth since her pregnancy, therefore they are seeking for calming technique to cope with the fear. The fear is related to self-efficacy during labor. According to findings from earlier studies, boosting women's self-efficacy will increase their capacity to manage the discomfort, anxiety, and fear of childbirth by doing Yoga calming breathing technique (pranayama), chanting and meditation (Songporn. et al., 2008; Rong et al., 2021).

The study suggests practicing yoga for at least one hour under supervision two or three times per week for 12 weeks can reduce labor discomfort and cut labor time in half.

Doing minimal one hour supervised yoga, two or three times a week for 12 weeks to decrese labor pain and shorten the duration of labor (Daniyati & Mawaddah, 2021; Jahdi et al., 2017a; Rong et al., 2021; Wadhwa et al., 2020; Yuliani & Andarwulan, 2022).

Prenatal Yoga and Perineal Tear

The pelvic floor, which is made up of the pelvic girdle and the muscles between the spine, hips, and pubic bone that support the genitourinary systems and organs, plays a physiological function in labor. The pelvic floor's joints and muscles are both involved in labor. For the infant to descend smoothly and to reduce or avoid perineal tearing, these muscles must be flexible. Additionally, maintaining muscle strength throughout the postpartum period is essential for healing, resuming sexual intimacy, and preventing urine incontinence. Doing yoga asanas such as badha konasana (stretches the upper legs), balasana,

malasana, deep abdominal breathing and chanting will improve the strength of pelvic muscle, opens the hips and help in making the body to get ready for labor (Kannan et al., 2015; Singh Dhapola et al., 2018).

Prenatal Yoga and Childbirth Method

Prenatal Yoga is suggested to women to prepare their body, mind, and soul to a pleasant labor and delivery, especially for normal vaginal birth. Yoga during pregnancy is thought to raise the likelihood of a normal vaginal delivery and reduce the rate of caesarean sections when practiced for a minimum of two or three times per week for 60 to 90 minutes each session.

Prenatal Yoga and Neonatal Birth Weight

In previous study, it is stated that women that doing prenatal yoga will improve the flexibility and strength in result they will become more in tune to their body to respond their labor process, concurrently it will help their physiological aspect. An increase of catecholamine will affect to a decrease of the strength, duration, and coordination of uterine contractions. Because of this hormon change, prolonging labor will impact to newborn's well-being (Songporn. et al., 2008; Jahdi et al., 2017).

Practicing prenatal yoga since conception to prepare for a conscious labor which can increase the positive neonatal outcomes such as decreasing the rate of low birth weight, preventing premature delivery, and increasing infant's APGAR Score (Bolanthakodi et al., 2018; Jahdi et al., 2017a; Yekefallah et al., 2021).

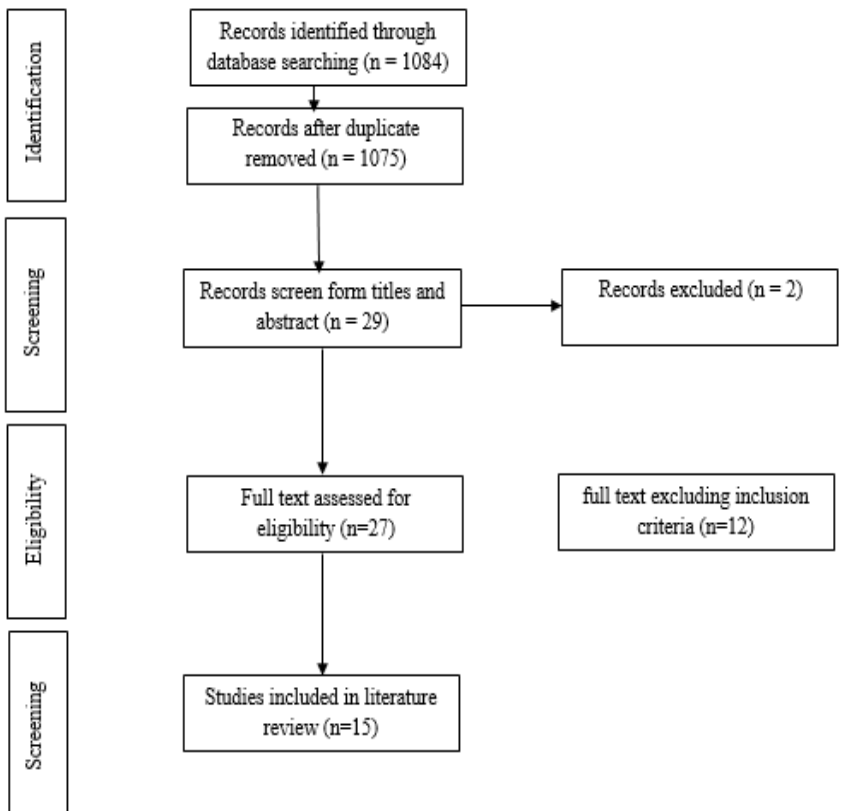

Figure 1 Flow Diagram of Study Selection

Table 1 Characteristic of Fifteen Selected Studies

No	Title	Author, Year	Country	Study Type	Sample Size (N)	Study Groups Experimental/Control	Outcome Measures
1.	Yoga during pregnancy: The effects on labor pain and delivery outcomes (A randomized controlled trial)	(Jahdi et al., 2017b)	Iran	randomized control trial	60 primiparous women, aged 18–35 years old (30/30)	Yoga (60 minutes sessions, three times a week) / routine midwifery care	• Apgar Scores: no statistical differences, • Newborn birth weight (p>0.05), • Duration 2nd Stage of Labor (p=0,04), • Duration 3rd stage of Labor (p=0,01), • Labor

No	Title	Author, Year	Country	Study Type	Sample Size (N)	Study Groups Experimental/Control	Outcome Measures
							pain cervical dilatation 3-4 cm (p=0,01), • Labor pain after 1st & 2nd (p=0,01), • Rate of cesarean: 13,3 % (intervention), 50% (control),
2.	Prenatal Yoga: Effects on Alleviation of Labor Pain and Birth	(Bolanthakodi et al., 2018)	India	randomized controlled trial	200 primigravida (100/100)	Yoga (30 min practice sessions, thrice a week) / routine	• The requirement for induction (p<0.044),

No	Title	Author, Year	Country	Study Type	Sample Size (N)	Study Groups Experimental/Control	Outcome Measures
	Outcomes					prenatal health care	• requirement of oxytocin augmentation (p<0.070), • Normal vaginal birth (p<0.037), • requirement of caesarean sections (p<0.048), • Duration 1st stage of labor (p<0.001)

No	Title	Author, Year	Country	Study Type	Sample Size (N)	Study Groups Experimental/Control	Outcome Measures
							, • Duration 2nd stage of labor (p<0.001) , • Labor pain on cervical dilatation 3-4 cm (p<0.0001) • Labor pain on cervical dilatation 8-10 cm (p<0.089) , • The tolerance of pain

No	Title	Author, Year	Country	Study Type	Sample Size (N)	Study Groups Experimental/Control	Outcome Measures
							better in the study group as shown by NPIS (p<0.001) , • Low birth weight (<2500 g) (p<0.042) , • preterm deliveries (p<0.785)
3.	The Effect of Yoga Towards Birth Delivery Output	(Karnasih , 2018)	Indonesia	a pre-experimental design	22 pregnant women on 3rd semester (11/11)	Yoga / routine prenatal health care	• Duration 1st stage of labor: p<0,005 • Duration of 2nd stage of labor: p<0,005

No	Title	Author, Year	Country	Study Type	Sample Size (N)	Study Groups Experimental/Control	Outcome Measures
							• Labor pain: p<0,005
4.	Prenatal Yoga Program on Primigravida 3rd Trimester Reducing Complaints in the First Stage and Self-Efficacy in the Labor	(Pont et.al, 2019)	Indonesia	randomized controlled trial	36 primigravida Trimester III (18/18)	Yoga (60 minutes sessions, twice a week) / routine prenatal health care	• The average value of complaints of labor in the first stage of 4cm cervical opening was 6.55 (p=0,000), • The average value of complaints of labor at 8cm cervical

No	Title	Author, Year	Country	Study Type	Sample Size (N)	Study Groups Experimental/Control	Outcome Measures
							opening obtained a mean number of 7.19 (p=0,000) • The average self-efficacy in 4cm cervical opening p=0,000 • The average self-efficacy of labor opening at 8cm is p<0,005. • Prenatal Yoga

No	Title	Author, Year	Country	Study Type	Sample Size (N)	Study Groups Experimental/Control	Outcome Measures
							Program is effective for primigravida trimester III in reducing first stage complaints and self-efficacy at the first stage of labor.
5.	The Influence of Prenatal Yoga On The Maternity Outcomes	(Evrianasari & Yantina, 2020)	Indonesia	quasi-experimental design	60 Trimester III pregnant women (30/30)	Yoga: <4 times in 3rd trimester / Routine Midwifery Care	• Labor pain in 1st stage of Labor Mean : Yoga = 3,80 (p<0,005), Control : 6,47 (p<0,005)

No	Title	Author, Year	Country	Study Type	Sample Size (N)	Study Groups Experimental/Control	Outcome Measures
							• Duration of 2nd Stage of Labor Mean: Yoga = 15,67, Control = 33,07 (p<0,05) • Rupture perineum Mean: Yoga = 1,33, Control = 2,13 (p<0,005)
6.	Effect of Antenatal Exercises, Including Yoga, on the Course of Labor, Delivery	(Wadhwa et al., 2020)	India	retrospective study	152 pregnant women (76/76)	Antenatal exercise (including yoga) antenatal exercises, including resistance, aerobic,	• Normal vaginal birth : Antenatal exercise Mean = 48 (p<0,05), control goup = 28 (p<0,05). • Cesarean section

No	Title	Author, Year	Country	Study Type	Sample Size (N)	Study Groups Experimental/Control	Outcome Measures
	and Pregnancy: A Retrospective Study					yoga, pelvic floor, stretching, relaxation exercises, or a combination program with or without walking, minimum 3 months (minimum half an hour) session per wee / Control : whom did no specific exercises or only walked during	delivery: Antenatal exercise = 28 (p<0,05), Control group = 72 (p<0,05). • Duration of delivery * (minutes) : Antenatal exercise = 401 (p<0,05), Control group = 607 (p<0,05) • Newborn infant weight * (grams) p<0,005

No	Title	Author, Year	Country	Study Type	Sample Size (N)	Study Groups Experimental/Control	Outcome Measures
						pregnancy	
7.	Efficacy of yoga on physiological and psychological discomforts and delivery outcomes in Chinese primiparas	(Rong et al., 2021)	China	randomized controlled trial	64 Pregnant women (32/32)	Yoga (60 minutes sessions, 12 week, three times per week) / routine prenatal health care	• childbirth self-efficacy (p =0.001), • Normal vaginal birth (p =0.039), • Duration 1st stage of labor (p =0.012), • Duration 2nd stage of labor (p =0.001),

No	Title	Author, Year	Country	Study Type	Sample Size (N)	Study Groups Experimental/Control	Outcome Measures
							• Duration 3rd stage of labor (p =0.002)
8.	Effect of Prenatal Yoga on Duration of the First Stage of Labor and Perineal Rupture in Primigravida Mothers	(Daniyati & Mawaddah, 2021)	Indonesia	pre-experimental design with the one shot case study design.	26 trimesters III primigravida pregnant women (13/13)	Yoga 1x meeting / routine prenatal health care	• Duration of 1st stage labor on intervention group : <3 hours, and the control group : 5-6 hours • The duration of the first stage of

No	Title	Author, Year	Country	Study Type	Sample Size (N)	Study Groups Experimental/Control	Outcome Measures
							labor p<0,005 • Perineal Rupture p<0,005
9.	Relieve Labor Pain with Hypno Prenatal and Prenatal Yoga	(Francisk a et al., 2021b)	Indo nesi a	an experime ntal design with a Static Group Comparis on strategy	60 pregnant women (30/30)	Hypno prenatal and Yoga one a week (60 minutes sessions for 4 times/routi ne prenatal health care	• Labor pain intensity mean on interventi on group: 2,7 (p<0,005) • Labor pain intensitu on control group: 4,33 (p<0,005)
10.	Reduction of anxiety	(Francisk a et al.,	Indo nesi	True experime	59 female primigravi	Iyengar Yoga with	• Normal Vaginal

No	Title	Author, Year	Country	Study Type	Sample Size (N)	Study Groups Experimental/Control	Outcome Measures
	and pain in primigravida mothers with modified Iyengar yoga: A clinical study	2021b)	a	ntal design with a post-test only control group	da (30/29)	modification : once a week during 12 weeks (90 minutes sessions) / routine prenatal health care	birth p>0,005 • Postpartum complications p>0,005 • Baby weight's mean on yoga group : 3040.862 (p>0,005), control group : 3051.333 (p>0,005) • Labor pain with Visual Analog Score (VAS)

No	Title	Author, Year	Country	Study Type	Sample Size (N)	Study Groups Experimental/Control	Outcome Measures
							p<0,005 • Labor pain with Hamilton Scale Rating for Anxiety (HSRA) : p<0,005
11.	The Effectiveness of Prenatal Yoga on Ballard Score and Newborn Babies Anthropometry	(Longulo et al., 2021)	Indonesia	a randomized controlled trial	40 (20/20)	Yoga 12 times (60 minutes sessions) / antenatal health care	• Ballard Score of yoga group's mean : 27, 50 (p<0,005), BS Score of Control Group : 13,50 (p<0,005) • Body Length of Newborn : Yoga group = 28,75 (p<0,005),

No	Title	Author, Year	Country	Study Type	Sample Size (N)	Study Groups Experimental/Control	Outcome Measures
							Control Group : 12,25 (p<0,005) • Body Weight of Newborn : • Head Circumference of Newborn
12.	The effect of yoga on the delivery and neonatal outcomes in nulliparous pregnant women in Iran: a clinical trial study	(Yekefallah et al., 2021)	Iran	a clinical trial study and using the random sampling	70 pregnant women (35/35)	Yoga : twice a week (each session lasting 75 min) / Routine prenatal health care	• Normal vaginal birth (p = 0.101) • Cesarean section (p = 0.044) • Preterm delivery (p = 0.039) • Episiotomy (p = 0.29)

No	Title	Author, Year	Country	Study Type	Sample Size (N)	Study Groups Experimental/Control	Outcome Measures
							• Episiotomy grade ($p < 0.0001$) • Birth weight ($p = 0.001$) • Labor duration ($p < 0.0001$)
13.	The effect of practicing yoga during pregnancy on labor stages length, anxiety and pain: a randomized controlled	(Mohyadin et al., 2021)	Iran	A clinical trial study	84 nulliparous women (42/42)	Yoga Program consisting of 6x (60-min training sessions) every 2 weeks from week 26 of pregnancy and continued until 37	• Labor pain was measured by Visual Analogue Scale (VAS) at dilatation (4–5 cm) : (p=0.001) • Labor pain after 2 hours the first treatment :

No	Title	Author, Year	Country	Study Type	Sample Size (N)	Study Groups Experimental/Control	Outcome Measures
	trial					weeks of gestation / routine prenatal health care	(p=0.001)
14.	Efficacy of Prenatal Yoga on Second Stage Progress in Third Trimester Pregnant Women	(Yuliani & Andarwulan, 2022)	Indonesia	quasi-experimental design with a two-group post-test approach	30 (15/15)	Yoga / Not Doing Yoga during 3 months	• Duration of 2nd stage of labor of Yoga Group : 21,66 minutes (p=0,000) , • Durations of 2nd stage of laborof Controls Group : 42,76 minutes (p=0,000)

No	Title	Author, Year	Country	Study Type	Sample Size (N)	Study Groups Experimental/Control	Outcome Measures
15.	Effects of Yoga and Meditation on the Birth Process	(Esencan & Rathfisch, 2023)	Turkey	a randomized controlled trial	90 primiparous pregnant women (30/60)	Yoga & Meditation : 2x/week during 10 weeks (60 minutes sessions) / Routine midwifery care	• Yoga group : higher vaginal delivery rates, lower labor intervention rates and episiotomy opening frequencies, lower pain measurement scores and WIJMA B scores, higher CBSEI scores and higher State Trait Anxiety Inventory (STAI) than control group

CONCLUSION

Prenatal yoga is significantly effective to shorten the labor duration in vaginal birth, lessen labor pain, decrease premature delivery, and decrease the possibility of perineal tear, and improve the neonatal wellbeing.

REFERENCES

Bolanthakodi, C., Raghunandan, C., Saili, A., Mondal, S., & Saxena, P. (2018). Prenatal Yoga: Effects on Alleviation of Labor Pain and Birth Outcomes. *Journal of Alternative and Complementary Medicine*, *24*(12), 1181–1188. https://doi.org/10.1089/acm.2018.0079

Daniyati, A., & Mawaddah, S. (2021). Effect of Prenatal Yoga on Duration of the First Stage of Labor and Perineal Rupture in Primigravida Mothers. *Research Journal of Life Science*, *8*(1), 34–39. https://doi.org/10.21776/ub.rjls.2021.008.01.5

Esencan, T. Y., & Rathfisch, G. (2023). Effects of Yoga and Meditation on the Birth Process. *Altern Ther Health Med*, *29*(1), 6–14.

Evrianasari, N., & Yantina, Y. (2020). Pengaruh Yoga Prenatal terhadap Outcome Persalinan The Influence Of Prenatal Yoga On The Maternity Outcomes. In *Jurnal Kesehatan* (Vol. 11, Issue 2). Online. http://ejurnal.poltekkes-tjk.ac.id/index.php/JK

Franciska, Y., Yuka, A. A. S., & Wilma, W. (2021a). Relieve Labor Pain With Hypno Prenatal and Prenatal Yoga. *Jurnal Ilmu Dan Teknologi Kesehatan*,

9(1), 60–70. https://doi.org/10.32668/jitek.v9i1.579

Franciska, Y., Yuka, A. A. S., & Wilma, W. (2021b). Relieve Labor Pain With Hypno Prenatal and Prenatal Yoga. Jurnal Ilmu Dan Teknologi Kesehatan, 9(1), 60–70. https://doi.org/10.32668/jitek.v9i1.579

Jahdi, F., Sheikhan, F., Haghani, H., Sharifi, B., Ghaseminejad, A., Khodarahmian, M., & Rouhana, N. (2017a). Yoga during pregnancy: The effects on labor pain and delivery outcomes (A randomized controlled trial). Complementary Therapies in Clinical Practice, 27, 1–4. https://doi.org/10.1016/j.ctcp.2016.12.002

Jahdi, F., Sheikhan, F., Haghani, H., Sharifi, B., Ghaseminejad, A., Khodarahmian, M., & Rouhana, N. (2017b). Yoga during pregnancy: The effects on labor pain and delivery outcomes (A randomized controlled trial). Complementary Therapies in Clinical Practice, 27, 1–4. https://doi.org/10.1016/J.CTCP.2016.12.002

Kalayil Madhavanprabhakaran, G., Sheila D'Souza, M., & Nairy, K. (2016). Effectiveness of Childbirth Education on Nulliparous Women's Knowledge of Childbirth Preparation, Pregnancy Anxiety and Pregnancy Outcomes. Nursing and Midwifery Studies, 6(1). https://doi.org/10.5812/nmsjournal.32526

Kannan, M., Rajeswaran, S., Natarajan, S., Vasudevan, R.,

Muralidass, S. D., & Devi, S. (2015). Yoga in Pregnancy. In Malaya Journal of Biosciences (Vol. 2015, Issue 2). www.malayabiosciences.com

Karnasih, I. (2018). The Effect Of Yoga Towards Birth Delivery Output. International Journal of Scientific & Technology Research, 7. www.ijstr.org

Longulo, O. J., Pont, A. V., Mangun, M., & Rafika, R. (2021). The Effectiveness of Prenatal Yoga on Ballard Score and Newborn Babies Anthropometry. Jurnal Aisyah : Jurnal Ilmu Kesehatan, 6. https://doi.org/10.30604/jika.v6is1.765

Lundgren, I., Karlsdottir, S. I., & Bondas, T. (2009). Long-term memories and experiences of childbirth in a Nordic contexta secondary analysis. International Journal of Qualitative Studies on Health and Well-Being, 4(2), 115–128. https://doi.org/10.1080/17482620802423414

Mohyadin, E., Ghorashi, Z., & Molamomanaei, Z. (2021). The effect of practicing yoga during pregnancy on labor stages length, anxiety and pain: A randomized controlled trial. Journal of Complementary and Integrative Medicine, 18(2), 413–417. https://doi.org/10.1515/jcim-2019-0291

Mousavi, S. R., Amiri-Farahani, L., Hasanpoor-Azghady, S. B., & Saravi, S. O. (2021). Comparing the effect of in-person and virtual childbirth preparation trainings on the fear of childbirth (FOC) and pregnancy

experience of pregnant women: protocol for a quasi-experimental feasibility study. Pilot and Feasibility Studies, 7(1). https://doi.org/10.1186/s40814-021-00933-w

National Institute for Health and Care Excellence. (2014). Intrapartum care: care of healthy women and their babies during childbirth. NICE Clinical Guideline 190, April 2007.

Physical Activity and Exercise during Pregnancy and the Postpartum Period: ACOG Committee Opinion, Number 804. (2020). Obstetrics and Gynecology, 135(4). https://doi.org/10.1097/AOG.0000000000003772

Raveendran, A. V., Deshpandae, A., & Joshi, S. R. (2018). Therapeutic Role of Yoga in Type 2 Diabetes. In Endocrinology and Metabolism (Vol. 33, Issue 3). https://doi.org/10.3803/EnM.2018.33.3.307

Rong, L., Dai, L. J., & Ouyang, Y. Q. (2020). The effectiveness of prenatal yoga on delivery outcomes: A meta-analysis. Complementary Therapies in Clinical Practice, 39. https://doi.org/10.1016/j.ctcp.2020.101157

Rong, L., Wang, R., Ouyang, Y. Q., & Redding, S. R. (2021). Efficacy of yoga on physiological and psychological discomforts and delivery outcomes in Chinese primiparas. Complementary Therapies in Clinical Practice, 44. https://doi.org/10.1016/j.ctcp.2021.101434

S., C., W., P., & U., H. (2008). Yoga during

pregnancy: Effects on maternal comfort, labor pain and birth outcomes. In Complementary Therapies in Clinical Practice (Vol. 14, Issue 2).

Singh Dhapola, M., Rahul, M., & Prasad, K. (n.d.). Role of Different Asanas during Prenatal and Postnatal Pregnancy. www.phyedusports.in

Slomian, J., Reginster, J. Y., Emonts, P., & Bruyère, O. (2021). Identifying maternal needs following childbirth: comparison between pregnant women and recent mothers. BMC Pregnancy and Childbirth, 21(1). https://doi.org/10.1186/s12884-021-03858-7

Sun, Y. C., Hung, Y. C., Chang, Y., & Kuo, S. C. (2010). Effects of a prenatal yoga programme on the discomforts of pregnancy and maternal childbirth self-efficacy in Taiwan. Midwifery, 26(6). https://doi.org/10.1016/j.midw.2009.01.005

Wadhwa, Y., Alghadir, A. H., & Iqbal, Z. A. (2020). Effect of antenatal exercises, including yoga, on the course of labor, delivery and pregnancy: A retrospective study. International Journal of Environmental Research and Public Health, 17(15), 1–11. https://doi.org/10.3390/ijerph17155274

Whitburn, L. Y. (2013). Labour pain: from the physical brain to the conscious mind. Journal of Psychosomatic Obstetrics and Gynecology, 34(3), 139–143. https://doi.org/10.3109/0167482X.2013.829033

Yekefallah, L., Namdar, P., Dehghankar, L.,

Golestaneh, F., Taheri, S., & Mohammadkhaniha, F. (2021). The effect of yoga on the delivery and neonatal outcomes in nulliparous pregnant women in Iran: a clinical trial study. BMC Pregnancy and Childbirth, 21(1). https://doi.org/10.1186/s12884-021-03794-6

Yuliani, N. R., & Andarwulan, S. (2022). Efficacy of Prenatal Yoga on Second Stage Progress in Third Trimester Pregnant Women. International Journal of Clinical Inventions and Medical Sciences, 4(2), 56–61. https://doi.org/10.36079/lamintang.ijcims-0402.408