Original Research Report

HYPNOPRESSURE AS A NON-INVASIVE METHOD FOR ANXIETY AND PAIN MANAGEMENT IN PRIMIGRAVIDAE DURING ACTIVE LABOR

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ABSTRACT

Psychological factors, such as fear and anxiety, are often responsible for prolonged labor. Anxiety affects 58% of primigravidae, while 2–4% experience pain with scores ranging from 30 to 40 out of 50. Hypnopressure is an innovative combination of hypnotherapy and acupressure applied on the Sanyinjiao (SP6) and Hegu (LI4) points for 3–5 seconds in 20 repetitions during the first stage of labor contractions. This study aimed to determine the effect of hypnopressure on the LI4 and Sp6 points in reducing primigravidae's anxiety levels and pain degrees during the active phase of the first labor stage. This research used a double-blind randomized controlled trial methodology with a pretest-posttest design. Eighty subjects were divided into four groups to compare the effects of different interventions and determine which one demonstrated the most effectiveness. Each of the hypnopressure, hypnotherapy, acupressure, and control groups comprised 20 subjects. The treatment interventions were administered during the active phase of the first labor stage, which was subsequently analyzed using the Wilcoxon and Kruskal-Wallis statistical tests ($p<0.05$). The hypnopressure ($p=0.000$), hypnotherapy ($p=0.000$), and acupressure ($p=0.002$) groups experienced decreasing anxiety levels. The Kruskal-Wallis post-test indicated a significant difference ($p=0.000$) after treatment, revealing that hypnotherapy resulted in the lowest decrease in anxiety compared to the other three groups. Additionally, the degree of labor pain ($p=0.000$) was lower in the hypnopressure group (4.00±1.496) than in the other three groups. There was a significant difference across the four groups ($p=0.000$), with subjects in the hypnopressure group reporting lower pain degrees compared to those in the hypnotherapy ($p=0.000$), acupressure (0.000), and control ($p=0.000$) groups. In conclusion, this study suggests that hypnopressure treatment can decrease anxiety levels and pain in primigravidae during active labor.

Keywords: Hypnopressure; anxiety level; pain degree; primigravidae; maternal health

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Highlights:
1. This study applied hypnopressure, an innovative method that combines auditory hypnosis with acupressure on effective uterine points, namely the Hegu (LI4) and Sanyinjiao (Sp6) points.
2. This innovation offers an effective method for managing labor pain in primigravidae during the active phase of the first labor stage compared to hypnotherapy and acupressure administered separately.

INTRODUCTION

Labor is a process lasting for approximately 18 hours, requiring resilience as well as physical and emotional endurance from expectant mothers. Psychological disorders, such as depression and anxiety, are serious health problems during pregnancy. The strongest predictors of postpartum depression include a history of psychopathology and previous psychological disorders. Postpartum depression may appear soon after childbirth or as a continuation of antenatal depression, both necessitating appropriate treatment (Upadhyay et al. 2017). The Ministry of Health of the Republic of Indonesia (2019) assert that psychological reactions to stress produce emotional reactions. Awareness of this issue is crucial, as around 58% of primigravidae experience anxiety during childbirth. Additionally, 20–25% of primigravidae suffer from anxiety, fear, anger, disappointment, and depression during the transition to parenthood. The World Health Organization (WHO) has reported that pregnant women who experience anxiety face an increased risk of depression, with 10–20% likely to encounter a depressive episode during the perinatal period (Philpott et al. 2019).

Women generally experience severe pain during labor, while only 2–4% report mild pain with scores between 30 and 40 out of 50. These scores surpass those of chronic back pain syndrome as well as pain associated with cancer, leg pain, and other conditions (Santi 2015). Hariyanti & Astuti (2021) analyzed data from the National Population and Family Planning Board concerning delivery cases in Indonesia. The data revealed that 71% of pregnant women are accompanied by complications during childbirth, with the most prevalent complications being anxiety or severe pain (53%) and prolonged labor (41%). In a previous study conducted by Ohaeri et al. (2019), 60–90% of pregnant women suffer from severe pain in the labor room. The labor pain in primigravidae is often more serious than in multigravidae, as the former are new to this experience. The pain tends to intensify, reaching its peak during the active phase (Adam 2015, Patriyani et al. 2022). Labor pain initiates anxiety, leading to an increase in cardiac output, oxygen need, glucose consumption, and catecholamine levels. These factors contribute to uterine inertia, characterized by the weakening of uterine contractions.

According to Benfield et al. (2014), failure to address childbirth complications can delay the delivery process, prompting the use of both pharmacological and non-pharmacological approaches. However, pharmacological interventions are limited to referral health facilities. Data from the 2018 Basic Health Research showed that 36.9% and 26% of pregnant women perceived hospital accessibility to be difficult and very difficult, respectively (Ministry of Health of the Republic of Indonesia 2019). Only 37.1% of pregnant women had easy access to hospital care, according to the data. In addition, the data revealed that 62.7% of expectant women gave birth with the help of private practice midwives (PPM). It is necessary to develop a simple, cheap, and effective non-pharmacological method of pain management and prolonged labor that can be applied in basic health facilities, enabling midwives to perform this non-invasive intervention on pregnant women. Therefore, this study aimed to assess the effect of hypnopressure on decreasing anxiety levels and pain degrees in primigravidae during the active phase of the first labor stage.

MATERIALS AND METHODS

This study used a true experimental research methodology with two designs, namely the randomized pretest-posttest control group design and the posttest-only control group design (Valente & MacKinnon 2017). Treatment was administered to the subjects during the active phase of the first labor stage. The subjects were divided into four different groups, each comprising 20 individuals. The four groups were as follows: the hypnopressure group, the hypnotherapy group, the acupressure group, and the control group. The study population consisted of primigravidae who met the inclusion criteria in private practice midwife facilities in Cirebon, Indonesia. A total of 80 subjects in the active phase of the first labor stage fulfilled the inclusion criteria and participated in this study.

The hypnopressure method used in this study was implemented by combining hypnotherapy and acupressure. The hypnotherapy used audio recordings prepared according to standards and registered under copyright No. 000296800, entitled "Safe and Enjoyable Delivery Relaxation," with a duration of 35 minutes 31 seconds. Additionally, the acupressure was applied on the Sanyinjiao (SP6) and Hegu (LI4) points, frequently targeted in conjunction for pregnant women in labor (Mafetoni & Shimo 2015). The provision of hypnopressure in this study involved 12 private practice midwives who fulfilled the criteria of being competent and certified independent midwives, in addition to functioning as laboratory officers and enumerators.

The level of anxiety was measured using the Hamilton Rating Scale for Anxiety (HARS), while the degree of labor pain was estimated with the Numeric Rating Scale (NRS). The Wilcoxon and Kruskal-Wallis statistical tests were performed to analyze the collected data (Ostertagová et al. 2014). The statistical analysis was conducted utilizing IBM

SPSS Statistics for Windows, version 25.0 (IBM Corp., Armonk, N.Y., USA). Descriptive statistics were presented for all variables. This study obtained ethical clearance from the Health Research Ethics Committee of the Faculty of Medicine, Universitas Diponegoro, Semarang, Indonesia, under reference No. 351/EC/KEPK/FK-UNDIP/IX/2021 dated 2/9/2021.

RESULTS

The subjects comprised 80 individuals who were divided into four different groups: the hypnopressure group, the hypnotherapy group, the acupressure group, and the control group. Each group consisted of 20 research subjects. As shown in Table 1, a statistically significant decrease in the level of anxiety was observed in the hypnopressure groups (p=0.000), the hypnotherapy group (p=0.000), and the acupressure group (p=0.002). Meanwhile, the control group showed no notable decrease in the level of anxiety. The Kruskal-Wallis test conducted after administering the treatment indicated a significant difference in anxiety levels among the four groups (p=0.000). The hypnotherapy group exhibited the lowest decrease in anxiety levels compared to the other three groups.

Table 1. Differences in the level of anxiety in each group.

Anxiety levels	Groups				p
	Hypno pressure	Hypno therapy	Acu pressure	Control	
Pretest					
Mean (SD)	19.70 ± 12.79	18.65± 7.862	15.9± 12.00	26.70± 13.44	
Median	16.00	18.00	13.50	25.00	0.054**
Min–max	5–54	7–31	0–42	7–53	
Posttest					
Mean (SD)	11.60± 7.444	10.95± 5.907	9.35± 6.046	20.30± 9.905	
Median	9.50	10.00	8.00	17.50	<0.001**
Min–max	3–31	5–31	2–24	7–57	
p	<0.001*	<0.001*	0.002*	0.126**	
Delta					
Mean (SD)	8.10± 6.889	7.700± 6.497	6.55± 8.362	6.40± 14.460	
Median	8.00	9.5	7.50	2.00	0.688**
Min–max	-3.0–23.0	0–18	-10–21.00	-19–37	

Legends: SD=standard deviation. An asterisk (*) signifies any statistical significance

Table 2. Differences in the degree of labor pain in each group.

Degree of labor pain	Groups				p
	Hypnopressure	Hypnotherapy	Acupressure	Control	
Pre-test					
Mean (SD)	5.70±2.319	5.90±2.634	5.15±2.560	4.90±2.713	
Median	5.50	6.5	5.50	5.5	0.622**
Min–max	2–10	2–10	2–9	0–9	
Post-test					
Mean (SD)	3.85±1.496	7.45±2.305	7.35±1.565	7.75±2.268	
Median	4.00	8.00	8.00	8.00	0.000**
Min–max	1–7	0–9	4–9	4–10	
p	0.00*	0.014*	0.027*	0.008*	
Delta					
Mean (SD)	-1.85±1.785	-1.55±2.438	-2.20±3.44	-2.85±3.842	
Median	2.00	-2.0	-2.50	-3.00	0.000**
Min–max	-2.0–5.0	-6.0–3.0	-7–4	-9.0–4.0	

Legends: SD=standard deviation. An asterisk (*) signifies any statistical significance.

Table 2 presents data that demonstrated a significant decrease in the degree of labor pain experienced by the hypnopressure group (p=0.00), the hypnotherapy group (p=0.014), the acupressure group (p=0.027), and the control group (p=0.008). The posttest analysis results for these four groups indicated a statistically significant difference (p=0.000). In addition, a significant difference in the mean score (delta) was also observed among the four groups (p=0.000).

DISCUSSION

The treatment groups in this study received different interventions, including hypnopressure, hypnotherapy, and acupressure. The hypnotherapy was conducted using a 30-minute audio recording created in accordance with established standards. The acupressure was simultaneously applied on the Sanyinjiao (SP6) and Hegu (LI4) points. The hypnopressure integrated the hypnotherapy technique with the acupressure technique. Hypnopressure was found to reduce anxiety during the active phase of the first labor stage among primigravidae. This study showed that the magnitude of decreased anxiety following the hypnopressure intervention was similar to the effect of hypnotherapy. More interestingly, hypnopressure significantly decreased pain after delivery more effectively than the other interventions. Hypnopressure applied on the Sanyinjiao and Hegu points stimulates the neurotransmitter endorphin and the posterior pituitary, thereby boosting endogenous oxytocin that can reduce pain and anxiety. The hypnopressure intervention demonstrated superior effectiveness in decreasing the level of pain after delivery compared to the

hypnotherapy, acupressure, and control groups. Psychological disorders, such as depression and anxiety, during pregnancy are serious health problems. On the other hand, labor pain can also cause anxiety. This may lead to increased cardiac output, oxygen demand, glucose consumption, and catecholamine levels, resulting in weakened uterine contractions (uterine inertia). If this condition is not treated immediately, it will result in prolonged labor, potentially causing maternal and infant death. The strongest predictors of postpartum depression are a history of psychopathology and previous psychological disorders during pregnancy (Upadhyay et al. 2017). The findings of this study align with a previous study conducted by Alang et al. (2023), who utilized a similar intervention. The study concluded that hypnopressure intervention effectively reduced stress levels in pregnant women.

The labor process often lasts for approximately 18 hours, thereby requiring pregnant women to have patience as well as physical and psychological strength. Depression and anxiety are among the psychological disorders that can pose serious health problems during pregnancy. This study used the Hamilton Rating Scale for Anxiety (HARS) to measure the level of anxiety, described as an emotional state featuring physiological arousal, an uncomfortable feeling of tension, and a fear of undesirable occurrences (Manurung 2021). Expectant mothers often undergo psychological changes during childbirth, typically manifesting as fear or anxiety, particularly in primigravidae who are unfamiliar with the events associated with the final stages of pregnancy. Therefore, expectant mothers should be mentally prepared to avoid fear or anxiety, as this may exacerbate pain and strain the cervical muscles, which can interfere with the uterine opening. The stress experienced by the mind and body can also lead to rapid fatigue in women during childbirth (Setiani et al. 2020).

Setiani et al. (2020) revealed a moderate correlation between anxiety levels and the incidence of prolonged labor in primigravidae. This implies that a higher level of anxiety initiates a higher incidence of prolonged labor. Around 58% of primigravidae experience anxiety during childbirth, whereas 20–25% endure anxiety along with fear, anger, disappointment, and depression (Ministry of Health of the Republic of Indonesia 2019, Aniroh & Fatimah 2019). According to the World Health Organization (WHO), the risk of depression increases when pregnant women experience anxiety related to the transition to parenthood, with 10–20% probably encountering a depressive episode during this period (Philpott et al. 2019, Domínguez-Solís et al. 2021). As reported by Walter et al. (2021), physiological and psychological stress may negatively affect the delivery process, breastfeeding, and bonding. At eight weeks postpartum, the prevalence of depression is 11.2%, which is significantly associated with the severity of postpartum pain. The essential factors associated with anxiety or antenatal depression include traumatic experiences, miscarriage cases, past events of domestic violence or abuse, the absence of a partner or social support, great emotional stress, pregnancy complications, unwanted pregnancy, and individual history of mental disorder (Gonzalez et al. 2016, Biaggi et al. 2016). Further investigations are necessary to explore the factors that cause anxiety during childbirth.

Hypnopressure applied on the Sanyinjiao (SP6) and Hegu (LI4) points is more effective than hypnotherapy and acupressure in decreasing labor duration and pain degree. The administration of hypnopressure during the active phase of labor can effectively suppress the labor pain threshold in primigravidae compared to hypnotherapy, acupressure, and deep breathing interventions. This is indicated by a mean difference in the posttest scores, namely a reduced average degree of labor pain in the hypnopressure group. Hypnopressure treatment leads to a 4.25-fold reduction in labor pain degree compared to the control group. Labor pain originates from physiological contractions of the myometrium, varying in intensity among individuals (Andarmoyo 2013). On the other hand, Azizah et al. (2024) showed that acupuncture can stimulate the release of oxytocin through stimulation of the LI4 and SP6 points during postpartum cesarean sections. Healthcare professionals attending to patients in the labor room need to recognize that labor pain is often associated with severe, complicated, and uncomfortable experiences. Pain reduction to minimize maternal and fetal stress is an important aspect that must be included in labor management (Gonzalez et al. 2016).

This study is in line with an investigation conducted by Abbasi et al. (2009), which focused on self-hypnosis in the context of childbirth. The analysis using Colaizzi's method showed that the expectant experience feelings of relief, comfort, self-confidence, and satisfaction after childbirth under hypnosis. A decrease in suffering due to delivery pain, stress, fear of natural childbirth, fatigue, and anxiety was reported in the study. There was also an increase in uterine and cervical muscle contraction, awareness of all labor stages, and positive thoughts regarding childbirth, which was considered a very satisfying experience in comparison to the previous one. A prior study revealed that hypnosis decreased delivery pain as well as the use of analgesics and tranquilizers (Cyna et al. 2004). Hypnosis administered for decreasing chronic pain in 3,632 subjects indicated its analgesic effect during labor.

A separate study conducted by Setyowati (2018) demonstrated the effectiveness of acupressure as a form of physiotherapy through the application of massage and stimulation at certain points or acupoints on the body. Acupressure involves the gradual application of pressure on healing points using the fingers, consequently stimulating the ability of the body to heal naturally.

Strength and limitations

The results of this study can be used to develop national guidelines for utilizing hypnopressure as a non-pharmacological method in reducing labor pain. These guidelines are applicable in health care facilities, especially in areas with limited access to pharmacological analgesics. However, this study has limitations regarding confounding variables affecting the degree of pain, which were not taken into account in the analysis. These variables include ambulation during labor, birth weight, head circumference of the child, sociocultural factors, psychological aspects from previous pregnancies or labors, and family support systems. The limitations of this study also include the design and criteria for respondent selection.

CONCLUSION

This study confirms that hypnopressure decreases the level of anxiety in primigravidae during the active phase of the first labor stage, with an effect comparable to that of hypnotherapy. Hypnopressure applied on the Hegu (LI4) and Sanyinjiao (SP6) points is more effective in decreasing the degree of labor pain compared to hypnotherapy and acupressure. Further research is recommended to examine the variables affecting anxiety that were not analyzed in this study, including depressive disorders during pregnancy, knowledge factors, socioeconomic status, and unwanted pregnancies.

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Conflict of interest

None.

Ethical consideration

The Health Research Ethics Committee of the Faculty of Medicine, Universitas Diponegoro, Semarang, Indonesia, issued the ethical clearance for this study under reference No. 351/EC/KEPK/FK-UNDIP/IX/2021 dated 2/9/2021. Additionally, informed consent was obtained from the subjects and their legal guardians.

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Author contribution

YF contributed to the conception and design of the study, the collection and analysis of the data, the drafting of the article, and critical revision of the article for important intellectual content. HP assisted in the collection and validation of the data, ensured the accuracy and integrity of the data, and critically revised the article for important intellectual content. RW provided critical insights for the analysis and interpretation of the data and contributed to the critical revision of the article for important intellectual content.

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