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Original Article

Hypnotherapy Intervention Can Reducing Anxiety and Cortisol in Pregnancy

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ABSTRACT

Pregnant women can experience anxiety during pregnancy. To enhance mental health during pregnancy, interventions related to the relation of the mental body are important. The goal of this research was to determine the effect of hypnotherapy on anxiety and cortisol. The present sample consists of 60 primiparous women with single and regular pregnancies, 18-28 weeks gestation, and a randomized control trial. The group consists of the monitoring group (n = 30) and the hypnotherapy group (n = 30). Intervention with hypnotherapy was performed twice for 7 weeks. Assessment of anxiety at baseline and after 7 weeks of intervention by PASS and blood cortisol. Hypnotherapy intervention and quality treatment obtained by the hypnotherapy community; standard care received by the control group. The result show that The hypnosis in pregnancy intervention could significantly decrease anxiety at the lower level than control group (m=21.07 ± SD=11.98 vs m=34.00 ± SD=17.35),. The hypnotherapy in pregnancy intervention could significantly decrease cortisol lower than control groups (m=14.64, ± SD=5.53 vs m=21.51, ± SD=8,83). The conclusion is intervention with hypnotherapy may enhance pregnant women's mental health, as shown by reducing anxiety and cortisol. Hypnotherapy is an intervention that needs to be provided during pregnancy in midwifery programs to improve the health of mothers and babies.

Keywords: Hypnotherapy, Pregnancy, Anxiety, Cortisol.

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INTRODUCTION

Physical, psychological, hormonal, and social changes occur during pregnancy, raising the risk of emotional distress and psychiatric illness during this time in a woman's life [1]. The term ‘anxiety’ may encompass a wide variety of Everything from clinical diagnosis to self-report symptom measurements to more generic stress indicators are all included[2]. Approximately 20–25% of women currently experience anxiety as they prepare to become mothers[3,4], of which 10−20% will have depressive episodes[3]. Pregnancy was associated with an estimated 35% greater anxiety rate[5] Increased anxiety symptoms have been noted in 8–9% of postpartum women and 15–16% of pregnant women[5]. According to other research, prenatal anxiety is believed to affect 25% of pregnant women in the first trimester and 21% of pregnant women in the third trimester[6]. Anxiety in pregnancy forms a U pattern, anxiety in early and late pregnancy is higher than mid-pregnancy. Anxiety during pregnancy for example, childbirth, baby's and mother health[7].

The only factor associated with the depressive symptoms and anxiety trajectory group was the stress of pregnancy. Most pregnant women show a stable emotional

status, but some pregnant women experience greater levels of anxiety and depression symptoms associated with more stress during pregnancy[8]. The amount of stress is significantly related to the high anxiety and depression during pregnancy[9]. Anxiety that occurs is body image, self-concern, fret about the acceptance of pregnancy, a baby, attitude toward medical personnel and childbirth. Parity also predicts both overall pregnancy-related anxiety and worry about delivery. There is an important moderating effect on acceptance of pregnancy which indicates that young mothers have low opinions of their parents' self-efficacy in taking their pregnancy on board. The results show that parental equality and self-confidence can be danger factors for moms who are experiencing anxiety associated to pregnancy for the first time[10]. Severe anxiety in pregnancy is about 22% of pregnant women and has a detrimental impact on the mother and newborn[7,11]**.** Pregnancy stress, such as anxiety, is known to raise the risk of a number of developmental consequences, including reduced gestation, constrained fetal growth, and higher emotional and behavioral issues in the offspring[12].

The Hypothalamic-Pituitary-Adrenal (HPA) axis and the Autonomic Nervous System (ANS) are activated by stressful life events and stress experienced in daily life[13]. Compared to healthy pregnant women, those with high levels of anxiety have higher cortisol/DHEA-S indices[14]. The stress hormones corticotrophin-releasing hormone (CRH), adrenocorticotropic hormone (ACTH), and glucocorticoids are released when a woman is under stress. These hormones influence fetal brain development by passing through the placenta[15]. Linear changes in pregnancy anxiety and nonlinear changes in pCRH during pregnancy are independent risk factors for shortened gestational length[16]. A well-known stress hormone is cortisol. Physical and psychological stressors cause the adrenal cortex to release it, and higher amounts are seen 20 minutes after the stressors[17]. High levels of anxiety and long-term stress are linked to an improved maternal response of the hypothalamic-pituitary-adrenal axis, as well as an increase in the release of cortisol from the adrenal glands and CRH from the placenta[18]. Additionally, the difference between pregnant women with high levels of anxiety and pregnant women who do not experience significant levels of anxiety may be seen in the cortisol/DHEA indexes, which demonstrates and validates the effects of anxiety during pregnancy[19]. Numerous pieces of evidence, including those showing an increase in basal cortisol levels and hyperresponsiveness of the adrenal cortex after psychosocial stress, have repeatedly shown that glucocorticoid receptor function is disrupted in anxiety disorders[20].

Other authors have focused their studies on evaluating other interventions such as family psychosocial and psychological intervention, hypnosis, high feedback in antenatal ultrasound appointments or mind-body interventions to prevent mental health problems in mothers during the transition to parenthood[21].

Complications in pregnancy, childbirth and puerperium can be prevented by encouraging mental health. In order to promote growth and development, healthy mental health also promotes fetal/infant experiences. Hypnothetrapy is one of the inner body link treatments conducted to improve mental wellbeing during pregnancy. Hypnotherapy is a successful intervention and there are no harmful side effects[22].

To the researcher's knowledge, hypnotherapy intervention studies in pregnant women that test mental wellbeing using anxiety biomarkers do not exist. This study aims to determine the effectivity of hypnotherapy, to anxiety and and cortisol levels.

METHOD

This study used a randomized, open-label, controlled trial. Participants were expecting mothers who came to the Kediri City health center's health facility. Pregnant girls who were qualified participating in our study were recruited: pregnant with gestational age 18-28 weeks, age 18 years, stable, singleton pregnancies, able to read and write, willing to offer written consent, willing to attend 7-week hypnotherapy sessions, husband works in 1 area. Exclusion criteria were collected from all individual participants participating in this research: psychological conditions, inability For study participation, informed permission is required.

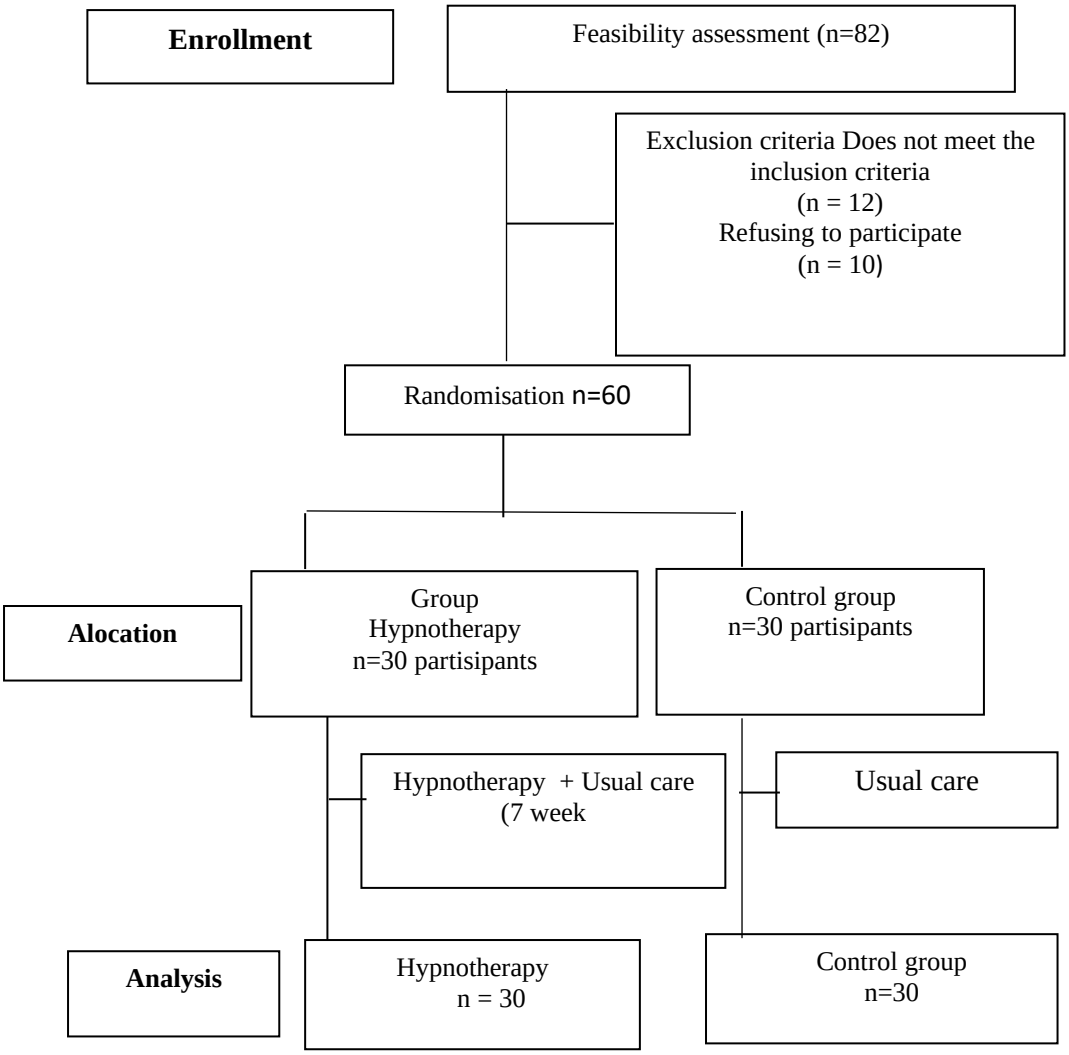
The study topics n = 60 were split into 2 classes, namely 1. The intervention group for hynotherapy (n=30) and the monitoring group

(n=30). Periodic quality treatment was offered by both classes. The independent variables in this study of hypnotherapy and the dependent variables were anxiety and blood cortisol.

The research permit was granted by the research ethics committee of the Poltekkes Kemenkes Malang, Reg.No.:427/EPK-POLKESMA/2022. Information on the research, including its goals, advantages, hypnotherapy courses, effects, was given to all qualified participants and they could stop at any time if desired. A written research approval sheet will be issued if participants are willing to take part in the study. The participants were then split randomly into two groups. 1 The participants were told to come back for a baseline test a week later. At the first meeting at 7 am, participants who met the inclusion criteria were asked to come and were sent a message not to eat breakfast first because they had to complete the state-trait anxiety inventory (STAI) questionnaire and blood cortisol.

For 7 weeks, the hypnotherapy group underwent intervention and routine treatment from the public health center and the control group was supported by the public health center with routine care. Hypnotherapy courses are held for 2 hours once a week. Education, hypnotherapy sessions, breathing exercises, visualization, relaxation, and regular affirmations constitute the hypnotherapy training program. A conference was held again at 7 a.m. after the 7th week then the two groups again filled out the state-trait anxiety inventory (STAI) questionnaire and blood cortisol.

For this analysis, the final sample size was 60 participants, with 30 in the comparison group and 30 in the intervention group, respectively. The participant flow diagram of the consolidated reporting trial criteria (CONSORT) is illustrated in Fig. 1



RESULTS

Tabel 1. Baseline characteristics

	Group						p-value
	Intervention group (HP)			Control group			
	N	Mean/%	SD	n	Mean/%	SD	
Age	30	24,37	2,41	30	25,33	3,17	0.479[a]
Gestation Age	30	22,67	4,12	30	23,40	4,02	0.882[a]
Educational Level	30			30			0.661[b]
Low	2	6.7%		1	3.3 %		
Middle	20	66.7%		23	76.7%		
High	8	26.7%		6	20%		
Work Status	30			30			0.038[b]
Employed	10	33.3%		18	60%		
Unemployed	20	66.7%		12	40%		
Income	30			30			0.184[b]
Low	8	26.7%		6	20%		
Midlle	19	63.3%		12	40%		
High	3	10%		12	40%		
Anxiety (STAI)	30	35.47	13.781	30	37.40	22.27	0.015[a]
Cortisol	30	29.42	6.129	30	26.66	5.34	0.032[a]

Test description: t.test[a]. chi square[b]

Table 1 show that the subject characteristics were different and not statistically significant: age (p=0.47), gestational age (p=0.88), educational (p=0.66), work status (p=0.03), income (p=0.18), anxiety (p=0.01), cortisol (p=0.03). The data for analysis is homogeneous.

Table 2. Differences before and after pregnancy hypnoteraphy intervention regarding anxiety levels and cortisol levels in the hypnoteraphy pregnancy group.

Variable	Pretest	Posttest	p-value
	Mean (SD)	Mean (SD)	
Anxiety (STAI)	35.47(13,78)	21.07(11,98)	<0.001
Cortisol	29.42 (6.12)	14.64(5,53)	<0.001

Test description: uji paired T-test

Table 2 show that the study revealed that there was a substantial difference in anxiety and cortisol level following pregnancy hypnotherapy, namely a decrease in anxiety levels (p=0,000), and a decrease in cortisol levels (p=0,000).

Table 3. Differences before and after being given standard care (class of pregnant women) regarding anxiety levels and cortisol levels in the control group.

Variabel	Pretest	posttest	p-value
	Mean (SD)	Mean (SD)	
Anxiety (STAI)	37,40 (22,27)	34,00 (17,35)	0.010
Cortisol	26,66 (5,34)	21,51 (8,83)	0.022

Test description: paired T-test

Table 3 show that the results of the control group analysis showed that there were no significant differences in the levels of anxiety (p=0,010), and cortisol level (p=0,022).

Table 4. Differences before and after anxiety levels and cortisol levels in the control group and hypnoteraphy pregnancy group.

Variable	Hypnotherapy	Control	p-value	Hypnotherapy	Control	p- value
	Pretest	Pretest		Posttest	Posttest	
	Mean (SD)	Mean (SD)		Mean (SD)	Mean (SD)	
Anxiety (STAI)	35.47 (13.78)	37.40 (22.27)	0.68	21.07 (11.98)	34.00 (17.35)	0.001
Cortisol	29.42 (6.12)	26.66 (5.34)	0.06	14.64 (5.53)	21.51 (8,83)	0.001

Test description: independent T-test

Table 4 show that the results of the t test analysis showed that there was a significant difference in the effects of pregnancy hypnotherapy intervention and control group, anxiety (p=0,001), and cortisol level (p=0,001).

The subject characteristics were different and not statistically significant: age (p=0.47), gestational age (p=0.88), educational (p=0.661), work status (p=0.03), income (p=0.18), anxiety (p=0.01), cortisol (p=0.03). The data for analysis is homogeneous. The mean age in the intervention group (m=24.37; SD=2.41) and in the control group (m=25.33; SD=3.17). The highest level of education in the intervention group was the middle level (66.7%) and the middle level in the control group (76.7%). Employment status in the intervention group the majority did not work (66.7%) and the control group the majority worked (60%). The majority of the income in the intervention group was middle (63.3%) and the control group was middle (40%) and high (40%). The mean anxiety in the intervention group (m=35.47; SD=13.78) and the control group (m=37.40, SD=22.27). Average cortisol levels in the intervention group (m=29.42; SD=6.12) and the control group (m=26.66; SD=5.34) (Table 1).

The study revealed that there was a substantial difference in anxiety and cortisol level following pregnancy hypnotherapy, namely a decrease in anxiety levels (p=0,000) pretest and posttest (m=35,47, SD=13,78 vs m=21,07,SD=11,98), and a decrease in cortisol levels (p=0,000) pretest and postest (m=29,42, SD=6,129 vs m=14,64, SD=5,53) (Table 2). This shows that there was a significant reduction in anxiety and cortisol levels in the group that received the hypnotherapy intervention for 7 weeks.

The results of the control group analysis showed that there were no significant differences in the levels of anxiety (p=0,010 pretest and posttest (m=37,40, SD=22,27 vs m=34,00, SD=17,35) and cortisol level (p=0,02) pretest and posttest (m=26,66, SD=5,34 vs m=21,51, SD=8,83) (Table 3). This shows that in the group that received standard care for 7 weeks there was a decrease in anxiety and cortisol levels although not significantly.

The results of the t test analysis showed that there was a significant difference in the effects of pregnancy hypnotherapy intervention and control group, anxiety (p = 0,001) pretest intervention group vs control group (m=35.74; SD=13,78, vs m=37.40; SD=22.27) and posttest (m=21.07; SD=11.98, vs m=34.00; SD=17.35), and cortisol level (p=0,001) pretest intervention group vs control group (m=29.42; SD=6.12, vs m=26.66; SD=5.34) and posttest (m=14.64; SD=05.53 vs m=21.51; SD=8.83) (Table 4).

DISCUSSION

The effect of the efficacy of pregnancy hypnotherapy on anxiety and cortisol was investigated in this study. Standard treatment was offered by the control group. The key results of this study showed that in the second trimester of pregnancy, intervention hypnotherapy could decrease anxiety and cortisol levels in pregnancy. Intervention given over 7 weeks include weekly education and hypnotherapy, plus visualization, relaxation and breathing results in lower anxiety and cortisol outcomes in the intervention group than in the control group.

This research was conducted on primigravida women aged between 24-25 years and the majority income is middle. This is a factor that causes anxiety during pregnancy. Anxiety that existed before pregnancy can also increase anxiety during pregnancy. This is in line with a study which said that primiparity and previous anxiety can increase anxiety and stress in pregnancy. Similar studies suggest that the reported risk factors for prenatal anxiety and depression include young age, low level of education [23]. Prenatal stress was also found to be associated with low monthly per capita household income, while anxiety was related to concerns about fetal abnormalities, safe delivery, abnormal conditions during labor/cesarean section and labor pain [24]. However, there are other studies that are not in line with the results of this study which say that sociodemographics (age, income level and obstetric factors (parity) have not been identified as having a relationship with anxiety [25].

Pregnancy is the initial research to demonstrate apparent relationship between hair cortisol levels during pregnancy and the maternal life course SES. The findings imply that maternal SES may have generational effects beginning in childhood through

disruption of pregnancy and fetal HPA when pregnant[26].

During the first trimester, psychological symptoms during pregnancy, particularly anxiety, have been shown to follow a 'u' pattern with more symptoms, decreasing symptoms in the second trimester and increasing again in the third trimester. During the antenatal phase, hypnotherapy and relaxation therapy have been shown to help reduce the occurrence of psychological symptoms during pregnancy [27].

Maternal anxiety and cortisol level correlated significantly in each trimester, maternal cortisol in reducing anxiety's effects[19]. Cortisol levels and anxiety unique to pregnancy were greater in primaries than multiple paragraphs, with pregnancy-specific anxiety modulating the relationship relationship cortisol levels and parity [28].

Six of the Nine research found hypnosis to have considerable benefits for reducing stress[29]. Hypnotherapy (using recordings) for 2 weeks can reduce stress, fatigue and improve well-being give a feeling of calm, confident, increase self-empowerment[30], help reduce anxiety, pain and improve quality of life[31] Hypnotherapy gives clients a feeling of relaxation and comfort [32].

Hypnosis changes the activation of the dorsal anterior cingular cortex (dACC) and dorsolateral prefrontal cortex (DLPFC). Examination using functional magnetic resonance imaging (fMRI) under resting conditions, demonstrated greater functional connectivity between the DLPFC, dACC, anterior insula, amygdala, and ventral striatum. This region is involved in detecting, integrating, and filtering relevant somatic, autonomic, and emotional information so as to reduce stress. These changes in neural activity underlie focused attention, increased somatic and emotional control, and a lack of self-awareness[33].

Other research findings show that mothers choose to use hypnosis during pregnancy and childbirth, so they can play an active role, improve their birth experience and reduce the use of analgesia, manage pain, be more confident, and calm[34].

In terms of lowering PMR, hypnosis is more effective than exam anxiety among medical trainees. Hypnosis can change the attentional bias toward stimuli that are dangerous, but cannot progressively muscle relaxation (PMR)[35]. A promising strategy for lowering hospital anxiety in cancer patients' children is hypnotherapy [36]. Electromyography (EMG) amplitude shocks produce increased frontal brain activity areas; amplitude using Somatosensory Event-Related Potentials (SERPs) exhibited comparable outcomes. Electroencephalographic (EEG) oscillation activity is positively related to a reaction to hypnosis. The EEG findings revealed a larger amplitude for the heavily hypnotized subject in hemisphere on the left. During hypnosis, the insula and anterior cingulate cortex (ACC) showed decreased activity[37].

This study is in line with previous research that hypnotherapy can alleviate stress, anxiety[38], improves well-being, improves stress control[39]. Hypnotherapy helps to resolve anxiety, stress and pain, and improves life quality. Hypnotherapy is a safe and reliable therapeutic approach used in medical procedures. Hypnotherapy is a very effective, non-addictive medication which has many advantages in reducing stress and anxiety during pregnancy for pregnant women. For use of medical management and enhancing mental wellbeing, the use of hypnotherapy as an alternative tool is suitable. A healthy, relaxed, and more empowering intervention is hypnotherapy.

Other analyses have also postpartum outcomes and maternal mental health have both been demonstrated to be related. health, and potential growth of infants [(28)]. exposure of children to inadequate mother mental health in utero have a greater chance of exhibiting poor birth results. Poor maternal final trimester mental health of pregnancy is connected to lower birth results (low birth weight and premature birth)[40].

Maternal well-being during pregnancy has not been measured by a variety of studies performed. This research underscores the treatments in hypnotherapy They are important for improving mental health and the well-being of women. First the small number of participants, which affects the second generalization, the regularity of the participants to come to the exercise so that the researcher must visit the homes of participants who are unable to attend class, are the drawbacks of this analysis. How effective hypnosis is techniques in terms of both psychological and physical parameters of wellbeing (depression, immunity, quality of

life) and more varied parity ought to be tested In subsequent studies.

The implication of this research is that hypnotherapy is important to be applied in health services, especially midwifery, on a regular basis to improve the mental health of pregnant women in having a healthy pregnancy so as to avoid pregnancy complications.

CONCLUSION

To our knowledge, this is the first research using the biomarkers of cortisol to determine mental health pregnancy. This study showed that hypnotherapy treatments administered during pregnancy can minimize stress and anxiety during pregnancy, decrease blood cortisol. This illustrates that during pregnancy, hypnotherapy intervenes and enhances mental wellbeing and women's happiness. This study forms the foundation for future studies to assess the mental wellbeing and quality of life impact of hypnotherapy during pregnancy. From the beginning of pregnancy, the provision of intervention offers greater benefits for improving mothers' mental health and psychological well-being while facing late pregnancy.

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CONFLICTS OF INTEREST:

The authors declare no conflict of interest.

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