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Effect of hypnotherapy on prolactin level in women after cesarean section

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ABSTRACT

BACKGROUND

Postpartum depression occurs in women after cesarean section, due to increased cortisol and decreased prolactin levels, leading to delayed breast milk production. Hypnotherapy is one of the most effective and efficient complementary therapy options for reducing postpartum depression. Hypnotherapy increases oxytocin secretion from the paraventricular nucleus of the anterior pituitary gland, decreases cortisol levels, and increases prolactin, thereby increasing breast milk production. This study evaluates hypnotherapy's effect on prolactin levels after a cesarean section.

METHODS

This study was an experimental non-blinded randomized controlled trial with a post-test-only control group design conducted at Dr. Moewardi General Hospital and UNS hospital. A total of 20 post-cesarean -section women were included in the study. They were randomized into two groups, a group I: given hypnotherapy, and group 2: the control group (without hypnotherapy). Both groups were tested for prolactin levels. Group I received hypnotherapy 6 to 12 hours post-cesarean section, and study participants were confirmed to be unaffected by the anesthetic. Data analysis used the independent t-test and $p<0.05$.

RESULTS

At baseline, there was no significant difference in age, parity, and indication for cesarean section between the hypnotherapy and the control groups ($p>0.05$). After intervention, the mean prolactin level was higher in the hypnotherapy group (247.6 ± 81.1 ng/mL) compared to the control group (120.1 ± 55.4 ng/mL) ($p<0.001$).

CONCLUSION

Hypnotherapy increases post-cesarean prolactin levels compared to the controls. Our findings open up a wide range of potential hypnotic applications among women with postpartum depression.

Keywords: Cesarean section, hypnotherapy, prolactin, breastfeeding

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INTRODUCTION

A cesarean section is the birth of an infant by surgery on the abdomen (laparotomy) and the uterus (hysterotomy). Cesarean sections are increasing significantly worldwide.[1,2] Between 1990 and 2014, an analysis of 121 countries found that cesarean section rates increased by 12.4% (from 6.7% to 19.1%), with an average annual increase rate of 4.4%.[3] In 2018, Indonesia's cesarean section rate was 17.6%.[4]

Cesarean delivery carries a higher risk of postpartum mood disorders for women than does vaginal delivery.[5,6] In one study, postpartum depression occurred in 21.1% (43 of 205) of patients who had undergone elective cesarean section. Increased risk of postpartum depression is associated with increased preoperative anxiety, pain scores, central sensitization, and decreased need for analgesics.[5]

Maternal psychological stress is associated with an increase in postpartum cortisol levels, interfering with the regulation of oxytocin and prolactin, which can affect the frequency and duration of breastfeeding.[7] Breastfeeding mothers who had undergone elective cesarean section had lower lactation rates than breastfeeding mothers who gave birth vaginally.[8] The combination of depressive symptoms and difficulty in breastfeeding can ultimately affect the duration and success of exclusive breastfeeding.[7]

Hypnotherapy significantly affects the optimization of postpartum maternal colostrum on the first day due to the release of endorphins (hormones that support prolactin secretion).[9] A previous study stated that there were significant differences in depression and anxiety symptoms in the two months postpartum, with control group results being higher than those of the experimental group who underwent hypnosis during pregnancy.[10] One study reported that the combination of hypnotherapy and acupressure reduced anxiety and pain levels significantly in post-cesarean mothers, thereby implying increased breast milk production.[11] Prolactin levels increased significantly in postpartum mothers who received oxytocin massage and breast care compared to the control group.[12]

Psychological symptoms during pregnancy, such as depression, can potentially cause postpartum depression.[13] A systematic review showed that the hypnosis-based interventions improved women's emotional experiences and outlook towards birth, with less anxiety, increased satisfaction, fewer birth interventions, more postnatal well-being, and better childbirth experience.[14] However, recent literature suggests the effectiveness of hypnosis in alleviating postpartum psychological symptoms, such as anxiety and depression.[10] Although a correlation between the amount of milk produced and the maternal prolactin level is not yet well established, it remains high in nursing mothers, with peaks in response to breastfeeding.[15] Considering all this, this study aims to evaluate the effects of hypnotherapy in raising prolactin levels in post-cesarean patients.

METHODS

Research design

This study used an experimental non-blinded randomized controlled trial with a post-test-only control group design to determine the effects of hypnotherapy on prolactin levels in post-cesarean patients. The study was conducted at Dr. Moewardi General Hospital and UNS Hospital. The research duration was from March 2022 to May 2022.

Study subjects

The study population was post-cesarean section patients treated at Dr. Mewardi General Hospital and UNS hospital. Research subjects were taken from those who met the inclusion and exclusion criteria. Inclusion criteria: post-cesarean -section patients, patients undergoing cesarean section under spinal anesthesia, patients without hearing loss, and patients who can attend hypnotherapy sessions. Exclusion criteria: patients with complications of other diseases and

a previous history of mental disorders. Twenty subjects involved in the study were divided randomly into two groups (10 subjects in the hypnotherapy group and 10 subjects in the control group). The sample size was calculated using comparing two means formula with effect size=0.9, α=0.05, β=0.2, and the optimum number of subjects was 10 for each group.

Intervention

The treatment group underwent a hypnotherapy intervention 6-12 hours after the cesarean section to confirm that they were unaffected by anesthesia. Hypnotherapy is carried out once, after which audio recordings are used before bedtime and in the morning after waking up. Hypnotherapy interventions are carried out by a psychiatrist with expertise in hypnotherapy. Hypnotherapy is carried out through the following procedures: providing information to the patient to obtain her informed consent for hypnotherapy, explaining hypnotherapy, indications, contraindications, and side effects of hypnotherapy so that the patient understands the action to be performed, conducting a suggestibility test to test/find out the patient's response to specific suggestions, and choosing the strategy to be used and training to enter a trance/hypnosis condition, induction (method for transferring the patient from the conscious state of mind to the subconscious state). During this phase, the patient must organize physical and psychological relaxation so that the patient is in a trance), trance deepening (to bring the patient to a deeper subconscious state), suggestion (to induce a feeling of calmness and reduce anxiety), termination (return the patient to full consciousness). The control group did not receive hypnotherapy treatment.

Laboratory analysis

Prolactin hormone levels were evaluated in the hypnotherapy group and the control group. First, a 5-mL blood sample was taken. Then, it is allowed to stand for 15 minutes and centrifuged at 3000 rpm for 15 minutes. Next, it is sent in a cooler bag within 24 hours to the laboratory to measure the level of prolactin in the blood on the condition that the sample should not be frozen.

Statistical analysis

The research data were analyzed using the IBM SPSS version 22 statistical application. In addition, normality tests were carried out. Finally, because the data distribution was normal, an independent t-test was used to analyze the data.

Ethical clearance

This study was approved by the Ethical Health Research Commission of the Dr. Moewardi Hospital, Surakarta, Jawa Tengah, Indonesia, under No. 352/ III/ HREC/ 2022, dated March 18, 2022.

RESULTS

A total of 20 subjects participated in the study and were randomized into the hypnotherapy (n=10) and control groups (n=10). The hypnotherapy subjects were given hypnotherapy intervention 6-12 hours after the cesarean section to confirm that they were unaffected by anesthesia (Figure 1).

At baseline, there was no significant difference in age, education, occupation, parity, history, indication for cesarean section, height, weight, and BMI between the hypnotherapy and the control groups (p>0.05) (Table 1).

After treatment mean prolactin level in the hypnotherapy group (247.6 ± 81.1 mg/dL) was significantly higher than that in the control group (120.1 ± 55.4 mg/dL) (p=0.001) (data not shown).

DISCUSSION

This study showed that hypnotherapy may increase prolactin levels in patients who have undergone cesarean section, compared to those not receiving hypnotherapy. This is consistent with a study by Anuhgera et al.,[9] which states that hypnotherapy is more effective than acupressure in stimulating the production of the hormone prolactin and the production of breast milk in women who give birth by cesarean section.

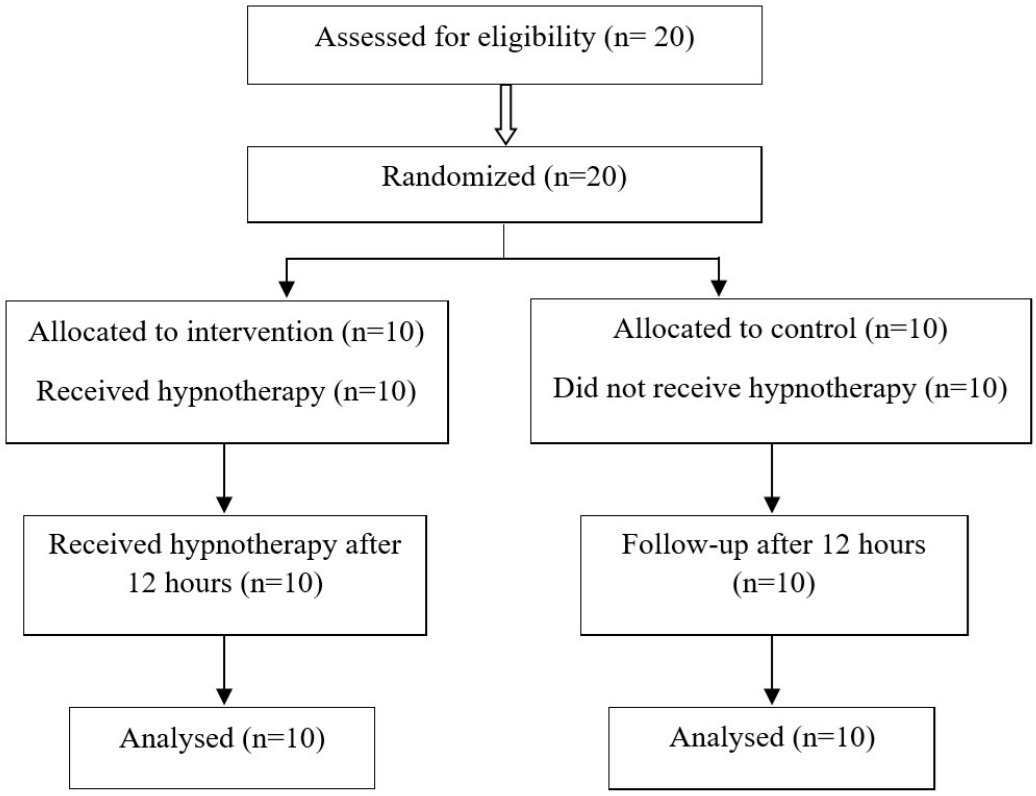

Figure 1. Flow diagram of the participants

Table 1. Distribution of several characteristics of the research subjects by treatment groups at baseline

Variable	Hypnotherapy (n=10)	Control (n=10)	p value
Age (years)	28.90 ±7.23	29.60 ± 3.77	0.789
Parity			
Primipara	2 (20)	6 (60)	0.068
Multipara	8 (80)	4 (40)	
History			
Cesarean section history	6 (60)	3 (30)	0.178
Primary	4 (40)	7 (70)	
Indication for cesarean section			
Elective	4 (40)	2 (20)	0.329
Emergency	6 (60)	8 (80)	
Weight (kg)	58.20 ±18.22	60.70 ±13.16	0.729
Height (cm)	152.70 ± 5.77	152.20 ± 6.00	0.851
BMI (kg/m^2)	20.95 ± 7.22	26.55 ± 4.89	0.631
Education			
Junior high school	2 (20)	1 (10)	0.480
Senior high school	4 (40)	3 (30)	
Diploma 3	3 (30)	2 (20)	
Bachelor	1 (10)	4 (40)	
Occupation			
Civil servant	0 (0)	2 (20)	0.315
Private employee	3 (30)	4 (40)	
Housewife	6 (60)	4 (40)	
Farmer	1 (10)	0 (0)	

*Significant at $p<0.05$; BMI: body mass index; Data presented as Mean ± SD and n (%)

Based on research conducted by Findik et al.,[13] post-cesarean pain and anxiety adversely affect milk production. Postpartum pain and anxiety were lower with vaginal delivery than with cesarean delivery. Epinephrine release increases during cesarean section and reduces the release of oxytocin, which in turn inhibits milk production and delays the onset of lactation.

Stress activates the hypothalamic–pituitary–adrenal (HPA) axis and triggers the release of corticotrophin releasing hormone (CRH) in the paraventricular nucleus (PVN), which will increase the secretion of adrenocorticotrophin (ACTH) from the anterior pituitary. Adrenocorticotrophin will induce the release of cortisol and reduce prolactin secretion.[16–18] In addition, stress can indirectly inhibit prolactin through sympathetic activation. Prolactin deficiency can cause lactation problems.[19,20]

Hypnotherapy is therapy that uses hypnosis to work on the subconscious mind. Hypnotherapy brings joy, contentment, relief, and peace to patients after cesarean delivery. In addition, hypnosis can also reduce stress. Cortisol levels can drop very low during hypnotherapy,[21–23] showing that there is a relationship between hypnotherapy and the HPA axis. Hypnotherapy has a statistically significant effect in lowering serum cortisol levels in patients.[19] Hypnotherapy may affect maternal beliefs, although temporarily, in the form of effective attention focus control, especially for breastfeeding. This effect will reduce depression and affect the hormonal axis. Our study did not measure prolactin levels at baseline because research funding was limited, and this was not a routine post-cesarean test. Therefore, there was no data on prolactin levels before administering hypnotherapy. High prolactin levels increase breast milk production, reduce low birth weight infants and infant mortality, and support exclusive breastfeeding. We suggest to reduce the use of drugs to raise prolactin levels, make patients more relaxed, and reduce trauma after cesarean delivery.

CONCLUSIONS

This study demonstrated that hypnotherapy after cesarean delivery increased prolactin levels. In addition, hypnosis-based interventions improve women's experience after cesarean section.

CONFLICT OF INTEREST

No relevant disclosures.

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CONTRIBUTORS

SHR drafted the manuscript. RB contributed to data collection. All authors contributed to the analysis and interpretation of the data. SHR, EEY, URB, and DS contributed to critically revising the manuscript for critical intellectual content. All authors have read and approved the final manuscript.

REFERENCES

1. Mengesha MB, Adhanu HH, Weldegeorges DA, et al. Maternal and fetal outcomes of cesarean delivery and factors associated with its unfavorable management outcomes in Ayder Specialized Comprehensive Hospital, Mekelle, Tigray, Ethiopia, 2017. BMC Res Notes 2019;12:4–9. doi: 10.1186/s13104-019-4690-5.
2. Boerma T, Ronsmans C, Melesse DY, et al. Global epidemiology of use of and disparities in caesarean sections. Lancet 2018;392:1341–8. doi: 10.1016/S0140-6736(18)31928-7.
3. Betrán AP, Ye J, Moller AB, Zhang J, Gülmezoglu AM, Torloni MR. The increasing trend in caesarean section rates: Global, regional and national estimates: 1990-2014. PLoS One 2016;11:1–12. doi: 10.1371/journal.pone.0148343.
4. Kementrian Kesehatan Republik Indonesia/ Kemenkes RI. Laporan Nasional RISKESDAS

2018. Badan Penelitian dan Pengembangan Kesehatan. Jakarta: Badan Penelitian dan Pengembangan Kesehatan; 2018.
5. Chan CLJ, Tan CW, Chan JJI, et al. Factors associated with the development of postnatal depression after cesarean delivery: a prospective study. Neuropsychiatr Dis Treat 2020;16:715–27. doi: 10.2147/NDT.S241984.
6. Benton M, Salter A, Tape N, Wilkinson C, Turnbull D. Women's psychosocial outcomes following an emergency caesarean section: A systematic literature review. BMC Pregnancy Childbirth 2019;19. doi: 10.1186/s12884-019-2687-7.
7. Mohd Shukri NH, Wells JCK, Fewtrell M. The effectiveness of interventions using relaxation therapy to improve breastfeeding outcomes: a systematic review. Matern Child Nutr 2018;14: e12563. doi: 10.1111/mcn.12563.
8. Ýsik Y, Dag ZO, Tulmac OB, Pek E. Early postpartum lactation effects of cesarean and vaginal birth. Ginekol Pol 2016;87:426–30. doi: 10.5603/GP.2016.0020.
9. Anuhgera DE, Kuncoro T, Sumarni S, Mardiyono M, Suwondo A. Hypnotherapy is more effective than acupressure in the production of prolactin hormone and breast milk among women having given birth with caesarean section. Med Sci Int Med J 2017;1. doi: 10.5455/medscience.2017. 06.8659.
10. Beevi Z, Low WY, Hassan J. The effectiveness of hypnosis intervention in alleviating postpartum psychological symptoms. Am J Clin Hypn 2019; 61:409–25. doi: 10.1080/00029157.2018.1538870.
11. Anuhgera DE, Kuncoro T, Sumarni S, Mardiyono, Suwondo A. Effect of combination of hypnobreastfeeding and acupressure on anxiety and wound pain in post-caesarean mothers. Belitung Nurs J 2017;3:525–32. doi: 10.33546/ bnj.191.
12. Aini YN, Hadi, Rahayu S, Pramono N, Mulyantoro DK. Effect of combination of oxytocin massage and hypnobreastfeeding on uterine involution and prolactin levels in postpartum mothers. Belitung Nurs J 2017;3:784-90. doi: 10.33546/ bnj.293.
13. Redshaw M, Henderson J. From antenatal to postnatal depression: associated factors and mitigating influences. J Womens Health (Larchmt) 2013;22:518-25. doi: 10.1089/jwh.2012.4152.
14. Catsaros S, Wendland J. Hypnosis-based interventions during pregnancy and childbirth and their impact on women's childbirth experience: a systematic review. Midwifery 2020;84: 102666. doi: 10.1016/j.midw.2020.102666.
15. McGuire TM. Drugs affecting milk supply during lactation. Aust Prescr 2018;41:7–9. doi: 10.18773/ austprescr.2018.002.
16. Torner L. Actions of prolactin in the brain: from physiological adaptations to stress and neurogenesis to psychopathology. Front Endocrinol (Lausanne) 2016;7:25. doi: 10.3389/ fendo.2016.00025.
17. Yuan Y, Wu W, Chen M, et al. Reward inhibits paraventricular CRH neurons to relieve stress. Curr Biol 2019;29:1243-51.e4. doi: 10.1016/ j.cub.2019.02.048.
18. Stephens MAC, McCaul ME, Wand GS. The potential role of glucocorticoids and the HPA axis in alcohol dependence. In : Noronha ABC, Cui C, Harris RA, Crabbe JC, editors. Neurobiology of Alcohol Dependence. Academic Press;2014. p.429-50. https://doi.org/10.1016/C2012-0-02501-X.
19. Begum T, Rahman A, Nababan H, et al. Indications and determinants of caesarean section delivery: evidence from a population-based study in Matlab, Bangladesh. PLoS One 2017;12:1–16. doi: 10.1371/JOURNAL.PONE. 0188074.
20. Bernard V, Young J, Binart N. Prolactin - a pleiotropic factor in health and disease. Nat Rev Endocrinol 2019;15:356–65. doi:10.1038/s41574-019-0194-6.
21. Mahandaru AH, Respati SH, Sulistyowati S, Laqif A, Prasetya H. The effect of hypnotherapy on postpartum pain and depression in women with post caesarean delivery. Indones J Med 2021; 6:194–205. doi: 10.26911/theijmed.2021.06.02.08.
22. Alizamar A, Ifdil I, Fadli RP, et al. The effectiveness of hypnotherapy in reducing stress levels. Addict Disord Trea 2018;17:191–5. doi: 10.1097/ADT. 0000000000000140.
23. Fisch S, Trivaković-Thiel S, Roll S, et al. Group hypnosis for stress reduction and improved stress coping: a multicenter randomized controlled trial. BMC Complement Med Ther 2020; 20:344. doi: 10.1186/s12906-017-1806-0.