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Hypnobreastfeeding, nutritional status, and postpartum depressive symptoms among breastfeeding mothers

Hypnobreastfeeding, status gizi, dan gejala depresi pascapersalinan pada ibu menyusui

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Abstract

Postpartum depressive symptoms can impair maternal functioning, breastfeeding, and infant care. This study aimed to compare post-intervention Edinburgh Postnatal Depression Scale (EPDS) scores between mothers who did and did not participate in hypnobreastfeeding, explore adherence-defined subgroups, and describe maternal nutritional status. A non-randomized post-test-only quasi-experimental study was conducted at TPMB Tri Widyawati, East Java, Indonesia, from October to December 2025. Sixty-eight breastfeeding mothers with infants aged 0–6 months were recruited by purposive sampling; allocation to the control (n = 34) or intervention (n = 34) group depended on willingness to participate. After a two-week regimen, the intervention participants were classified as routine (n = 19) or nonroutine (n = 15) practitioners. The EPDS was measured only after the intervention. The unadjusted Kruskal–Wallis test showed different EPDS score distributions across the three groups (H = 39.505, df = 2, p < 0.001). Bonferroni-adjusted pairwise comparisons differed between each adherence subgroup and control (both p < 0.001), but not between routine and nonroutine subgroups (p = 0.484). Participant characteristics and post-intervention BMI also differed between the groups. These preliminary associations do not establish causality because the allocation was nonrandom, pre-intervention EPDS was unavailable, and analyses were not adjusted for confounding factors.

Keywords: Edinburgh Postnatal Depression Scale, hypnobreastfeeding adherence, maternal nutritional status, postpartum depressive symptoms

Abstrak

Gejala depresi pascapersalinan dapat mengganggu fungsi ibu, menyusui, dan perawatan bayi. Penelitian ini bertujuan membandingkan skor Edinburgh Postnatal Depression Scale (EPDS) pascaintervensi antara ibu yang mengikuti dan tidak mengikuti hypnobreastfeeding, mengeksplorasi subkelompok berdasarkan kepatuhan, dan mendeskripsikan status gizi ibu. Studi kuasi-eksperimental nonrandomisasi dengan desain posttest-only dilakukan di TPMB Tri Widyawati, Jawa Timur, Indonesia, pada Oktober–Desember 2025. Sebanyak 68 ibu menyusui dengan bayi berusia 0–6 bulan direkrut secara purposif; alokasi ke kelompok kontrol (n = 34) atau intervensi (n = 34) bergantung pada kesediaan mengikuti intervensi. Setelah regimen dua minggu, peserta intervensi diklasifikasikan sebagai praktisi rutin (n = 19) atau nonrutin (n = 15). EPDS hanya diukur setelah intervensi. Uji Kruskal–Wallis yang tidak disesuaikan menunjukkan perbedaan distribusi skor EPDS antarketiga kelompok (H = 39,505; df = 2; p < 0,001). Perbandingan pasangan dengan koreksi Bonferroni berbeda antara setiap subkelompok kepatuhan dan kontrol (keduanya p < 0,001), tetapi tidak antara subkelompok rutin dan nonrutin (p = 0,484).

Karakteristik peserta dan IMT pascaintervensi juga berbeda antarkelompok. Hubungan awal ini tidak membuktikan sebab-akibat karena alokasi tidak acak, EPDS praintervensi tidak tersedia, dan analisis belum disesuaikan terhadap faktor perancu.

Kata Kunci: Edinburgh Postnatal Depression Scale, gejala depresi pascapersalinan, kepatuhan hypnobreastfeeding, status gizi ibu

Introduction

Postpartum depressive symptoms are common and clinically significant. Meta-analyses estimated a global prevalence of approximately 17% and an incidence of 12% among mothers without a history of depression (Hahn-Holbrook et al., 2018; Shorey et al., 2018). Symptoms may persist or increase beyond the early postpartum period and can impair maternal functioning, breastfeeding, mother–infant interaction, and child development, making timely screening and referral important components of postpartum care (Putnick et al., 2020; Slomian et al., 2019).

Postpartum depressive symptoms are of multifactorial origin. Population-based and cohort studies have identified prior psychiatric history, adverse life events, age, education, parity, sleep quality, and social support as relevant correlates or predictors (Cho et al., 2022; Guintivano et al., 2018; Li et al., 2017; Liu et al., 2017; Matsumura et al., 2019; Okun et al., 2018; Pao et al., 2019; Silverman et al., 2017; Vaezi et al., 2019). Lactation increases nutritional demands, whereas depressive symptoms may affect appetite and dietary patterns; these relationships may be bidirectional. The cited Indonesian EPDS adaptation evaluated pregnant rather than postpartum women, which is relevant when applying its language version and thresholds to postpartum participants (Sari et al., 2021).

Maternal nutritional status may be relevant to postpartum mental health issues. Observational studies have linked dietary patterns, diet quality, nutritional biomarkers, and BMI with postpartum depressive symptoms, although heterogeneity and residual confounding limit causal interpretation (Cao et al., 2020; Lin et al., 2019; Papadopoulou et al., 2023; Silverman et al., 2018; Teo et al., 2018; Yang et al., 2021), which is consistent with recent systematic reviews (Opie et al., 2020; Sun et al., 2023). During lactation, the body mass index (BMI) and mid-upper arm circumference (MUAC) provide complementary anthropometric information. Measuring these indicators alongside EPDS scores may help identify nutritional differences that could confound or modify psychological associations.

Hypnobf combines relaxation, focused attention, breathing, and positive affirmations intended to increase calmness and confidence during breastfeeding. Small studies on perinatal hypnosis-based and hypnobreastfeeding interventions have reported favorable anxiety, self-efficacy, and breastfeeding-related outcomes, but direct evidence for postpartum EPDS outcomes is limited (Anggita et al., 2024; Asih et al., 2025; Beevi et al., 2019; Sari et al., 2019). Consequently, hypnobreasfeeding should be evaluated as a supportive practice rather than an established treatment for postpartum depression.

The principal evidence gap concerns post-intervention depressive symptoms measured by the EPDS after a non-randomized hypnobreastfeeding program, with maternal nutritional status considered a potential confounder. In addition, routine and non-routine practices arose after allocation and therefore represent adherence-defined subgroups, not prespecified treatment arms. This distinction is important because motivation, education, family support, and other participant characteristics may influence both adherence and the EPDS scores.

The primary objective was to compare the post-intervention EPDS scores between the control and hypnobreastfeeding groups. The exploratory objective was to compare routine and non-routine adherence subgroups and to describe maternal BMI and MUAC in relation to the study group and EPDS scores. As no pre-intervention EPDS scores were collected, the study evaluated between-group post-test associations rather than within-person improvement or causal effectiveness.

Methods

This nonrandomized, post-test-only, quasi-experimental study compared a control group

with a hypnobreasfeeding intervention group. No random sequence, allocation concealment, or blinding was performed. Allocation depended on each mother's willingness to undertake hypnobreastfeeding, creating self-selection and limiting baseline comparability. Routine and nonroutine practices were defined after allocation and analyzed only as exploratory adherence subgroups. Reporting was guided by the TREND Reporting of Evaluations with Nonrandomized Designs (TREND) framework.

The study was conducted at the TPMB Tri Widyawati, Lawang, East Java, Indonesia, from October to December 2025. Of the 100 breastfeeding mothers assessed, 32 were excluded (14 did not meet the inclusion criteria, nine met the exclusion criteria, and nine declined to participate). Sixty-eight mothers were enrolled in the study: 34 in the control group and 34 in the intervention group. All participants completed the two-week follow-up and post-intervention assessment. No a priori sample size calculation was documented in the materials available for revision. Accordingly, the sample represented eligible consenting participants recruited during the study period, and all inferential findings should be considered as exploratory.

Purposive non-probability sampling was used. Eligible participants were mothers directly and exclusively breastfeeding healthy infants aged 0–6 months who agreed to participate and had no physical breastfeeding problems that could interfere with the protocol. The exclusion criteria were a diagnosed psychiatric disorder, infant hospitalization or separation from the mother, and maternal use of medication intended to increase or suppress milk production. These criteria and willingness-based allocation may limit generalizability.

Within the intervention group, participants were classified after the two-week period as routine practitioners (n = 19; at least once daily) or non-routine practitioners (n = 15; less than once daily), based on self-reported diaries. These were adherence-defined subgroups rather than separately allocated intervention groups. Motivation, education, family support, and other unmeasured factors could determine both adherence and EPDS outcomes, introducing selection bias into the subgroup comparisons.

Hypnobf was presented as a supportive relaxation practice combining focused attention, diaphragmatic breathing, body relaxation, and positive breastfeeding affirmations. Before the intervention period, both groups attended one approximately 30-minute educational session delivered by the researcher and a certified hypnobreasfeeding provider. The session covered breastfeeding physiology, relaxation, affirmations, and demonstrations. Because both groups received this session, it was a co-intervention; only the intervention participants were instructed to undertake the home-practice regimen.

The intervention participants were asked to practice for 15–20 minutes once daily, preferably before breastfeeding or sleep, for 14 sessions over two weeks. They received standardized audio and written instructions, and initial practice was supervised by a certified provider. Adherence was monitored using a daily self-report diary and telephone reminders every three days. The control participants received routine postpartum and breastfeeding care without audio recordings or home practice instructions. Contamination remained possible because both groups attended educational sessions.

Body weight was measured to 0.1 kg with a digital scale and height to 0.1 cm with a microtoise. BMI was calculated as kg/m^2 and categorized as underweight (<18.5), normal weight (18.5–24.9), overweight (25.0–29.9), or obese (≥30.0). MUAC was measured on the left arm to 0.1 cm with a non-elastic tape; values <23.5 cm were classified as at risk of chronic energy deficiency. BMI and MUAC were measured once at the same post-intervention visit as the EPDS. Therefore, neither measure is a true baseline variable, and the temporality between nutritional status and EPDS cannot be determined.

Post-intervention depressive symptoms were screened using the Indonesian-language Edinburgh Postnatal Depression Scale (EPDS). No pre-intervention EPDS measurement was obtained; therefore, baseline psychological comparability, within-person change, and ANCOVA using a baseline EPDS score could not be evaluated. The study used the categories 0–4, 5–9, 10–12, and >12 as recorded in the source analysis. The EPDS is a screening instrument and does not establish a clinical diagnosis of depression. The cited Indonesian EPDS validation study evaluated pregnant, not postpartum, women; therefore, the selected language version and category thresholds require confirmation against an appropriate postpartum validation source.

Analyses were conducted using IBM SPSS Statistics version 27.0 with a two-sided α of 0.05. Continuous and categorical variables were summarized descriptively. Group differences in participant characteristics were assessed using one-way analysis of variance or Kruskal–Wallis tests for continuous variables and chi-square or Fisher's exact tests for categorical variables, as appropriate. Post-intervention EPDS scores were compared across the control, routine adherence, and non-routine adherence groups using an unadjusted Kruskal–Wallis test, followed by Bonferroni-adjusted pairwise comparisons. The Bonferroni-adjusted p-values address multiple pairwise testing; they are not adjusted for confounding. A coherent primary multivariable between-group model could not be reconstructed from the aggregate tables in the manuscript, and no adjusted effect estimates, 95% confidence intervals, model diagnostics, or participant-level data were available in the supplementary material. Accordingly, all inferential findings reported here were exploratory and unadjusted.

Ethical approval was obtained from the Research and Innovation Ethics Committee of Universitas Brawijaya, Indonesia (No. 361/EC/KEPK/10/2025), with a stated validity period from October 22, 2025, to October 22, 2026. Written informed consent was obtained prior to enrollment. The approval number and date should be checked against the original ethics certificate before resubmission.

Result and Discussion

Participant Characteristics and Post Intervention Nutritional Status

The control group comprised 34 mothers. The intervention group included 34 mothers and was subdivided after allocation into 19 routine and 15 non-routine practitioners according to reported adherence.

Table 1. Participant characteristics and postintervention maternal BMI by study group

Characteristics	Category	Control, n = 34 (%)	Routine adherence, n = 19 (%)	Nonroutine adherence, n = 15 (%)	p value
Age (years)	17–20 years	9 (26.4)	0 (0.0)	5 (33.3)	0.004
	21–30 years	12 (35.2)	14 (73.6)	10 (66.7)	
	31–40 years	13 (38.4)	5 (26.4)	0 (0.0)	
Highest education level	Elementary school	6 (17.6)	2 (10.5)	0 (0.0)	<0.001
	Junior high school	6 (17.6)	1 (5.3)	12 (80.0)	
	Senior high school	11 (32.4)	9 (47.3)	3 (20.0)	
	Bachelor/Diploma	11 (32.4)	7 (36.8)	0 (0.0)	
Employment status	Not working	12 (35.2)	9 (47.3)	9 (60.0)	0.261
	Working	22 (64.8)	10 (52.7)	6 (40.0)	
Parity	Primipara	15 (44.1)	14 (73.6)	11 (73.3)	0.048
	Multipara	19 (55.9)	5 (26.4)	4 (26.7)	
Mode of delivery	Vaginal delivery	18 (52.9)	15 (78.9)	11 (73.3)	0.120
	Cesarean section	16 (47.1)	4 (21.1)	4 (26.7)	
Living arrangement	Nuclear family	18 (52.9)	9 (47.3)	7 (46.7)	0.888
	Extended family	16 (47.1)	10 (52.7)	8 (53.3)	
Infant age (months)	0–1 month	23 (67.6)	5 (26.4)	10 (66.7)	0.011
	2–3 months	5 (14.8)	7 (36.8)	5 (33.3)	
	4–6 months	6 (17.6)	7 (36.8)	0 (0.0)	
Infant weight gain (grams)	100–200 gram	20 (58.9)	0 (0.0)	0 (0.0)	<0.001
	250–300 gram	6 (17.6)	1 (5.3)	4 (26.7)	
	400–500 gram	8 (23.5)	15 (78.9)	11 (73.3)	
	600–700 gram	0 (0.0)	3 (15.9)	0 (0.0)	
BMI (WHO)	Underweight	2 (5.9)	4 (21.1)	6 (40.0)	<0.001
	Normal	13 (38.2)	15 (78.9)	9 (60.0)	
	Overweight	13 (38.2)	0 (0.0)	0 (0.0)	
	Obesity	6 (17.6)	0 (0.0)	0 (0.0)	

Table 1 shows significant between-group differences in maternal age (p = 0.004), education (p < 0.001), parity (p = 0.048), infant age (p = 0.011), infant weight gain (p < 0.001), and post-intervention BMI (p < 0.001). The routine adherence subgroup was concentrated at 21–30 years and had more participants with senior high school or tertiary education, whereas junior high school predominated in the nonroutine subgroup. Primiparity was more frequent in both adherence subgroups, whereas multiparity was more frequent in the control group. Employment, mode of delivery, and living arrangements did not differ significantly.

These unadjusted comparisons demonstrate group imbalances rather than confounding controls. Age, education level, and parity are plausible pre-intervention confounders. In contrast, infant weight gain and maternal BMI were measured during or after the intervention; therefore, their temporal relationships with the EPDS are uncertain. MUAC was specified in the Methods section but was not reported; consequently, nutritional findings should not be expanded without complete MUAC results. Because no adjusted between-group estimate was available, residual confounding remains likely, and all inferential findings are preliminary.

Table 2. Postintervention EPDS screening categories by original allocation group

Category	Hypnobreast-feeding intervention, n = 34 (%)		Control, n = 34 (%)	
	Posttest		Posttest	
	n	%	n	%
EPDS score 0–4	32	94.2	21	61.8
EPDS score 5–9	2	5.8	5	14.8
EPDS score 10–12	-	-	4	11.7
EPDS score >12	-	-	4	11.7
Total	34	100	34	100

Table 2 summarizes the postintervention EPDS screening categories. Among the intervention participants, 32 of 34 (94.2%) scored 0–4, and two (5.8%) scored 5–9; none scored ≥10. In the control group, 21 (61.8%) scored 0–4, five (14.8%) scored 5–9, and eight (23.4%) scored ≥10. These unadjusted descriptive data indicate lower post-intervention EPDS scores in the intervention group but do not establish an independent intervention effect.

Table 3. Unadjusted pairwise comparisons of postintervention EPDS scores

Comparison	Test statistic	p-value*
Overall Kruskal–Wallis test	H = 39.505, df = 2	<0.001
Routine- vs. nonroutine-adherence subgroup	-9.035	0.484
Routine-adherence subgroup vs. control	-31.751	<0.001
Nonroutine-adherence subgroup vs. control	-22.716	<0.001

*Bonferroni-adjusted

The unadjusted Kruskal–Wallis test showed different post-intervention EPDS score distributions across the control, routine-adherence, and non-routine adherence groups (H = 39.505; df = 2; p < 0.001). Bonferroni-adjusted pairwise comparisons differed between routine adherence and control and between nonroutine adherence and control (both p < 0.001), but not between routine and nonroutine adherence (p = 0.484). Here, adjustment refers only to multiplicity correction, not to the control of participant characteristics.

Thus, both adherence subgroups had lower post-intervention EPDS scores than the control group in exploratory unadjusted comparisons, with no evidence of a dose–response relationship. These tests do not account for the observed group imbalances and should not be interpreted as independent or causal effects of the intervention.

The principal finding of this study was a clear difference in post-intervention Edinburgh Postnatal Depression Scale (EPDS) score distributions between the control group and both adherence-defined hypnobreastfeeding subgroups. The overall Kruskal-Wallis test was statistically significant (H = 39.505; df = 2; p < 0.001), and Bonferroni-adjusted pairwise comparisons indicated lower post-intervention EPDS scores in both the routine and non-routine adherence subgroups than in the control group (both p < 0.001). In contrast, the routine and nonroutine subgroups did not differ significantly (P = 0.484). The categorical EPDS distribution was directionally consistent with these findings: 94.2% of mothers in the intervention group scored 0-4 and none scored 10, whereas 23.4% of mothers in the control group scored 10. These findings suggest an association between participation in the hypnobreastfeeding program

and a more favorable post-intervention depressive symptom profile. However, the design does not permit this association to be interpreted as an improvement over time or as an independent treatment effect because no pre-intervention EPDS measurement was available, allocation was self-selected, and relevant participant characteristics differed across groups.

The observed pattern is broadly compatible with previous studies, suggesting that hypnosis- and relaxation-oriented interventions may support psychological well-being, reduce anxiety, or strengthen breastfeeding self-efficacy during the perinatal period (Asih et al., 2025; Beevi et al., 2019; Sari et al., 2019). This is also consistent with observational evidence linking postpartum depressive symptoms with breastfeeding experience, breastfeeding patterns, and maternal self-efficacy (Coo et al., 2020; Gila-Díaz et al., 2020; Mercan & Tari Selcuk, 2021; Silva et al., 2017; Vieira et al., 2018). Nevertheless, this evidence does not establish that hypnobreastfeeding reduces depressive symptoms. The present study adds preliminary data on post-intervention EPDS differences after a structured two-week hypnobreastfeeding regimen, but it should be viewed as hypothesis-generating rather than confirmatory evidence of efficacy.

Interpretation and Plausible Mechanisms

Hypnobreastfeeding combines focused attention, slow diaphragmatic breathing, body relaxation, and positive breastfeeding affirmations. Conceptually, this combination may reduce perceived stress, interrupt repetitive negative cognitions, and increase a mother's sense of calmness and control during breastfeeding. Positive affirmations may reinforce perceived competence and breastfeeding confidence. Because the maternal emotional state and breastfeeding behavior are closely interrelated, improvement in confidence or reduction in situational anxiety could plausibly coexist with lower depressive symptom scores (Coo et al., 2020; Gila-Díaz et al., 2020). These pathways are clinically plausible but were not directly measured in this study.

Several nonspecific mechanisms may have contributed to the observed differences. Mothers who elected to participate in the intervention received a standardized audio recording, written instructions, supervised initial practice, and telephone reminders every three days. These elements may increase perceived support, treatment expectancy, self-monitoring, and engagement with postpartum care, independent of the specific hypnotic or affirmation components. Family members were also permitted to assist with the practice, potentially introducing additional interpersonal support. Because the control group did not receive the audio recording or home practice regimen, the study could not distinguish the specific effect of hypnobreastfeeding from the effects of attention, expectancy, provider contact, behavioral activation, family engagement, or other co-interventions. Future trials should therefore include standardized attention controls, explicit intervention fidelity measures, and pre-specified mediators if the mechanism of action is to be evaluated.

Maternal Nutritional Status and Psychological Outcomes

Maternal nutritional status deserves separate consideration because postpartum mental health and nutritional status may influence each other. In the present sample, post-intervention BMI differed markedly across groups. The control group included mothers across underweight, normal weight, overweight, and obesity categories, whereas the adherence subgroups were composed predominantly of mothers with underweight or normal BMI. Previous observational studies have associated postpartum depressive symptoms with BMI, dietary patterns, diet quality, and nutritional biomarkers, although the direction and magnitude of these relationships vary across populations and study designs (Cao et al., 2020; Lin et al., 2019; Papadopoulou et al., 2023; Silverman et al., 2018; Teo et al., 2018; Yang et al., 2021). Systematic reviews similarly emphasize heterogeneity and the difficulty in drawing causal conclusions from the available evidence (Opie et al., 2020; Sun et al., 2023).

Therefore, the nutritional findings of this study should be interpreted cautiously. BMI was measured only at the post-intervention assessment; therefore, it cannot be treated as a true baseline covariate, and its temporal relationship with the EPDS is uncertain. Maternal body composition during lactation is also influenced by prepregnancy nutritional status,

gestational weight gain, postpartum weight retention, dietary intake, physical activity, and lactation-related energy expenditure, none of which were comprehensively characterized in this study. MUAC was specified in the Methods section as an additional anthropometric measure but was not reported in the available Results. Therefore, this study cannot support a complete interpretation of maternal nutritional status or determine whether nutrition acts as a confounder, mediator, effect modifier, or consequence of psychological well-being. Future studies should report all prespecified anthropometric outcomes and incorporate repeated BMI and MUAC measurements together with dietary intake or diet quality assessment.

Social Support and Contextual Influences

Postpartum depressive symptoms arise within the broader social and caregiving contexts. Social support has been repeatedly associated with maternal psychological well-being and may also influence a mother's ability to perform daily home-based interventions (Cho et al., 2022; Hetherington et al., 2018; Kim et al., 2023; Li et al., 2017; Pao et al., 2019; Permata Rachim et al., 2025; Vaezi et al., 2019). Although living arrangements did not differ significantly among the groups, living with an extended family or in a nuclear household is an imperfect proxy for the quality, availability, or perceived helpfulness of social support. A mother may live with several family members yet receive limited emotional or practical support, whereas another may live in a nuclear household and receive strong partner support.

This consideration is relevant because family assistance was permitted during the hypnobreastfeeding practice, but support was not measured using a validated instrument. Supportive involvement could improve adherence, reduce the caregiving burden, increase maternal confidence, or independently influence EPDS scores. Sleep quality, breastfeeding difficulties, relationship stress, financial strain, and prior psychological symptoms are additional contextual factors that may influence both intervention participation and postpartum depressive symptoms but were not comprehensively measured in this study. Future studies should embed hypnobreastfeeding within a prespecified causal framework that distinguishes intervention exposure from social and behavioral determinants and includes validated measures of social support and other major postpartum risk factors.

Clinical and Public Health Implications

From a clinical perspective, the findings support the further evaluation of hypnobreastfeeding as an adjunctive relaxation practice rather than as a treatment for postpartum depression. The intervention is relatively brief, can be practiced at home, and may be acceptable to mothers who prefer non-pharmacological supportive strategies during breastfeeding. These practical characteristics could make it relevant to maternal-child health services if future trials confirm its benefits. However, implementation should not precede adequate evidence of its effectiveness, safety, feasibility, and reproducibility across diverse populations.

The distinction between screening and diagnosis is, therefore, essential. The EPDS identifies depressive symptoms and risks but does not establish a clinical diagnosis. Current obstetric guidance recommends that screening be embedded within systems that ensure timely assessment, referral, treatment, and follow-up when clinically indicated (American College of Obstetricians and Gynecologists, 2023). Therefore, a low EPDS score after participation in hypnobreastfeeding should not be interpreted as proof that depression has been prevented or treated, and an elevated score or any concern regarding self-harm requires appropriate clinical evaluation according to local protocols. Hypnobreastfeeding, if used, should complement rather than replace established screening pathways, psychotherapy, pharmacotherapy when indicated, and specialist referral.

Strengths, Limitations, and Directions for Future Research

Several features strengthen the study's descriptive value. All 68 enrolled participants completed the short-term follow-up period. The intervention regimen was described in sufficient detail to support replication, participants received standardized audio and written instructions, initial practice was supervised, and adherence was monitored using diaries and scheduled telephone reminders. This study also attempted to place psychological outcomes in a broader maternal health context by collecting anthropometric information. In addition, the analysis appropriately distinguished routine and non-routine participants as adherence-defined subgroups rather than independently randomized treatment arms.

However, these strengths are offset by important methodological limitations. The non-randomized post-test-only design and willingness-based allocation are vulnerable to selection bias and preclude a credible estimate of within-person change. The single-site sample was small, particularly for the nonroutine subgroup, and no a priori sample size calculation was documented, limiting precision and external validity. Neither the participants nor the assessors were blinded, adherence was self-reported, and both study groups attended the same educational session, creating a possibility of contamination or co-intervention effects. Most importantly, no pre-intervention EPDS score was available, and no adjusted participant-level model could be reconstructed from the reported aggregate data. Therefore, the analysis cannot determine whether the observed group differences persisted after controlling for age, education, parity, other baseline characteristics, or unmeasured determinants of intervention uptake.

Additional limitations concern the measurements. BMI and MUAC were obtained only once at the post-intervention visit, MUAC results were not reported, and relevant dietary and behavioral variables were not measured longitudinally. Social support and sleep quality were not assessed using validated instruments. In addition, the EPDS category thresholds used in the source analysis should be confirmed against an appropriate postpartum validation source for the Indonesian population in the future. These issues do not invalidate the observed posttest differences, but they substantially constrain their interpretation and should be reflected consistently in the abstract, discussion and conclusion.

The next step should be an adequately powered multicenter randomized controlled trial with concealed allocation, a pre-specified primary outcome, and pre-intervention plus repeated post-intervention EPDS assessment. Such a trial should standardize co-interventions, monitor contamination, use validated adherence measures, and capture potential mediators such as perceived stress, anxiety, breastfeeding self-efficacy, and social support. Repeated BMI and MUAC measurements and dietary assessments could clarify the temporal relationship between nutritional and psychological outcomes. Analyses should report effect estimates with 95% confidence intervals, adjust for prespecified prognostic variables when appropriate, evaluate missing data mechanisms and model assumptions, and include sensitivity analyses. These design improvements would allow future research to determine whether hypnobreastfeeding has a reproducible independent effect, whether any benefit is mediated by stress reduction or breastfeeding confidence, and whether intervention adherence modifies this effect.

Overall, the present findings are best interpreted as preliminary evidence of an association between participation in a structured hypnobreasfeeding program and lower postintervention EPDS scores. The consistency of the direction of the observed differences with prior relaxation- and breastfeeding-related literature supports continued investigation, but the absence of baseline EPDS measurements, randomization, and confounder-adjusted analysis prevents causal attribution. This balanced interpretation is important for positioning hypnobreastfeeding within evidence-based postpartum care: it may be a promising supportive practice, but its effectiveness in reducing postpartum depressive symptoms remains to be established in rigorously designed trials.

Conclusion

Routine- and nonroutine-adherence subgroups had lower postintervention EPDS scores than controls in exploratory unadjusted comparisons, while the two adherence subgroups did not differ. Because the EPDS was not measured before the intervention, allocation was self-selected, participant characteristics were imbalanced, and no adjusted estimate was available, the findings do not establish improvement or a causal intervention effect.

The results are preliminary and hypothesis-generating in nature. Hypnobreastfeeding may be evaluated as an adjunctive relaxation practice but should not replace evidence-based screening, diagnostic assessment, or treatment. Adequately powered multicenter randomized studies with pre-intervention EPDS, repeated nutritional assessment, standardized adherence monitoring, and prespecified adjusted analyses are required before effectiveness or implementation can be inferred.

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