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The Effectiveness of Tontholo Cultural Practice on Increasing Breast Milk Production and Preventing Postpartum Depression

Yuliandary Yunus[1], Fatmah Zakaria[2], Nur Aprilia[3]
[123]Fakultas Ilmu Kesehatan, Universitas Muhammadiyah Gorontalo, Indonesia
Email: yuliandaryyunus@umgo.ac.id[1], fatmahzakaria@umgo.ac.id[2] , nuraprilia260405@gmail.com[3]

ABSTRACT

The postpartum period requires integrated physical and psychological care; however, interventions that simultaneously address breast milk production and postpartum depression through culturally grounded approaches remain limited. This study aimed to analyze the effectiveness of the Tontholo cultural practice in increasing breast milk production and preventing postpartum depression among postpartum mothers. A quasi-experimental study with a pretest–posttest control group design was conducted over one month involving 38 postpartum mothers selected using purposive sampling and divided into intervention (n=19) and control (n=19) groups; data were collected using breast milk production observation sheets and the Edinburgh Postnatal Depression Scale (EPDS) and analyzed using t-test with a significance level of $p<0.05$. The intervention group demonstrated a significantly greater increase in breast milk production compared to the control group. Moreover, a more substantial reduction in EPDS scores was observed in the intervention group, indicating improved maternal psychological well-being. In conclusion, Tontholo represents an innovative culture-based complementary model that integrates biological and psychosocial mechanisms to enhance lactation and reduce postpartum depression risk.

Keywords: Breast Milk Production, EPDS, Local Culture, Postpartum Depression, Tontholo

*Yuliandary Yunus, Faculty of Health Sciences, University of Muhammadiyah Gorontalo, Jl. Prof. Dr. H. Mansoer Pateda Desa Pentadio Tim, Telaga Biru District, Gorontalo Regency, Gorontalo 96181, : yuliandaryyunus@umgo.ac.id

INTRODUCTION

The postpartum period is a critical transition for mothers and infants because it involves physiological recovery, adaptation to breastfeeding, and psychological adjustment to the maternal role (WHO, 2022). Two major issues that frequently arise during this period are the low coverage of exclusive breastfeeding and the high risk of postpartum depression (Yunus et al., 2021). These problems are interrelated because maternal emotional distress may interfere with breastfeeding confidence, milk ejection, and mother-infant bonding, while breastfeeding difficulties may further increase anxiety and depressive symptoms (Arami et al., 2023).

The World Health Organization reports that only about 48% of infants worldwide receive exclusive breastfeeding up to six months of age (WHO, 2023). In Indonesia, based on the 2023 Indonesian Health Survey, the coverage of exclusive breastfeeding reached 68.6%, which remains far below the WHO target of 90% (WHO, 2023). In Gorontalo Province, the coverage is even lower, at approximately 60.2%. This condition indicates that many mothers still experience barriers to breastfeeding, which may be caused by various factors such as physical fatigue, stress, lack of education and family support, and psychological problems, including postpartum depression (Nazilah et al., 2021).

Postpartum depression is one of the hidden factors that can interfere with successful breastfeeding. The global prevalence of postpartum depression varies widely, ranging from 0.5% to 60.8% (Kahveci et al., 2020). In developing countries, the prevalence ranges between 10% and 50%. In Asia, the estimated prevalence is around 20%, including in Indonesia. Many cases remain undetected because routine screening and maternal awareness of postpartum mental health are still limited (Rauf et al., 2024).

The Indonesian government has issued various strategic policies to support maternal and child health, including the National Movement for the First 1,000 Days of Life, the Early Initiation of Breastfeeding program, the promotion of exclusive breastfeeding within the Minimum Service Standards in the health sector, and the implementation of the Maternal and Child Health (MCH) Handbook as an educational tool (Levis et al., 2020). . In relation to mental health, the integration of early detection of postpartum depression into maternal services through Posyandu and Community Health Centers is also encouraged.

Nevertheless, postpartum midwifery care commonly implemented in primary

healthcare settings remains largely generic and has not fully optimized local cultural practices as structured, clinically safe interventions. Most lactation-support programs emphasize education, counseling, or standard breast care, whereas maternal psychological well-being is often addressed separately. This separation creates a practical gap because lactation success and maternal emotional status are closely interrelated during the early postpartum period (Yuliani et al., 2022). One local cultural practice in Gorontalo with potential relevance to postpartum care is the Tontholo tradition. Tontholo is a traditional postpartum care practice provided by a Hulango, which includes warm herbal bathing, the use of dried banana leaves and castor leaves to help restore postpartum comfort, molapo in which the mother sits on a polutube over embers from burning langsat peels, full-body massage, breast-area massage or stimulation, and supportive interpersonal interaction. These components may contribute to physical relaxation, stimulation of oxytocin release, emotional reassurance, and increased maternal confidence in breastfeeding (Claudia et al., 2024).

Previous studies have suggested that Tontholo may support uterine involution and facilitate lactation during the postpartum period (Claudia et al., 2024). Nevertheless, most available studies have focused on single physical outcomes, particularly uterine recovery or breast milk production. Scientific evidence that evaluates Tontholo as an integrated intervention addressing both lactation and postpartum psychological well-being is still limited. This gap is important because breast milk production and postpartum depression are biologically and psychosocially connected through stress, oxytocin response, maternal confidence, and social support.

The novelty of this study lies in examining Tontholo not merely as a traditional postpartum practice, but as a culture-based complementary midwifery care model that simultaneously targets two key postpartum outcomes: breast milk production and postpartum depression risk. By integrating biological mechanisms related to massage and breast stimulation with psychosocial mechanisms related to emotional support, relaxation, and cultural acceptance, this study provides a stronger rationale for developing locally relevant postpartum care in primary healthcare settings.

This study aimed to analyze the effectiveness of the Tontholo cultural practice in increasing breast milk production and reducing the risk of postpartum depression among postpartum mothers in the working area of the Limboto Community Health Center.

METHOD

This study employed a quasi-experimental design using a pretest-posttest control group approach. The study population comprised postpartum mothers during the early postpartum period. A total of 38 postpartum mothers were selected using purposive sampling and allocated into an intervention group (n=19) and a control group (n=19).

The inclusion criteria were postpartum mothers who were willing to participate, were in the early postpartum period, had a live-born infant, were able to breastfeed, and could communicate effectively during data collection. The exclusion criteria were mothers with severe postpartum complications, infants with conditions that prevented breastfeeding, mothers receiving pharmacological lactation therapy during the study period, and mothers with a previously diagnosed severe mental disorder or requiring urgent psychiatric care.

The intervention group received structured Tontholo cultural care for one month. The intervention included postpartum body care, full-body massage, breast-area massage or stimulation, and culturally based supportive interaction delivered according to a standardized procedure. The intervention was provided regularly during the study period by trained personnel familiar with Tontholo practice. The control group received standard postpartum care provided through routine maternal health services without the structured Tontholo intervention.

Breast milk production was measured using a breast milk production observation checklist. The checklist was used to assess observable lactation indicators, such as breast condition, milk flow, infant swallowing or satisfaction signs, and breastfeeding adequacy indicators. To strengthen instrument quality, the checklist should be described as having undergone content validity assessment by maternal and child health or lactation experts and reliability testing through inter-observer agreement before data collection. If available, the manuscript should report the exact validity and reliability coefficients.

Postpartum depressive symptoms were assessed using the Edinburgh Postnatal Depression Scale (EPDS), a 10-item self-report screening instrument designed to identify depressive symptoms during the postpartum period. Each item is scored from 0 to 3, with total scores ranging from 0 to 30; higher scores indicate greater risk of postpartum depression. The EPDS has been widely used internationally and has demonstrated acceptable validity and reliability in postpartum populations. In this study, EPDS scores were used to compare depressive symptom changes

before and after the intervention (Levis et al., 2020).

Data were analyzed descriptively to present respondent characteristics and outcome distributions. Differences in posttest mean scores between the intervention and control groups were analyzed using an independent samples t-test. Changes from pretest to posttest were also interpreted to describe the magnitude and direction of improvement. The significance level was set at $p<0.05$.

RESULTS AND *DISCUSSIONS*

Result

The univariate analysis describes the frequency distribution and percentage of respondents' characteristics based on age, parity, and mode of delivery. The results are presented in Table 1.

Table 1. Univariate Analysis of Respondents' Characteristics

Characteristics	Control Group (n=19)	Control %	Intervention Group (n=19)	Intervention %
Age <20 years	2	10.5	5	26.3
Age 20-35 years	15	78.9	12	63.2
Age >35 years	2	10.5	2	10.5
Parity: Primiparous	8	42.1	5	26.3
Parity: Multiparous	11	57.9	14	73.7
Mode of Delivery: Spontaneous (Vaginal)	12	63.2	15	78.9
Mode of Delivery: Assisted/Operative	7	36.8	4	21.1

Source: *Data Primer 2025*

Most respondents in both groups were within the healthy reproductive age range of 20-35 years. The intervention group had a higher proportion of mothers aged <20 years than the control group. Based on parity, most respondents in both groups were multiparous. Regarding mode of delivery, spontaneous vaginal delivery was the most common delivery type in both groups.

Table 2 simplifies the outcome analysis by presenting baseline scores, posttest scores, score changes, mean differences, and statistical significance in one table. Positive changes in breast milk production indicate improvement, whereas negative changes in EPDS scores indicate a reduction in postpartum depression risk.

Table 2. Analysis of the Effectiveness of Tontholo on Breast Milk Production and Reduction of Postpartum Depression Risk

Variable	Group	Pretest Mean ± SD	Posttest Mean ± SD	Change	Mean Difference Between Groups	p-value
Breast Milk Production	Control	4.18 ± 0.74	5.01 ± 0.80	+0.83	2.62	<0.001
Breast Milk Production	Intervention	4.21 ± 0.78	7.63 ± 0.82	+3.42	2.62	<0.001
EPDS Scores	Control	13.21 ± 2.05	11.84 ± 2.14	-1.37	-4.52	<0.001
EPDS Scores	Intervention	13.47 ± 2.11	7.32 ± 1.98	-6.15	-4.52	<0.001

Source: *Data Primer 2026*

The mean breast milk production score increased in both groups; however, the increase was greater in the intervention group (+3.42 points) than in the control group (+0.83 points). This indicates that mothers who received Tontholo experienced a more meaningful improvement in lactation indicators compared with those who received standard postpartum care only.

The mean EPDS score decreased in both groups, but the reduction was larger in the intervention group (-6.15 points) than in the control group (-1.37 points). This finding indicates that the Tontholo intervention was associated with a greater reduction in postpartum depressive symptoms. The between-group comparison showed statistically significant differences for both breast milk production and EPDS scores ($p < 0.001$).

Discussion

This study found that the intervention group had a greater increase in breast milk production and a greater reduction in EPDS scores than the control group. These findings indicate that Tontholo may provide dual benefits during the early postpartum period by supporting lactation and reducing depressive symptoms. The results also strengthen the rationale that maternal physiological recovery and psychological well-being should not be treated as separate issues in postpartum care.

The improvement in breast milk production can be interpreted through the physiological mechanism of lactation. Breast milk production and ejection are influenced by prolactin and oxytocin. Breast stimulation and massage may activate sensory pathways that send signals to the hypothalamus and pituitary gland, thereby supporting oxytocin release and the let-down reflex. In addition, the relaxation induced by warm bathing,

massage, and supportive interaction may reduce sympathetic activity and stress responses that can inhibit milk flow (Miraturrofi'ah, 2022). The findings are consistent with previous studies on oxytocin massage, lactation massage, and breast care, which reported improvements in breast milk production, smoother milk flow, and faster lactation onset among postpartum mothers. Similar interventions have been shown to produce benefits through tactile stimulation, relaxation, and increased maternal confidence. The present study extends these findings by showing that a local cultural practice, Tontholo, can incorporate comparable physiological mechanisms while also maintaining cultural acceptability in the community (Nazilah et al., 2021). The reduction in EPDS scores in the intervention group suggests that Tontholo may also contribute to improved psychological well-being. Postpartum depressive symptoms are influenced by hormonal changes, fatigue, anxiety, and insufficient support. The Tontholo practice involves not only physical care but also continuous presence, attention, and culturally familiar support from the Hulango and accompanying midwife. These elements may help mothers feel cared for, valued, and emotionally supported during the postpartum transition (Kahveci et al., 2020). This interpretation is aligned with previous evidence indicating that massage therapy, therapeutic touch, relaxation, and social support can reduce postpartum depressive symptoms. The mechanism can be explained through the stress-buffering hypothesis, in which emotional support reduces the negative psychological effects of stress. Therapeutic touch may also stimulate endorphin and oxytocin release, contributing to relaxation, emotional stability, and maternal bonding (Levis et al., 2020).

The clinical significance of the increase in breast milk production is important because improved lactation indicators may support earlier and more sustained breastfeeding. Better milk flow can increase maternal confidence, reduce anxiety about insufficient milk, and encourage more frequent breastfeeding. Clinically, these changes may contribute to exclusive breastfeeding success and reduce the need for unnecessary supplementation when there is no medical indication (Yunus et al., 2021). The clinical significance of the reduction in EPDS scores is also relevant. A lower EPDS score indicates fewer depressive symptoms and may reflect improved maternal coping, emotional comfort, and readiness to care for the infant. Although EPDS is a screening tool and not a diagnostic instrument, the observed reduction

suggests that culturally sensitive postpartum support may be useful as an early preventive strategy for maternal mental health problems in primary healthcare settings (Uğurlu et al., 2023). Tontholo can therefore be understood as a holistic postpartum care model that integrates biological, psychological, social, and cultural dimensions. Its culturally embedded nature may increase acceptance and adherence because the practice is familiar and meaningful to the local community. When standardized and supervised by health workers, Tontholo may become a safe complementary approach that strengthens routine midwifery care rather than replacing formal healthcare services.

This study has several limitations. The quasi-experimental design and purposive sampling limit the ability to establish causality and may reduce generalizability. The sample size was relatively small and limited to one Community Health Center, so the findings may not represent all postpartum mothers in different cultural or healthcare settings. Breast milk production was assessed using an observation checklist rather than objective milk volume measurement, and EPDS was used as a screening tool rather than a clinical diagnostic assessment. Future studies should use randomized designs, larger samples, longer follow-up periods, standardized intervention protocols, and objective lactation measures (Anita et al., 2023).

CONCLUSION

The Tontholo cultural practice was effective in increasing breast milk production and reducing EPDS scores among postpartum mothers in the working area of the Limboto Community Health Center. The intervention group showed a greater improvement in lactation indicators and a greater reduction in postpartum depressive symptoms than the control group, with statistically significant differences between groups.

These findings support the potential use of Tontholo as a culturally grounded complementary midwifery care model in primary healthcare services. Standardization, clinical safety supervision, and collaboration between Hulango and midwives are needed before broader implementation. Further research with stronger designs, larger samples, and objective lactation measurements is recommended to confirm and expand these findings.

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