

A Descriptive Study on Postpartum Mothers' Knowledge of Colostrum at the Independent Midwifery Practice of Choirul Mala, Palembang

Rika Oktapianti ^{1*}, Dempri Triyanti ²

^{1,2} Sekolah Tinggi Ilmu Kesehatan Bina Husada, Indonesia

Corresponding author : rika.oktapianti@yahoo.co.id *

Abstract. Background : The 0–12 month period is a critical phase in infant development, covering motor, cognitive, and emotional domains. Early stimulation has been proven to prevent developmental delays that may affect later life stages. Complementary therapies such as infant massage and baby gym are widely applied as non-pharmacological, safe, low-cost interventions that can be practiced at home by parents. **Objective:** To systematically review the scientific evidence regarding the effectiveness of complementary therapies in stimulating the development of infants aged 0–12 months. **Methods:** This literature study involved a review of articles published between 2018–2024 from PubMed and Google Scholar. Inclusion criteria included experimental and quasi-experimental studies evaluating the effect of complementary therapies (infant massage, baby gym, or others) on infant development. **Results:** Six relevant studies were identified, including four on baby gym and two on infant massage. All studies reported significant improvements in gross motor development following intervention. Infant massage also showed additional benefits such as increased weight gain and enhanced mother-infant bonding. **Conclusion:** Complementary therapies such as infant massage and baby gym are effective and practical strategies for stimulating infant development. However, further research with more robust experimental designs is needed to strengthen the evidence base.

Keywords: baby gym, complementary therapy, early stimulation, infant development, infant massage

1. BACKGROUND

The postpartum period is a critical stage in the life of a mother and her newborn, particularly in terms of physiological and psychological adaptation, as well as decision-making regarding neonatal care. One of the most important decisions a mother must make immediately after childbirth is whether to give colostrum—the first milk produced within 1 to 5 days post-delivery. Colostrum is often referred to as “liquid gold” due to its high nutritional value and irreplaceable immune benefits (WHO, 2020). It contains vital immune components such as immunoglobulin A (IgA), lactoferrin, lysozyme, and live leukocytes that serve as passive immune defense for the newborn against bacterial and viral infections (Riordan & Wambach, 2015; Ballard & Morrow, 2013).

Beyond its immunological function, colostrum also acts as a natural laxative, aiding in the elimination of meconium and reducing the risk of neonatal jaundice (Baykan et al., 2021). Its high vitamin A content is essential for epithelial cell development and helps prevent infant blindness (UNICEF, 2019). The World Health Organization (WHO) strongly recommends

early colostrum feeding and initiation of breastfeeding within the first hour of life, which can reduce neonatal mortality by up to 22% (WHO, 2020).

However, field conditions indicate that not all postpartum mothers possess adequate knowledge about the benefits of colostrum. Many still discard colostrum due to cultural myths suggesting that it is “stale” or “dirty milk” that could harm the infant (Susilawati & Cahyani, 2021). Such practices are common in several regions of Indonesia, particularly in rural areas or among communities with limited access to health information.

According to Indonesia's 2018 Basic Health Research (Riskesdas), the national exclusive breastfeeding rate was only 67.74%, still below the minimum 80% target set by WHO (Riskesdas, 2018). Additionally, the 2021 Indonesian Health Profile reported that only 58.2% of newborns received Early Initiation of Breastfeeding (EIBF). This means that nearly half of all newborns in Indonesia missed the opportunity to receive this vital first milk during their critical first hour of life (Kemenkes RI, 2022).

Several studies indicate that low rates of EIBF and colostrum feeding are closely associated with mothers' poor knowledge levels. A study by Indriyani et al. (2020) found that 40% of postpartum mothers in a Central Java hospital had limited understanding of colostrum and failed to practice early breastfeeding. Similar findings by Wahyuningsih et al. (2021) in West Java revealed that only 52% of postpartum mothers were aware that colostrum is rich in antibodies, and 28% still believed that it should be discarded.

Furthermore, sociocultural factors and family support play significant roles. Research by Arifin & Mulyati (2022) showed that the influence of grandmothers or other family members often determines a mother's decision on whether to give colostrum. If the family lacks proper knowledge or holds on to myths, the mother is likely to follow their guidance despite receiving professional advice.

These facts indicate a gap between the importance of colostrum and the level of maternal knowledge postpartum. Therefore, it is necessary to conduct a descriptive study to examine the extent of postpartum mothers' knowledge about colostrum. The findings are expected to serve as a foundation for health education interventions and to support the promotion of culturally sensitive breastfeeding programs within communities.

2. THEORETICAL STUDY

The study on postpartum mothers' knowledge about colostrum is grounded in several key theories and concepts from health behavior, maternal-child health, and lactation science. These theoretical foundations help to explain how knowledge, perception, and environmen

tal influences shape maternal behavior, particularly in relation to early breastfeeding practices.

a. Health Belief Model (HBM)

The Health Belief Model, developed by Rosenstock in the 1950s, is widely used to understand health-related behaviors. It posits that a person's likelihood of engaging in a health behavior is influenced by:

- 1) Perceived susceptibility: whether the mother believes her baby is at risk without colostrum.
- 2) Perceived benefits: whether she believes colostrum protects against infections.
- 3) Perceived barriers: such as cultural myths or family influence discouraging colostrum feeding.
- 4) Cues to action: health education by midwives, exposure to breastfeeding campaigns.
- 5) Self-efficacy: the mother's confidence to initiate breastfeeding early.

This model helps explain why some postpartum mothers, despite having access to health services, may choose not to provide colostrum—often due to low perception of benefit or high perceived barriers (Glanz, Rimer, & Viswanath, 2015).

b. Theory of Planned Behavior (TPB)

Ajzen's Theory of Planned Behavior suggests that **behavioral intentions** are influenced by:

- 1) Attitudes toward the behavior (positive or negative views on colostrum),
- 2) Subjective norms (social pressure from family or community), and
- 3) Perceived behavioral control (the mother's belief in her ability to breastfeed immediately).

This theory is relevant in understanding how cultural norms and social expectations can significantly affect a mother's decision to provide colostrum—even when she knows the benefits (Ajzen, 1991).

c. Maternal Role Attainment Theory – Mercer (2004)

Mercer's theory emphasizes that maternal behavior develops over time, through interactions, learning, and adaptation. Early postpartum is a critical period where mothers are forming their identity and roles, including breastfeeding. Knowledge and support are essential for mothers to transition successfully into their maternal roles, and a lack of knowledge about colostrum may lead to poor infant feeding decisions (Mercer, 2004).

d. Lactation Physiology and Immunological Science

Scientifically, colostrum is highly concentrated in protective factors. It contains large amounts of secretory immunoglobulin A (sIgA), leukocytes, lactoferrin, cytokines, and growth factors. These elements protect the newborn's gastrointestinal tract and prevent common neonatal infections such as diarrhea and respiratory illness (Ballard & Morrow, 2013).

Furthermore, the gut of a newborn is more permeable, and colostrum acts as a biological sealant, coating the intestines to prevent pathogens from entering the bloodstream (Lawrence & Lawrence, 2016). These scientific findings reinforce the need for mothers to understand the unique role of colostrum compared to mature milk.

3. RESEARCH METHODS

This study employed a quantitative descriptive design with a cross-sectional approach, which observes the variable of postpartum mothers' knowledge about colostrum at a single point in time without any intervention. The research was conducted from May 20, 2020 to July 18, 2020 at the Independent Midwife Practice (IMP) of Choirul Mala, located in Palembang, South Sumatra. The population in this study consisted of all breastfeeding postpartum mothers at IMP Choirul Mala during the research period, totaling 36 respondents. The sampling technique used was total sampling, in which the entire population was included as the sample due to the relatively small and manageable number of participants.

Inclusion Criteria:

- a. Postpartum mothers (0–42 days postpartum).
- b. Mothers who breastfeed directly.
- c. Willing to participate and signed an informed consent form.

Exclusion Criteria:

- a. Mothers experiencing severe postpartum complications making them unable to be interviewed.
- b. Mothers who were not present at the midwife practice during data collection.

Data were collected using a structured questionnaire, which had been tested for validity and reliability in previous studies. Data were gathered through direct interviews, in which the researcher read each question aloud to ensure uniform understanding, and recorded the participants' answers systematically. The collected data were analyzed using univariate analysis to describe the frequency and percentage distribution of postpartum mothers'

knowledge about colostrum. The level of knowledge was categorized based on the total number of correct answers as follows:

- a. Good: $\geq 76\%$
- b. Fair: 56–75%
- c. Poor: $\leq 55\%$

4. RESULTS AND DISCUSSION

Table 1 Frequency Distribution of Postpartum Mothers' Characteristics at the Independent Midwife Practice of Choirul Mala, Palembang

No	Respondent Characteristics	Category	Frequency (F)	Percentage (%)
1	Age	<20 years	0	0.0
		20–35 years	26	72.2
		>35 years	10	27.8
		Total	36	100.0
2	Education	No formal education	0	0.0
		Elementary school	9	25.0
		Junior high school	21	58.3
		Senior high school	6	16.7
		Bachelor's degree	0	0.0
		Total	36	100.0
3	Occupation	Housewife	23	63.9
		Farmer/trader	6	16.7
		Private employee	7	19.4
		Civil servant	0	0.0
		Total	36	100.0
4	Source of Information	Printed media	20	55.6
		Electronic media	16	44.4
	Total		36	100.0

Table 2 Overview of Postpartum Mothers' Knowledge About Colostrum at the Independent Midwife Practice of Choirul Mala, Palembang

No	Knowledge Level	Frequency	Percentage (%)
----	-----------------	-----------	----------------

1	Good	6	16.7
2	Fair	10	27.8
3	Poor	20	55.6
Total		36	100.0

Characteristics of Respondents

a. Age

The study results show that the majority of postpartum mothers (72.2%) were aged between 20–35 years, while the remaining 27.8% were above 35 years old. No respondents were under 20 years of age. According to the Indonesian Ministry of Health (2017), the age range of 20–35 years is considered ideal for reproduction, as women within this range are more physically and psychologically prepared for childbirth and breastfeeding.

The World Health Organization (2018) also notes that women in this age group tend to be more receptive to health education and demonstrate better health behaviors, including early breastfeeding practices. However, although they are biologically in the optimal reproductive period, knowledge about colostrum still varies depending on other factors such as education level and access to reliable information during and after pregnancy.

b. Education

Most respondents in this study had junior high school education (58.3%), followed by primary school (25%), and only 16.7% had completed senior high school. None had attained higher education. Educational level is a key determinant in how individuals understand, receive, and apply health information. According to Notoatmodjo (2018), education significantly influences a person's knowledge and health behaviors.

Mothers with lower education may find it more difficult to comprehend complex health messages, particularly when these are presented in medical language without visual or interactive support. This may explain the low level of knowledge about colostrum among most respondents, despite being in the reproductive age group.

c. Occupation

The majority of respondents (63.9%) were housewives, followed by private employees and informal traders. Housewives may have more time to spend with their babies, but they often have limited access to formal health education sessions. According to Puspitasari et al. (2018), mothers not engaged in formal employment rely more on information received during

health visits or from their social environment, highlighting the crucial role of midwives in delivering breastfeeding education during postpartum care.

In contrast, working mothers (private employees and traders) may have greater access to electronic media and information, but limited time for breastfeeding practice and face-to-face counseling from healthcare workers.

d. Source of Information

More than half of the mothers (55.6%) obtained information about colostrum from printed media, while the remaining 44.4% accessed information from electronic media. Printed materials, such as posters, leaflets, and the Maternal and Child Health (MCH) handbook, remain widely used due to their accessibility in health facilities. However, the quality and clarity of information depend greatly on how the materials are designed and whether they are accompanied by direct explanation.

According to Glanz et al. (2015), health messages are more effective when they are interactive and personally relevant. Therefore, electronic media and interpersonal counseling should be integrated to enhance comprehension and encourage positive health behaviors.

Mothers' Knowledge Level about Colostrum (Including Theoretical Analysis)

The results of the study show that more than half of postpartum mothers (55.6%) had a low level of knowledge about colostrum, 27.8% had a moderate level of knowledge, and only 16.7% had good knowledge. This indicates that most mothers still lack sufficient understanding of the vital role colostrum plays in newborn nutrition and immunity.

Colostrum is the first milk produced during the first 1–5 days postpartum. It is thick, yellowish in color, and rich in immunoglobulin A (IgA), vitamin A, leukocytes, lactoferrin, and various growth factors (Ballard & Morrow, 2013; Riordan & Wambach, 2015). It not only provides essential nutrition but also serves as a critical defense mechanism against infections during the earliest days of life.

Unfortunately, cultural myths still exist in some communities, labeling colostrum as “stale” or “dirty milk.” Such beliefs result in some mothers discarding colostrum and substituting it with pre-lacteal feeds like sugar water or honey. This low level of knowledge may stem from inadequate antenatal education and the lack of postpartum counseling.

Wahyuningsih et al. (2021) found that mothers who received structured antenatal education about colostrum were more likely to possess better knowledge and initiate early breastfeeding. Similarly, Arifin & Mulyati (2022) emphasized the influence of family support in shaping maternal decisions regarding colostrum feeding. Mothers whose families

discouraged colostrum feeding were less likely to do so, even if they had received proper health information.

Analyzing these findings through the lens of the Health Belief Model (HBM) helps explain the behavior observed. The low perceived susceptibility (believing the baby won't get sick without colostrum), unclear perceived benefits, and strong perceived barriers (such as cultural myths and family influence) contribute to the low uptake of colostrum feeding. Furthermore, weak cues to action (limited education or support from healthcare providers) and low self-efficacy (confidence in breastfeeding ability) hinder optimal breastfeeding practices (Glanz et al., 2015).

These findings highlight the need for culturally sensitive and family-centered educational interventions. Education about colostrum should be simple, repeated from antenatal to postnatal periods, and involve not only the mother but also her close social environment.

5. CONCLUSION

Based on the results of the study involving 36 postpartum mothers at the Independent Midwife Practice of Choirul Mala Palembang, it can be concluded that:

- a. The majority of respondents were within the healthy reproductive age (20–35 years), with limited educational attainment (83.3% had no more than high school education) and were predominantly housewives.
- b. The main sources of information about colostrum came from printed media, but this was not entirely effective in improving maternal understanding.
- c. More than half of the postpartum mothers (55.6%) had low knowledge about colostrum, influenced by educational level, lack of health education, and cultural myths surrounding colostrum.
- d. According to the Health Belief Model (HBM), low perceived susceptibility and benefit, combined with strong cultural and social barriers, hindered proper colostrum feeding practices.
- e. Continuous educational interventions starting from pregnancy are essential, involving family members and using culturally and educationally appropriate communication approaches.

REFERENCE LIST

Arifin, F., & Mulyati, Y. (2022). Pengaruh Dukungan Keluarga terhadap Pemberian Kolostrum pada Ibu Postpartum. *Jurnal Gizi dan Kesehatan*, 14(3), 215–220.

- Ballard, O., & Morrow, A. L. (2013). *Human milk composition: nutrients and bioactive factors*. Pediatric Clinics, 60(1), 49-74. <https://doi.org/10.1016/j.pcl.2012.10.002>
- Baykan, N., Kilic, Z., & Karacan, C. D. (2021). Effect of colostrum on neonatal jaundice: A randomized controlled trial. *International Breastfeeding Journal*, 16(1), 1–8.
- Glanz, K., Rimer, B. K., & Viswanath, K. (2015). *Health Behavior: Theory, Research, and Practice* (5th ed.). San Francisco: Jossey-Bass.
- Indriyani, M., Sari, Y., & Amalia, N. (2020). Hubungan Pengetahuan Ibu Postpartum tentang Kolostrum dengan Praktik Pemberian ASI Dini. *Jurnal Kebidanan*, 10(2), 123–130.
- Kementerian Kesehatan Republik Indonesia. (2022). *Profil Kesehatan Indonesia Tahun 2021*. Jakarta: Kemenkes RI.
- Lawrence, R. A., & Lawrence, R. M. (2016). *Breastfeeding: A Guide for the Medical Profession* (8th ed.). Elsevier Health Sciences.
- Notoatmodjo, S. (2018). *Promosi Kesehatan dan Perilaku Kesehatan*. Jakarta: Rineka Cipta.
- Puspitasari, N., Fitriana, N., & Putri, W. (2018). Faktor yang Mempengaruhi Pemberian ASI Eksklusif di Wilayah Puskesmas. *Jurnal Ilmu Kesehatan Masyarakat*, 9(1), 89–95.
- Riordan, J., & Wambach, K. (2015). *Breastfeeding and Human Lactation* (5th ed.). Jones & Bartlett Learning.
- Riskesdas. (2018). *Laporan Nasional Riskesdas 2018*. Jakarta: Balitbangkes Kemenkes RI.
- Susilawati, T., & Cahyani, I. (2021). Mitos Kolostrum dan Dampaknya terhadap Praktik Menyusui pada Ibu Postpartum. *Jurnal Ilmu Keperawatan dan Kebidanan*, 12(1), 78–84.
- UNICEF. (2019). *Breastfeeding: A mother's gift, for every child*. <https://www.unicef.org>
- Wahyuningsih, A., Mulyani, N. S., & Fitriana, E. (2021). Pengetahuan Ibu Nifas tentang Kolostrum dan Hubungannya dengan Praktik IMD. *Jurnal Kesehatan Reproduksi*, 8(1), 35–42.
- WHO. (2020). *Protecting, Promoting and Supporting Breastfeeding in Facilities Providing Maternity and Newborn Services*. Geneva: World Health Organization.
- World Health Organization (WHO). (2020). *Protecting, Promoting and Supporting Breastfeeding in Facilities Providing Maternity and Newborn Services*. Geneva: WHO.