

Nursing care for post-caesarean mothers with ineffective breastfeeding through oxytocin massage combined with breastfeeding education and breast care

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ABSTRACT

Background: Ineffective breastfeeding is common among post-caesarean mothers and may be associated with delayed milk flow, postoperative pain, difficulty with breastfeeding positioning and attachment, nipple problems, and limited maternal knowledge. Oxytocin massage is a supportive nursing intervention intended to promote maternal relaxation and support the milk-ejection reflex. **Objective:** This case study described nursing care for post-caesarean mothers with ineffective breastfeeding through oxytocin massage combined with breastfeeding education and breast care. **Methods:** A descriptive case study used a nursing-process approach comprising assessment, diagnosis, planning, implementation, and evaluation. Three primiparous post-caesarean mothers (aged 23–28 years) were selected by convenience sampling. Baseline assessment, three days of intervention, and final evaluation were conducted between 25 and 28 April 2026. Data were collected through interviews, observation, physical examination, and documentation, with breastfeeding status rated using the Indonesian Nursing Outcome Standards (SLKI). The intervention combined oxytocin massage with breastfeeding education, positioning and latch-on training, breast and nipple care, milk-expression education, and family support. **Results:** At baseline, all three mothers showed breastfeeding difficulties, including limited or absent milk flow, positioning and latch difficulties, and nipple problems. After three days, all three improved on selected indicators, including attachment, positioning, milk flow, maternal confidence, and sucking. Shared SLKI scores rose from 2 to 4, against a target of 5. **Conclusion:** Oxytocin massage combined with breastfeeding education and breast care was followed by improvement in selected indicators over three days. As a descriptive case study, it cannot establish intervention efficacy or effects on exclusive breastfeeding. Controlled studies are needed to test its independent effectiveness.

Keywords: Caesarean Section; Ineffective Breastfeeding; Nursing Care; Oxytocin Massage; Breastfeeding Education

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1. INTRODUCTION

Childbirth is a physiological process that can occur through vaginal or operative delivery. Caesarean section is a surgical procedure performed when clinically indicated to protect maternal or fetal health, and its use has risen steadily worldwide, with an estimated 21.1% of births delivered by caesarean globally as of 2018 (Betrán et al., 2021). It can be an important life-saving procedure, yet it also brings postoperative recovery demands that may influence maternal comfort and breastfeeding. The World Health Organization advises that caesarean section be provided when medically necessary and that population-level rates not be treated as a universal target for individual hospitals or countries (World Health Organization, 2015).

According to the 2023 Indonesian Health Survey (SKI), about 17–18% of births in Indonesia were delivered by caesarean section, with a higher proportion reported in Jakarta (Badan Kebijakan Pembangunan Kesehatan, 2023). Caesarean delivery therefore represents an important context for maternity nursing, particularly for postoperative recovery and breastfeeding support. Breastfeeding difficulties often appear during the early post-caesarean period, when postoperative pain, limited mobility, psychological stress, and delayed initiation can interfere with the breastfeeding process. Physiologically, prolactin drives milk synthesis, whereas oxytocin governs milk ejection; discomfort and stress can disrupt the milk-ejection reflex and contribute to delayed or inadequate milk flow (Astuti et al., 2023).

The neuroendocrine basis of milk ejection helps explain why supportive, relaxation-oriented interventions are used in lactation care. Suckling and cutaneous stimulation of the back and breast send afferent signals to the hypothalamus, triggering pulsatile oxytocin release; oxytocin then causes the myoepithelial cells surrounding the alveoli to contract, moving milk toward the nipple in the let-down reflex (Uvnäs-Moberg et al., 2019). Maternal stress and pain can inhibit this reflex, so interventions that lower stress and support effective milk removal are physiologically plausible adjuncts to breastfeeding care (Kent et al., 2012).

From a nursing perspective, these problems can be framed using the Indonesian Nursing Diagnosis Standards (SDKI). Ineffective Breastfeeding (D.0029) describes a condition in which the breastfeeding process does not adequately meet the infant's needs (PPNI, 2018a). In the present cases, the diagnosis was supported by limited milk flow, ineffective infant sucking or attachment, difficulty with positioning, infant fussiness, nipple problems, and limited maternal knowledge of breastfeeding technique. The expected outcome was Breastfeeding Status (L.03029) under the Indonesian Nursing Outcome Standards (SLKI), with indicators such as infant attachment, maternal positioning, milk flow, adequate supply, maternal confidence, sleep after breastfeeding, infant sucking, nipple condition, and infant fussiness (PPNI, 2018b).

The Indonesian Nursing Intervention Standards (SIKI) recommend breastfeeding education and related supportive measures for breastfeeding problems (PPNI, 2018c). One supportive measure is oxytocin massage, performed along the paravertebral region to promote relaxation and support the let-down reflex, and included in national nursing-procedure guidance (PPNI, 2021). International evidence likewise supports structured breastfeeding support and education as ways to improve breastfeeding practice and maternal self-efficacy (Dennis, 2003; McFadden et al., 2017; World Health Organization & UNICEF, 2018). Several studies have reported improvements after oxytocin massage. Astuti et al. (2024) found that combining emotional management with oxytocin massage raised both oxytocin and prolactin levels in working postpartum mothers with oligogalactia. Erciyas and Kavlak (2024) reported, in a randomised controlled trial, that back massage produced significantly higher breast-milk volumes and lower maternal anxiety than a control group. Wulandari et al. (2020) likewise showed that oxytocin massage combined with music therapy improved both milk production and breastfeeding self-efficacy in primiparous postpartum mothers. In an Indonesian hospital setting, Afriani et al. (2024) similarly found that oxytocin massage education improved breastfeeding behaviour among postpartum mothers, supporting the relevance of structured

oxytocin massage education as part of routine postpartum nursing care.

Improvement observed after oxytocin massage in a clinical case cannot, on its own, be read as evidence of a causal effect, because breastfeeding is shaped by many concurrent factors, including the normal progression of lactogenesis, breastfeeding frequency, latch quality, maternal comfort, education, emotional support, and family involvement. This case study was conducted at RSKB Columbia Asia Pulomas to document post-caesarean mothers who experienced delayed or limited milk flow,

breast fullness or discomfort, difficulty with breastfeeding positions, and concerns about their infants' intake. These observations provided a clinical basis for an integrated nursing-care approach combining oxytocin massage, breastfeeding education, breast care, and family support. Figure 1 summarises this integrated approach and its proposed mechanism. The study aimed to describe nursing care for post-caesarean mothers with ineffective breastfeeding through oxytocin massage combined with breastfeeding education and breast care.

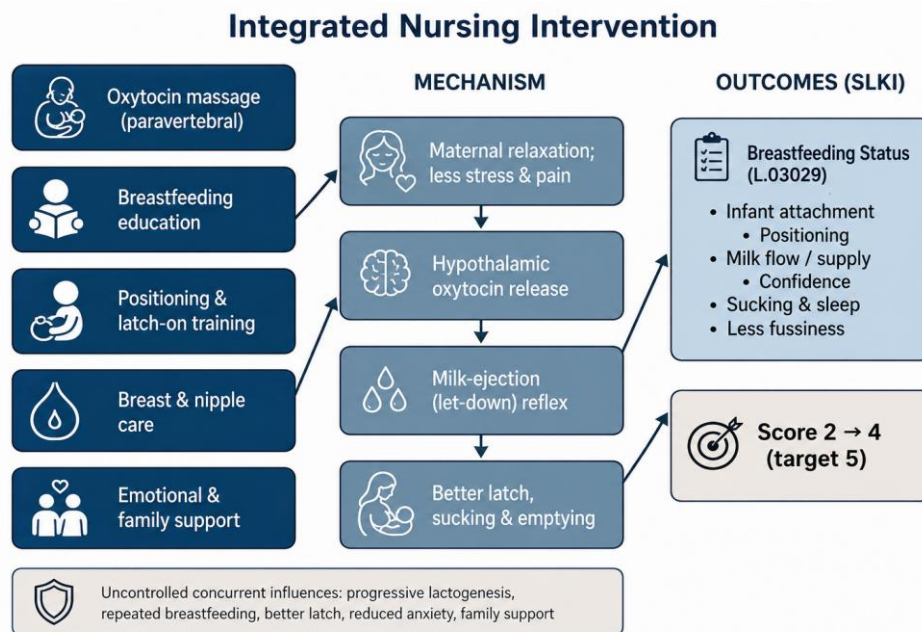


Figure 1. Conceptual framework of the integrated nursing intervention, its proposed physiological and behavioural mechanism, and the targeted SLKI outcomes. Uncontrolled concurrent influences are shown at the base.

2. METHODS

2.1 Study Design

This study used a descriptive case-study design with a nursing-process approach comprising assessment, nursing diagnosis,

intervention planning, implementation, and evaluation. Nursing diagnoses were determined using the SDKI, expected outcomes were based on the SLKI, and interventions were guided by the SIKI (PPNI, 2018a; PPNI, 2018b; PPNI, 2018c). Figure 2 shows the overall study flow and the three-day care process.

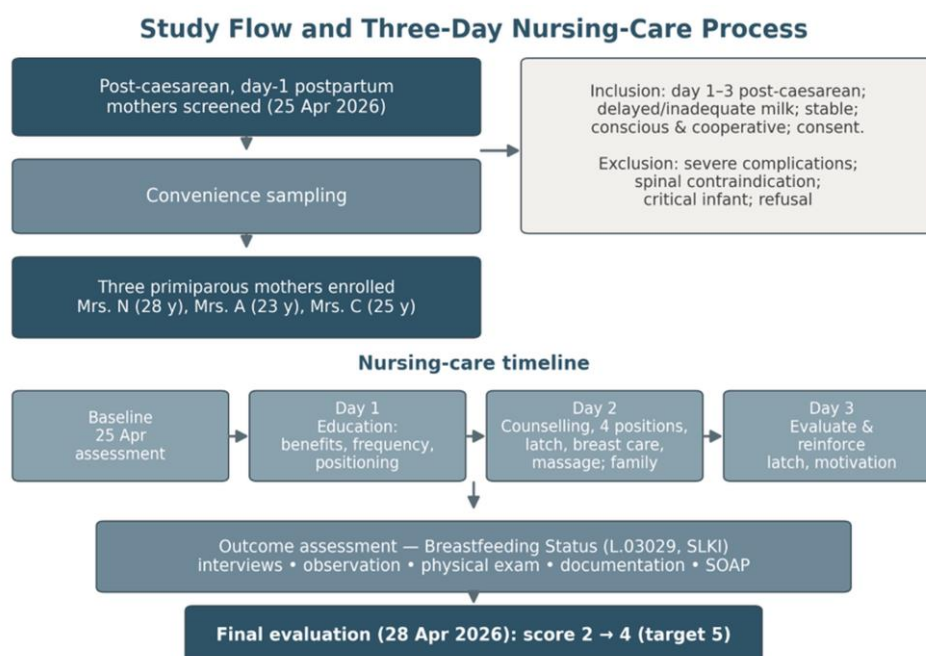


Figure 2. Study flow, eligibility criteria, and the three-day nursing-care timeline from baseline assessment to final evaluation.

2.2 Participants

Three primiparous mothers receiving inpatient care at RSKB Columbia Asia Pulomas were included: Mrs. N (28 years), Mrs. A (23 years), and Mrs. C (25 years). Baseline screening on 25 April 2026 documented all three as post-caesarean, first-day postpartum patients with ineffective breastfeeding.

Inclusion criteria were a post-caesarean mother on the first to third day of care, delayed or inadequate milk production, a stable haemodynamic condition, being conscious and cooperative, and willingness to participate. Exclusion criteria were severe postoperative complications such as bleeding or systemic infection, spinal disorders or other contraindications to oxytocin massage, a critical infant condition preventing breastfeeding, an inability to sit, unconsciousness or lack of cooperation, and refusal to participate. The three mothers were recruited by convenience sampling based on availability, accessibility, and suitability as sources of clinical information (Golzar et al., 2022).

2.3 Study Timeline

Baseline assessment was conducted on 25 April 2026. Nursing interventions were implemented from 26 to 28 April 2026, and final evaluation followed on 28 April 2026.

2.4 Interventions and Procedures

The nursing intervention combined oxytocin massage with breastfeeding education and breast care. Oxytocin massage followed the standard operating procedure in PPNI (2021) nursing-procedure guidance. The mother sat and leaned forward while embracing a pillow or resting on a table, with the upper back exposed and privacy maintained. Using the thumbs, the nurse applied circular movements along both sides of the spine toward the scapular region. The sequence was repeated three times, each lasting about 3–5 minutes.

The massage was accompanied by breastfeeding education, lactation counselling, positioning and latch-on training, breast and nipple care, milk-expression education, emotional support, and family involvement, delivered over three days. On the first day, mothers received education on the benefits of breastfeeding, feeding frequency, correct positions, and signs of adequate intake. On the second day, they received counselling, learned four breastfeeding positions and latch-on

techniques, and were taught breast care, milk expression, and oxytocin massage; husbands and family members were involved as a support system. On the third day, positioning and latch-on were re-evaluated and reinforced.

To support consistency, the massage and education were delivered by the attending nurse following the PPNI procedure, and husbands were trained to perform the massage twice daily under nursing guidance. Formal, checklist-based fidelity monitoring was not undertaken, which is acknowledged as a limitation.

2.5 Data Collection and Outcome Assessment

Data were collected through interviews, observation, physical examination, clinical documentation, nursing-implementation records, and breastfeeding-status evaluation. The outcome measure was the Breastfeeding Status (L.03029) indicator set from the SLKI, a standardised nursing-outcome framework issued by the Indonesian National Nurses Association (PPNI, 2018b). The indicators were infant attachment to the breast, maternal ability to position the infant, milk drops or flow, adequate supply, maternal confidence, sleep after breastfeeding, infant sucking, nipple soreness or abrasion, infant fussiness, and crying after breastfeeding.

Each indicator was rated using the SLKI five-point scale, and the scores are reported as documented in the nursing evaluation. Ratings were assigned by the attending nurse at baseline and during daily evaluation; independent double rating and formal inter-rater reliability were not performed. Changes were documented using the SOAP framework.

2.6 Data Analysis

Data were analysed descriptively by comparing each participant's baseline breastfeeding condition with the condition after three days of nursing care. Findings are presented as narrative descriptions, tables, and a figure summarising the SLKI scores (Figure 3). Because the study involved three clinical cases with no comparison group, the analysis was descriptive and narrative, and no inferential statistical test was applied. This choice is appropriate for the design: with three cases and no control group, inferential testing would be neither valid nor interpretable.

2.7 Ethical Considerations

Written informed consent was obtained from each participant before participation. The consent process covered the purpose, procedures, benefits, confidentiality assurances, and voluntary nature of participation. Participant identities were protected by using initials rather than full names. The study followed the principles of informed consent, confidentiality, anonymity, beneficence, non-maleficence, justice, and respect for human dignity.

Ethical approval for this case study was obtained under approval number 359/KEP/UNKAHA/SLE/I/2026.

3. RESULTS

3.1 Baseline Assessment

Baseline assessment of the three primiparous mothers was conducted on 25 April 2026. Mrs. N had vital signs within normal limits (blood pressure 118/80 mmHg, temperature 36.6°C, pulse 87 beats/min, respiratory rate 20 breaths/min); breast assessment showed swelling, no visible milk flow, a less prominent right nipple, and a scratched left nipple. Mrs. A had blood pressure 120/80 mmHg, temperature 36.5°C, pulse 80 beats/min, and respiratory rate 20 breaths/min, with firm, full breasts, protruding nipples, and an infant who had difficulty attaching. Mrs. C had blood pressure 110/80 mmHg, temperature 36.3°C, pulse 82 beats/min, and respiratory rate 20 breaths/min, with hard, full breasts, non-prominent nipples, and an incorrect infant position. Baseline characteristics and breastfeeding problems are summarised in Table 1.

Table 1. Baseline characteristics and breastfeeding problems

Participant	Age	Baseline breastfeeding findings
Mrs. N	28 years	Milk had not flowed adequately; breast discomfort; difficulty with positioning; infant frequently fussy or crying; weak infant sucking; less prominent right nipple; scratched/sore left nipple

Mrs. A	23 years	Milk had not flowed; inadequate infant sucking; infant fussy and crying during breastfeeding; no infant urination for 12 hours; firm, full breasts; infant difficulty latching
Mrs. C	25 years	Limited, non-smooth milk flow; difficulty positioning the infant; fussy infant; hard, full breasts; non-prominent nipples; incorrect breastfeeding position

3.2 Nursing Diagnosis

In all three cases, the nursing diagnosis was Ineffective Breastfeeding related to inadequate breast-milk supply, supported by inadequate milk flow, weak or ineffective infant sucking, difficulty with positioning and attachment, infant fussiness, nipple problems, and difficulty applying appropriate breastfeeding techniques.

The clinical picture showed that breastfeeding difficulty was multifactorial. Ineffective attachment, nipple problems, postoperative discomfort, and limited knowledge were treated as contributing clinical factors rather than as separate diagnoses replacing the documented one.

3.3 Nursing Intervention

Nursing care was delivered from 26 to 28 April 2026. On the first day, the mothers were assessed for readiness to receive breastfeeding information, their goals were identified, and education was provided on the benefits of breastfeeding, feeding frequency, positioning, and signs of adequate intake; they were encouraged to ask questions and received emotional support.

On the second day, husbands and family members were involved as a support system, breastfeeding counselling addressed common difficulties, and four breastfeeding positions with appropriate latch-on techniques were demonstrated, together with postpartum breast and nipple care, milk expression, and oxytocin massage.

On the third day, positioning and latch-on were evaluated, and reinforcement and motivation were provided to support continued breastfeeding.

3.4 Nursing Evaluation

At final evaluation, Mrs. N reported smoother milk flow, understood the correct position and attachment, and felt more confident; her infant appeared calmer after feeding. Breast pain had decreased, although the left nipple remained slightly sore at the start of feeds. Her husband performed oxytocin massage in the morning and evening, and the infant breastfed 11 times per day.

Mrs. A reported that her milk began to flow after the second day of oxytocin massage performed by her husband twice daily, and she felt more relaxed. Infant urination was normal over 24 hours, and the infant was in good condition, not fussy, and slept after breastfeeding; milk flow was smoother.

Mrs. C reported improved milk flow and better understanding of breastfeeding and oxytocin massage. Her husband was able to perform the massage consistently in the morning and evening. The infant breastfed 12 times, the nipples were more prominent, sucking appeared stronger and longer, and the infant was less fussy after feeding. Outcomes for the three mothers are presented in Table 2, and the SLKI evaluation is shown in Table 3 and Figure 3.

Table 2. Breastfeeding outcomes after three days of nursing care

Indicator	Baseline condition	Final condition
Infant attachment	Attachment difficulties were observed	Attachment improved
Maternal positioning	Difficulty positioning infants	Improved positioning
Milk flow	Limited or absent milk flow	Milk flow reported as smoother
Maternal confidence	Limited confidence and knowledge	Confidence and understanding increased
Infant sucking	Weak or ineffective sucking	Sucking appeared stronger
Infant sleep after feeding	Fussiness reported	Infants calmer and/or slept after feeding

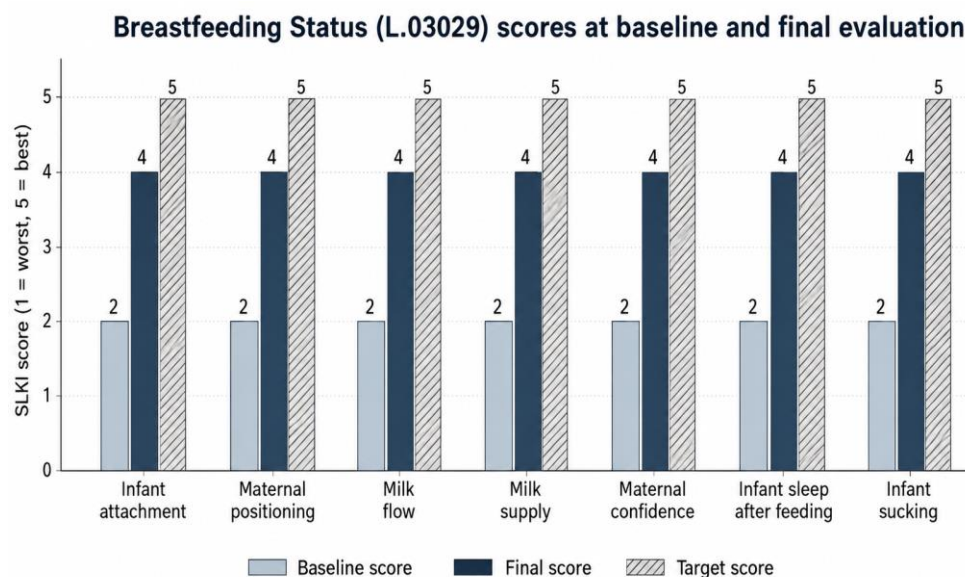
Infant fussiness	Fussiness/crying during or after feeding	Fussiness decreased	Mother's ability to position the infant correctly	2	5	4
Nipple condition	Soreness, scratching, or non-prominent nipples	Nipple condition improved in documented cases	Milk drops / flow	2	5	4
			Adequate breast-milk supply	2	5	4
			Maternal confidence	2	5	4
			Infant sleep after breastfeeding	2	5	4
			Infant sucking	2	5	4
			Infant fussiness	2	5	4
			Infant crying after breastfeeding	2	5	4
			Nipple soreness or abrasion (Case 1 only) ^a	3	5	4

Documented scores were identical across all three cases (Cases 1–3) for the shared indicators below unless otherwise noted. The values are presented as documented; no participant-specific differences are inferred where none were recorded.

Table 3. SLKI (Breastfeeding Status, L.03029) scores

Indicator	Baseline score	Target score	Final score
Infant attachment to the mother's breast	2	5	4

^aThe nipple-condition indicator was documented only for Case 1 (Mrs. N); it was not recorded for Cases 2 and 3. Scores are reproduced as documented in the SLKI evaluation.



Scores were identical for all three cases as documented; the nipple-condition indicator (Case 1 only: 3 → 4) is omitted.

Figure 3. Breastfeeding Status (L.03029) scores at baseline and final evaluation against the target score, for the seven shared positive indicators.

Overall, the documented final evaluation showed improvement in breastfeeding status,

although the target score was not fully reached within the three-day period.

4. DISCUSSION

The three cases shared a common pattern of ineffective breastfeeding after caesarean section: limited milk flow, ineffective latch or positioning, infant fussiness, and maternal uncertainty. This pattern is consistent with the nursing diagnosis of ineffective breastfeeding and with previous descriptions of breastfeeding difficulty among post-caesarean mothers (Ekasari & Adimayanti, 2022). It also shows that ineffective breastfeeding cannot be reduced to milk supply alone. Postoperative pain, nipple condition, positioning and latch, maternal knowledge, psychological comfort, and family support all interacted in the observed situations. Pain can reduce comfort and interfere with positioning, limited mobility can make an appropriate position harder to maintain, and stress and anxiety can undermine maternal confidence and the breastfeeding process (Astuti et al., 2023).

In these cases, the problem was not defined by inadequate milk flow alone. Mrs. N had breast discomfort and nipple problems and did not initially understand appropriate positioning. Mrs. A had ineffective sucking and attachment, an unsettled infant, and no infant urination for 12 hours. Mrs. C had limited milk flow, firm breasts, non-prominent nipples, and incorrect positioning. Taken together, these findings point to ineffective breastfeeding as a multidimensional nursing problem.

Difficulties improved after a structured three-day programme. Education and counselling mattered because all three mothers reported limited understanding of positioning, latch-on, breast care, or oxytocin massage. On the second day they practised four positions and correct attachment, and family members took part. This aligns with reports that breastfeeding education and support can strengthen maternal confidence and practice after caesarean section (Anita et al., 2022; Brockway et al., 2017) and with international evidence that structured support improves breastfeeding outcomes and self-efficacy (Dennis, 2003; McFadden et al., 2017).

Oxytocin massage served as the main supportive measure. Mothers reported greater comfort and smoother milk flow after it, and infants were observed to feed more effectively and settle more easily. The technique is applied

along the paravertebral region to promote relaxation and support the milk-ejection reflex, a mechanism consistent with the neuroendocrine control of let-down (Uvnäs-Moberg et al., 2019; Kent et al., 2012). These observations echo earlier reports of increased milk production and comfort after oxytocin massage in postpartum mothers: Erciyas and Kavlak (2024) documented higher milk volumes and lower anxiety with back massage in a randomised trial, and Astuti et al. (2024) found that oxytocin massage raised oxytocin and prolactin levels. Wulandari et al. (2020) similarly reported improved milk production and breastfeeding self-efficacy after oxytocin massage combined with music therapy in primiparous mothers. Afriani et al. (2024) similarly reported that oxytocin massage education strengthened breastfeeding behaviour among postpartum mothers in an Indonesian hospital setting, reinforcing its relevance as a routine nursing intervention in comparable clinical contexts.

The improvements cannot be attributed to oxytocin massage alone. It was delivered alongside breastfeeding education, latch-on training, breast care, repeated breastfeeding, emotional support, and family involvement. Lactogenesis also advances naturally during the first postpartum days, so maturation of lactation, repeated breast stimulation, better latch, reduced anxiety, and family support are plausible concurrent explanations for the changes. The design had no control or comparison group, included only three cases, and used no inferential analysis. The findings should therefore be read as clinical observations rather than as evidence of a causal effect.

For the shared SLKI indicators, the documented scores increased from 2 at baseline to 4 at final evaluation against a target of 5. This pattern was documented across the three cases and indicates improvement during the three-day care period, although the intended target was not reached. Continued education, positioning and latch-on support, breast care, family support, and reassessment therefore remained necessary at discharge.

Several limitations should be considered when interpreting these results. The sample was small (three mothers) and selected by convenience sampling, and there was no control or comparison group. The intervention

combined oxytocin massage with several other breastfeeding-support measures, so its independent contribution cannot be isolated. Fidelity monitoring was not formally documented, ratings were not independently double-checked for reliability, and breast-milk volume was not measured objectively. The shared SLKI indicators were documented with identical baseline and final scores across the three cases; these values are reported as recorded, without inferring participant-specific differences that were not documented. In Mrs. A's case, the baseline finding of no infant urination for 12 hours was clinically important; the present report does not document additional evaluation or management of that finding, so the subsequent normalization of urination should not be attributed specifically to the nursing intervention.

The outcomes were short-term (three days) and did not include exclusive breastfeeding, longer-term continuation, or infant weight gain. Controlled studies with larger samples, standardised protocols, validated breastfeeding measures, and objective infant outcomes are needed to determine the independent effectiveness of oxytocin massage.

5. CONCLUSION

The three post-caesarean mothers in this case study experienced ineffective breastfeeding marked by limited milk flow, difficulty with attachment and positioning, infant fussiness, nipple problems, and limited breastfeeding knowledge. After three days of nursing care combining oxytocin massage with breastfeeding education and breast care, all three improved on selected breastfeeding indicators. For the shared SLKI indicators, the documented scores were 2 at baseline and 4 at final evaluation, against a target of 5. These observations describe what happened during the care period; the case-study design cannot establish intervention efficacy or effects on exclusive breastfeeding. Controlled studies are required to determine the effectiveness of oxytocin massage as an independent intervention.

DECLARATIONS

Acknowledgement

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Conflict Of Interest

The authors declare no conflict of interest.

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Ethics Statement

Written informed consent was obtained from all participants before participation. Participants received information on the purpose, procedures, benefits, possible discomfort, confidentiality, and voluntary nature of participation, and their identities were protected by using initials rather than full names. The case study followed the principles of informed consent, confidentiality, anonymity, beneficence, non-maleficence, justice, and respect for human dignity. This case study received ethical approval under Approval No. 359/KEP/UNKAHA/SLE/I/2026.

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