



THE EFFECT OF MATERNAL NEWBORN SKIN TO SKIN CONTACT IN PREMATURE INFANTS ON SUCCESSFUL INITIATION OF BREASTFEEDING: A SYSTEMATIC LITERATURE REVIEW

Fahrul Nizam¹, Asnawi Abdullah^{1*}, Dharina Baharuddin¹, Nurjannah², Fahmi Ichwansyah¹

¹Master of Public Health Program, Universitas Muhammadiyah Aceh, Jl. Muhammadiyah No.91, Desa Batoh, Lueng Bata, Banda Aceh, Aceh 23123, Indonesia

²Public Health Department, Medical School, Universitas Syiah Kuala, Jl. Teuku Nyak Arief No.441, Kopelma Darussalam, Banda Aceh, Aceh 23123, Indonesia

*asnawi.abdullah@gmail.com

ABSTRACT

Several systematic literature reviews (SLRs) have demonstrated that skin-to-skin contact (SSC) between mothers and infants is essential for successful first breastfeeding. However, this study aims to analyze the effect of SSC on successful first breastfeeding among mothers and preterm newborns, considering the limited available evidence regarding its benefits, particularly in preterm neonates. To analyze and summarize the available literature evidence regarding the effect of SSC between mothers and preterm newborns on successful first breastfeeding. This study employed a systematic literature review (SLR) using three databases: Scopus, ScienceDirect, and PubMed. The literature search covered publications from 2016 to 2025 and was conducted in April 2025. A total of nine articles were selected for the final review. Data analysis was conducted using the PRISMA 2020 method. The results showed that SSC between mothers and preterm newborns had a positive effect on successful first breastfeeding, including improving breastfeeding duration and breastfeeding provision. The implementation of SSC was effective in maintaining stable body temperature and preventing hyperthermia. In addition, SSC was able to reduce postpartum maternal stress and long-term anxiety. The effect on infant sleep quality could not be directly established; however, some study protocols indicated better self-regulation and sleep-wake cycle regulation during the neonatal period. This study concludes that SSC between mothers and preterm newborns contributes to successful breastfeeding initiation, helps maintain infant body temperature, and reduces maternal stress. However, its effect on infant sleep quality appears to be indirect, through improved physiological stability in the infant.

Keywords: maternal-infant skin-to-skin contact; preterm; successful first breastfeeding

How to cite (in APA style)

Nizam, F., Abdullah, A., Baharuddin, D., Nurjannah, N., & Ichwansyah, F. (2026). The Effect of Maternal Newborn Skin to Skin Contact in Premature Infants on Successful Initiation of Breastfeeding: A Systematic Literature Review. *Indonesian Journal of Global Health Research*, 8(6), 1177–1186. <https://doi.org/10.37287/ijghr.v8i6.2826>.

INTRODUCTION

The World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) recommend exclusive breastfeeding for the first six months of life to achieve optimal growth, development, and health, followed by the introduction of adequate and safe complementary foods until two years of age or beyond (WHO, 2023). Poor maternal knowledge, inadequate support from healthcare providers, and cultural barriers are major obstacles to initiating breastfeeding (Shobo et al., 2020). Successful initiation of breastfeeding can be supported through skin-to-skin contact (SSC) between the mother and newborn immediately after birth. SSC during the first hour after birth contributes significantly to increasing the likelihood of exclusive breastfeeding (Saco et al., 2019; Safari et al., 2018; Giang et al., 2022; Huang et al., 2022). SSC provides benefits for both mothers and newborns by supporting breastfeeding initiation and improving neonatal physiological stability (Moore et al., 2016).

SSC has been proposed as a low-cost technique for preventing hypothermia in newborns (Kardum et al., 2022; Kyokan et al., 2023). The WHO has issued new recommendations supporting kangaroo care (WHO, 2022). SSC is also effective in preventing neonatal hypoglycemia by regulating blood

glucose levels, reducing the risk of complications, and promoting physiological interaction between mothers and newborns (Lord et al., 2023). SSC facilitates communication between maternal brain networks and promotes physiological processes that enable mothers and newborns to establish a strong emotional bond (Feng and Zhang, 2024). SSC serves as an optimal practice for initiating exclusive breastfeeding (Datnow-Martinez et al., 2024; Kusteja et al., 2024). Educating mothers about the benefits of SSC and reducing barriers to its implementation can enhance mother–infant bonding (Widström et al., 2019; Abdulghani et al., 2022). Education, supportive policies, and community involvement can create an enabling environment for SSC and breastfeeding practices (Alenchery et al., 2018; Walsh et al., 2023). Thus, cultural influences, resource limitations, and community perceptions of the practice all affect the successful implementation of SSC between mothers and newborns.

SSC and neonatal care can improve the success of breastfeeding initiation among infants born by cesarean section. While Zavala-Soto et al. (2022) demonstrated that SSC implemented immediately after birth had a positive effect on breastfeeding continuation, Xu et al. (2024) highlighted a more extended care perspective for infants born by cesarean section. Newborns have limited ability to regulate body temperature and lose heat more rapidly than adults, particularly low-birth-weight and premature infants (Singh et al., 2017). Low-birth-weight and premature infants can adapt well to skin-to-skin contact (Brimdyr et al., 2023). The benefits of SSC for premature infants include improved thermoregulation, reduced episodes of apnea and bradycardia, and increased oxygen saturation (Jones and Santamaria, 2018). These findings indicate that premature infants may particularly benefit from SSC during the initiation of breastfeeding.

Based on findings from several systematic literature reviews (SLRs) conducted using the PubMed database, previous research has primarily focused on the effects of SSC on successful breastfeeding initiation among healthy, full-term newborns, while evidence involving premature infants remains limited. A systematic review conducted by (Abdulghani, Edvardsson and Amir, 2018) focused on the effect of SSC following vaginal delivery on breastfeeding success among healthy newborns. Similarly, studies by (Karimi et al, 2019 & Taskou, 2023) focused primarily on the effects of SSC on breastfeeding success and duration among healthy newborns. A review conducted by (Lord et al., 2023) examined the effects of SSC on the prevention of neonatal hypoglycemia.

The systematic review by Moran et al. (2023) focused on the content, experiences, and outcomes of interventions aimed at increasing early SSC in high-income countries. Hucklenbruch-Rother et al. (2020) reported that, beyond the first few hours of life, the overall involvement of parents as primary caregivers of premature infants in providing early SSC is important for healthy neurological development. Denge et al. (2024) examined key aspects of educational programs for implementing skin-to-skin contact among premature infants. Gupta et al. (2021) reported that early SSC in delivery rooms, operating rooms, and neonatal intensive care units (NICUs) within 180 minutes after birth was beneficial for neonates; however, the study did not specifically report the effects of SSC among extremely premature neonates. Based on the systematic literature review studies presented above, numerous studies have examined the effects of SSC on successful breastfeeding initiation among mothers and newborns. However, the present study aims to analyze the effect of SSC on successful breastfeeding initiation among mothers and premature newborns. The findings of this analysis are expected to contribute to policies and the management of premature infants, particularly in maintaining body temperature, reducing stress, and improving sleep quality.

METHOD

This study was a systematic literature review (SLR) aimed at analyzing the effect of Skin-to-Skin Contact (SSC) between mothers and premature newborns on successful initiation of breastfeeding. The literature search was conducted in April 2025 using three electronic databases, namely

PubMed, Scopus, and ScienceDirect, covering articles published between 2016 and 2025. The literature search process and reporting of the review findings followed the PRISMA 2020 guidelines.

Studies considered eligible for inclusion were those evaluating SSC among mothers and premature infants and reporting outcomes related to successful breastfeeding initiation. Eligible study designs included Randomized Controlled Trials (RCTs), Cluster Randomized Trials (CRTs), quasi-experimental studies, case-control studies, cross-sectional studies, single-group studies, and pilot studies. The inclusion criteria were: (1) articles published in English; (2) studies conducted in humans; (3) studies involving premature infants and/or low-birth-weight infants; and (4) studies reporting successful breastfeeding initiation as one of the study outcomes. Articles that did not correspond to the research focus, were not available in full text, or did not report outcomes relevant to the research objective were excluded. The initial search across three databases PubMed, Scopus, and ScienceDirect identified 1,758 records. After removing duplicate records and articles that were not available through open access, 171 records remained for screening based on titles and abstracts. Of these, 124 records were excluded, leaving 47 reports for further assessment. Following the eligibility assessment based on the predefined inclusion and exclusion criteria, 8 articles were ultimately included in the systematic literature review.

Data from eligible articles were systematically extracted, including author name, year of publication, study location, study design, sample size, subject characteristics, form or implementation of SSC, and study outcomes. The outcomes of interest included successful breastfeeding initiation, breastfeeding duration or provision, neonatal temperature stability, maternal stress, and infant sleep quality. The extracted data were organized into tables and compared across studies to identify patterns in the findings. Risk of bias was assessed using the Cochrane Risk of Bias tool, supported by Review Manager (RevMan) version 5.4.1, for studies with controlled trial designs. The assessment was conducted based on risk-of-bias domains relevant to each study design. The results of the assessment were used to consider the quality and reliability of the evidence when interpreting the findings.

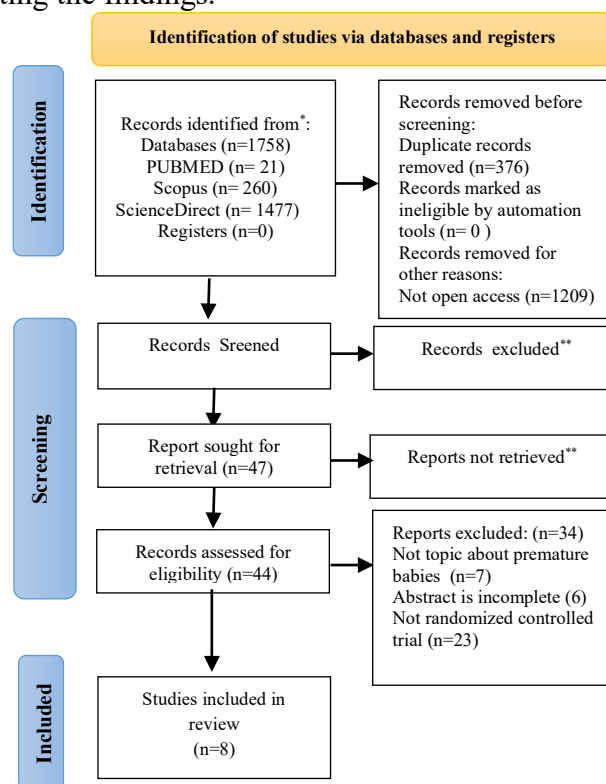


Figure 1. PRISMA 2020 Flow Diagram (Study Selection)

The analysis was conducted descriptively and narratively by comparing the characteristics, SSC interventions, subject characteristics, and outcomes of each included study. The findings were presented in tables and narrative descriptions to illustrate the effect of SSC on successful breastfeeding initiation among premature infants. A meta-analysis was not performed when substantial heterogeneity was identified in participant characteristics, interventions, outcomes, or study designs. The entire process of study identification, screening, eligibility assessment, and inclusion was presented in a PRISMA 2020 flow diagram, as illustrated in Figure 1.

RESULT

Based on the various aspects identified, this SLR analysis provides a clear overview of the distribution of studies and potential gaps in the existing literature. Thus, it allows for a more in-depth explanation and discussion in accordance with the implications of the reviewed studies. The following section presents the characteristics of the studies included in this SLR.

Table 1.
Characteristics of the Studies Included in the Final Analysis (n=9)

Author (Year)	Desain	Setting	Number at baseline to (*) endline
Kristoffersen et al., (2016)	RCT	Norwegia	128(*)136
Çaka et al., (2023)	RCT	Turki	176(*)168
Ouyang et al., (2024)	RCT	Fujian (Tiongkok)	93(*)91
Miranda et al., (2022)	RCT	Recife, Brazil	27(*)26
Taneja et al., (2020)	RCT	India	552(*)516
Tully et al., (2016)	RCT	Amerika Serikat	231(*)231
Kristoffersen et al., (2025)	RCT	Norwegia	108(*)81
Linnér, et al., (2020)	RCT	Swedia	150(*)150
Jamehdar et al., (2022)	RCT	Iran	70(*)70



Figure 2. Risk of Bias of the Included Studies Using RevMan 5.4.1

The characteristics of the studies included in Table 1 focus on skin-to-skin contact (SCC) or kangaroo mother care (KMC), particularly among preterm infants. The study designs included in the review were randomized controlled trials (RCTs). The research settings were Norway, Turkey, China, Brazil, India, the United States, Sweden, and Iran. The risk of bias assessment describes the potential for systematic errors or weaknesses in the design, conduct, or reporting of individual studies included in the SLR. Identifying the risk of bias helps evaluate the internal validity of the studies and influences the level of confidence in the findings of the SLR. To systematically and comprehensively assess the risk of bias, this SLR used the Cochrane Method, implemented using Review Manager (RevMan 5.4.1). The following section presents the risk of bias assessment of the studies included in this SLR.

Figure 2 presents the risk of bias in the studies included in the SLR using RevMan. The analysis showed that the domains of participant blinding and outcome assessment were generally associated with a low risk of bias. However, the selective reporting and allocation concealment domains were predominantly assessed as having an unclear risk of bias. Therefore, these domains require further consideration regarding the transparency of reported results to minimize the potential for bias. The individual study results in this SLR describe the findings of the selected studies in relation to the specified outcomes. The outcomes determined in this study were early initiation of breastfeeding (first breastfeeding), body temperature, maternal stress, and sleep quality.

Table 2.

Analysis of SSC/KMC Interventions in Preterm Infants

Outcome	Number of Studies (n)	Design	Intervention Type	Intervention Duration	Main Findings
Early Initiation of Breastfeeding	4	RCT	SSC, KC, KMC	2 hours after birth to 2 months; KMC 3×/day for 60 minutes over 4 days	SSC/KC/KMC increased early breastfeeding initiation, breastfeeding frequency and duration, and breastfeeding continuation up to 12 months; SSC was safe for preterm infants and more effective than standard care without skin-to-skin contact.
Body Temperature	3	RCT	SSC, KMC	Approximately 60 minutes to 24 hours of observation	SSC/KMC helped stabilize body temperature and prevent hypothermia; KMC resulted in higher body temperatures compared with standard care, although some studies found no statistically significant differences.
Maternal Stress	6	RCT	SSC, KMC, ciKMC	Varied	SSC/KMC potentially reduced maternal stress, anxiety, and depression and improved maternal mental health; findings varied across studies, with some studies still reporting protocols without final results.

Based on Table 2 above, SSC, KC, and KMC interventions have demonstrated benefits for preterm infants and their mothers. Skin-to-skin contact interventions consistently improve early initiation of breastfeeding, breastfeeding frequency, duration, and continuation compared with standard care. In addition, SSC and KMC help maintain infant body temperature and contribute to the prevention of hypothermia, although some studies have reported statistically varied results. From a psychological perspective, SSC and KMC also have the potential to reduce maternal stress, anxiety, and depression, as well as improve parental mental health, thereby supporting the quality of care and mother–infant bonding among preterm infants.

DISCUSSION

This systematic literature review analyzed nine articles obtained from three databases, namely PubMed, Scopus, and ScienceDirect, to evaluate the effects of Skin-to-Skin Contact (SSC) between mothers and preterm infants on successful early breastfeeding. Overall, the findings indicate that SSC or Kangaroo Mother Care (KMC) provides benefits for several aspects of preterm infant care,

particularly breastfeeding success, temperature stability, and maternal psychological well-being. Meanwhile, evidence regarding the effects of SSC on infant sleep quality remains limited. These findings suggest that the benefits of SSC for preterm infants are not limited to physiological stability but also encompass nutritional and maternal psychological aspects.

SSC performed immediately after birth or during the early postnatal period showed a positive tendency toward breastfeeding success among preterm infants. Several studies have demonstrated that SSC can improve breastfeeding practices, breastfeeding duration, and continuation of breastfeeding until hospital discharge and during follow-up periods (Kristoffersen et al., 2016; Kristoffersen et al., 2025 & Jamehdar et al., 2022). These findings are consistent with other studies reporting an association between SSC/KMC and improvements in breastfeeding initiation, duration, and exclusivity among preterm infants (Sinha et al., 2021 ; Goudard et al., 2022; Gomes et al., 2023). Physiologically, direct contact between the mother and infant may enhance mother–infant closeness and provide greater opportunities for the infant to demonstrate feeding behaviors, while in mothers, such contact may support lactation and increase confidence in breastfeeding.

Nevertheless, the effect of SSC on breastfeeding success is not entirely consistent. Kristoffersen et al., (2025) did not find a significant improvement in breastfeeding success, although breastfeeding practices showed improvement. This difference indicates that breastfeeding success among preterm infants may not be determined solely by SSC but may also be influenced by the timing of implementation, duration of contact, gestational age, the infant's clinical condition, lactation support, and feeding methods. This is further supported by a study showing that the duration of SSC provided by both mothers and fathers was associated with breastfeeding at hospital discharge (Nyqvist *et al.*, 2017). Nurse training programs focusing on breastfeeding support and KMC education for mothers have also been reported to increase exclusive breastfeeding (Maastrup et al., 2021; Samsudin et al., 2023). Therefore, SSC should not be regarded as a stand-alone intervention but rather as part of a neonatal care system that supports successful lactation.

In addition to breastfeeding success, the findings indicate that SSC/KMC contributes to maintaining temperature stability in preterm infants. Several studies have reported that infants receiving SSC/KMC were able to maintain more stable body temperatures and were protected against hypothermia and hyperthermia (Çaka et al., 2023; Eksirinimit et al., 2023; Parsa et al., 2018; Lode-Kolz et al., 2023; Hassan et al., 2024; Miranda et al., 2022 dan Gere et al., 2021). This finding is important because preterm infants have immature thermoregulatory systems and are therefore more vulnerable to heat loss. Direct skin-to-skin contact between the mother and infant facilitates heat transfer and helps create a more stable thermal environment for the infant. SSC has also been associated with the stability of other physiological parameters, such as heart rate and oxygen saturation (Çaka et al., 2023; Parsa et al., 2018).

However, some studies have still reported low body temperatures following SSC (Kristoffersen et al., 2016; Çaka et al., 2023; Miranda et al., 2022). These findings indicate that SSC does not completely eliminate the risk of thermoregulatory disturbances, particularly among infants with severe prematurity or certain clinical conditions. Therefore, SSC should be accompanied by regular monitoring of the infant's temperature and physiological condition. Accordingly, the thermoregulatory benefits of SSC are more appropriately understood as an approach to help maintain temperature stability rather than as a substitute for monitoring and medical interventions in infants experiencing thermoregulatory disturbances.

The review also demonstrated benefits of SSC for maternal psychological well-being. Several studies reported that SSC/KMC can reduce stress, anxiety, and depressive symptoms among mothers of preterm infants, as measured using instruments such as the Parental Stressor Scale: Neonatal Intensive Care Unit (PSS), Edinburgh Postnatal Depression Scale (EPDS), and Patient

Health Questionnaire-9 (PHQ-9) (Kristoffersen et al., 2016 ; Ouyang et al., 2024; Taneja et al., 2020; Tully et al., 2016; Kristoffersen et al., 2025; & Linnér et al., 2020). This effect may be explained by increased maternal involvement in infant care. The presence of an infant in the NICU can cause anxiety and feelings of helplessness, whereas SSC provides mothers with opportunities to interact with and participate directly in the care of their infants.

These psychological benefits are also reflected in improvements in maternal attachment, satisfaction, confidence, and competence following participation in KMC (Mehrpisheh et al., 2022; Eksirinimit et al., 2023); Eksirinimit et al., 2023) . These effects may be strengthened through supportive interventions. KMC combined with mindfulness training has been reported to reduce stress among mothers of preterm infants hospitalized in the NICU (Ouyang et al., 2024; Landry et al., 2022). This suggests that the psychological benefits of SSC may result from an interaction between physical contact with the infant, increased involvement in infant care, and the psychosocial support received throughout the care process.

In contrast to breastfeeding success, temperature stability, and maternal psychological well-being, evidence regarding the effects of SSC on infant sleep quality remains limited. Several studies have indicated improved self-regulation and sleep–wake cycles among infants receiving SSC/KMC. These findings suggest that SSC may support the development of physiological regulation in preterm infants. However, most studies did not specifically assess sleep quality as a primary outcome using standardized measurement instruments. Therefore, a direct association between SSC and improved sleep quality cannot yet be established. Any potential benefit may occur indirectly through improved physiological stability, reduced stress, and the creation of a calmer environment for the infant.

The findings of this systematic literature review indicate that SSC/KMC provides multidimensional benefits for preterm infants and their mothers. The most consistent evidence was observed in support of breastfeeding and maintenance of infant temperature stability, while benefits for maternal psychological well-being also demonstrated a positive tendency. In contrast, evidence regarding infant sleep quality remains insufficient. These findings contribute to the understanding that SSC for preterm infants should not be viewed solely as a method for maintaining body temperature but also as an integral component of neonatal care that supports breastfeeding success and maternal psychological well-being.

CONCLUSION

Skin-to-skin contact between mothers and preterm newborns influences successful initial breastfeeding, increases breastfeeding duration and exclusive breastfeeding, and thereby helps preterm infants achieve adequate breast milk intake and appropriate weight gain. Skin-to-skin contact between mothers and preterm newborns also has beneficial effects on other aspects of preterm infant health. This is evidenced by the effectiveness of SSC/KMC in maintaining stable body temperature in preterm infants and preventing hyperthermia. The implementation of SSC can reduce postpartum maternal stress and long-term anxiety. In addition, SSC may improve infant sleep quality, as reflected by better self-regulation and more stable sleep-wake cycles during the neonatal period.

REFERENCES

- Abdulghani, N. et al. (2022) ‘Mothers’ perceptions and experiences of skin-to-skin contact after vaginal birth in Saudi Arabia: A cross-sectional study’, *Women and Birth*, 35(1), pp. e60–e67. doi:10.1016/j.wombi.2021.02.001.
- Abdulghani, N., Edvardsson, K. and Amir, L.H. (2018) ‘Worldwide prevalence of mother-infant skinto-skin contact after vaginal birth: A systematic review’, *PLoS ONE*, 13(10), pp. 1–19. doi:10.1371/journal.pone.0205696.

- Alenchery, A.J. et al. (2018) 'Barriers and enablers to skin-to-skin contact at birth in healthy neonates - a qualitative study', *BMC Pediatrics*, 18(1), pp. 1–10. doi:10.1186/s12887-018-1033-y.
- Brimdyr, K. et al. (2023) 'Skin-to-skin contact after birth: Developing a research and practice guideline', *Acta Paediatrica, International Journal of Paediatrics*, 112(8), pp. 1633–1643. doi:10.1111/apa.16842.
- Çaka, S.Y. et al. (2023) 'Effects of kangaroo mother care on feeding intolerance in preterm infants', *Journal of Tropical Pediatrics*, 69(2). doi:10.1093/tropej/fmad015.
- Datnow-Martinez, C. et al. (2024) 'Factors affecting infant feeding choices with a focus on barriers to exclusive breastfeeding in Western Jamaica: a qualitative study', *International Breastfeeding Journal*, 19(1). doi:10.1186/s13006-024-00671-8.
- Denge, T.T. et al. (2024) 'Essential components of an educational program for implementing skin-to-skin contact for preterm infants in intensive care units: an integrative literature review', *BMC Pregnancy and Childbirth*, 24(1), pp. 1–15. doi:10.1186/s12884-024-06447-6.
- Eksirinimit, T. et al. (2023) 'Effects of Kangaroo Care on body temperature of premature infants and maternal satisfaction at Maharaj Nakhon Si Thammarat hospital, Thailand', *Journal of Neonatal Nursing*, 29(2), pp. 302–306. doi:10.1016/j.jnn.2022.07.005.
- Feng, X. and Zhang, Y. (2024) 'Effects of mother–infant skin-to-skin contact on mother–infant relationship and maternal psychology feelings: A qualitative study', *Nursing Open*, 11(6), pp. 1–15. doi:10.1002/nop2.2181.
- Gere, S., Berhane, Y. and Worku, A. (2021) 'Chest-to-Back Skin-to-Skin Contact to Regulate Body Temperature for Low Birth Weight and/or Premature Babies: A Crossover Randomized Controlled Clinical Trial', *International Journal of Pediatrics (United Kingdom)*, 2021. doi:10.1155/2021/8873169.
- Giang, H.T.N. et al. (2022) 'Prevalence of early skin-to-skin contact and its impact on exclusive breastfeeding during the maternity hospitalization', *BMC Pediatrics*, 22(1), pp. 1–10. doi:10.1186/s12887-022-03455-3.
- Goudard, M.J.F. et al. (2022) 'The role of skin-to-skin contact in exclusive breastfeeding: a cohort study', *Revista de Saude Publica*, 56, pp. 1–10. doi:10.11606/S1518-8787.2022056004063.
- Gupta, N. et al. (2021) 'Systematic review confirmed the benefits of early skin-to-skin contact but highlighted lack of studies on very and extremely preterm infants', *Acta Paediatrica, International Journal of Paediatrics*, 110(8), pp. 2310–2315. doi:10.1111/apa.15913.
- Hassan, Z.A., Al-Haris, F.M. and Nasrawi, A.J.M. (2024) 'Kangaroo mother care and outcome of neonates with low birth weight', *Child's Health*, 19(6), pp. 348–353. doi:10.22141/2224-0551.19.6.2024.1738.
- Huang, J.-Z. et al. (2022) 'Evaluation of the effects of skin-to-skin contact on newborn sucking, and breastfeeding abilities: a quasi-experimental study design', *Nutrients*, 14. doi:https://doi.org/10.3390/nu14091846.
- Hucklenbruch-Rother, E. et al. (2020) 'Delivery room skin-to-skin contact in preterm infants affects long-term expression of stress response genes', *Psychoneuroendocrinology*, 122(September), p. 104883. doi:10.1016/j.psyneuen.2020.104883.
- Jamehdar, M. et al. (2022) 'KMC by surrogate can have an effect equal to KMC by mother in improving the nutritional behavior and arterial oxygen saturation of the preterm infant: results of a controlled randomized clinical trial', *BMC Pediatrics*, 22(1), pp. 1–8. doi:10.1186/s12887-022-03316-z.
- Jones, H. and Santamaria, N. (2018) 'An Observational Cohort Study Examining the Effect of the Duration of Skin-to-Skin Contact on the Physiological Parameters of the Neonate in a Neonatal Intensive Special Care Unit', *Original Research*, 00(0), pp. 1–7. doi:10.1097/ANC.0000000000000485.
- Kardum, D. et al. (2022) 'Duration of skin-to-skin care and rectal temperatures in late preterm and term infants', *BMC Pregnancy and Childbirth*, 22(1), pp. 7–11. doi:10.1186/s12884-022-04983-7.

- Karimi, F.Z. et al. (2019) 'The effect of mother-infant skin to skin contact on success and duration of first breastfeeding: A systematic review and meta-analysis', *Taiwanese Journal of Obstetrics and Gynecology*, 58(1), pp. 1–9. doi:10.1016/j.tjog.2018.11.002.
- Kristoffersen, L. et al. (2016) 'Early skin-to-skin contact or incubator for very preterm infants: Study protocol for a randomized controlled trial', *Trials*, 17(1), pp. 1–9. doi:10.1186/s13063-016-1730-5.
- Kristoffersen, L. et al. (2025) 'Immediate Skin-to-Skin Contact in Very Preterm Neonates and Early Childhood Neurodevelopment: A Randomized Clinical Trial.', *JAMA network open*, 8(4), p. e255467. doi:10.1001/jamanetworkopen.2025.5467.
- Kusteja, N.F. et al. (2024) 'Science Midwifery Mother's psychology and exclusive breastfeeding success: Scoping review', *Science Midwifery*, 12(3), pp. 2721–9453.
- Kyokan, M. et al. (2023) 'Early detection of cold stress to prevent hypothermia: A narrative review', *SAGE Open Medicine*, 11. doi:10.1177/20503121231172866.
- Landry, M.A. et al. (2022) 'Mindful Kangaroo Care: mindfulness intervention for mothers during skin-to-skin care: a randomized control pilot study', *BMC Pregnancy and Childbirth*, 22(1), pp. 1–8. doi:10.1186/s12884-021-04336-w.
- Linnér, A. et al. (2020) 'Immediate parent-infant skin-to-skin study (IPISTOSS): study protocol of a randomised controlled trial on very preterm infants cared for in skin-to-skin contact immediately after birth and potential physiological, epigenetic, psychological and neurodevelo', *BMJ open*, 10(7), p. e038938. doi:10.1136/bmjopen-2020-038938.
- Lode-Kolz, K. et al. (2023) 'Immediate skin-to-skin contact after birth ensures stable thermoregulation in very preterm infants in high-resource settings', *Acta Paediatrica, International Journal of Paediatrics*, 112(5), pp. 934–941. doi:10.1111/apa.16590.
- Lord, L.G. et al. (2023) 'Skin-to-skin contact for the prevention of neonatal hypoglycaemia: a systematic review and meta-analysis', *BMC Pregnancy and Childbirth*, 23(1), pp. 1–21. doi:10.1186/s12884-023-06057-8.
- Maastrup, R. et al. (2021) 'Improved exclusive breastfeeding rates in preterm infants after a neonatal nurse training program focusing on six breastfeeding-supportive clinical practices', *PLoS ONE*, 16(2 February), pp. 1–17. doi:10.1371/journal.pone.0245273.
- Mehrpisheh, S. et al. (2022) 'The Effectiveness of Kangaroo Mother Care (KMC) on attachment of mothers with premature infants', *European Journal of Obstetrics and Gynecology and Reproductive Biology*, X, 15(March), p. 100149. doi:10.1016/j.eurox.2022.100149.
- Miranda, R.M. et al. (2022) 'Effect of Kangaroo Position on microcirculation of preterm newborns: a controlled randomized clinical trial', *Jornal de Pediatria*, 98(2), pp. 196–203. doi:10.1016/j.jped.2021.05.012.
- Moore, E.R. et al. (2016) 'Early skin-to-skin contact formothers and their healthy newborn infants', *Cochrane Database of Systematic Reviews* [Preprint], (11). doi:10.1002/14651858.CD003519.pub4.www.cochranelibrary.com.
- Moran, C. et al. (2023) 'The content, experiences and outcomes of interventions designed to increase early skin-to-skin contact in high-income settings: A mixed-methods systematic review', *Acta Paediatrica, International Journal of Paediatrics*, 112(2), pp. 200–221. doi:10.1111/apa.16575.
- Nyqvist, K.H. et al. (2017) 'Early skin-to-skin contact between healthy late preterm infants and their parents: An observational cohort study', *PeerJ*, 2017(10), pp. 1–17. doi:10.7717/peerj.3949.
- Ouyang, X. et al. (2024) 'Effects of kangaroo mother care combined with nurse-assisted mindfulness training for reducing stress among mothers of preterm infants hospitalized in the NICU: a randomized controlled trial', *BMC pediatrics*, 24(1), p. 628. doi:10.1186/s12887-024-05075-5.
- Parsa, P. et al. (2018) 'The effect of kangaroo mother care on physiological parameters of premature infants in Hamadan city, Iran', *Pan African Medical Journal*, 30, pp. 1–8. doi:10.11604/pamj.2018.30.89.14428.

- Saco, M.C. et al. (2019) 'Skin-to-skin contact followed by breastfeeding in the first hour of life: Associated factors and influences on exclusive breastfeeding', *Texto e Contexto Enfermagem*, 28, pp. 1–12. doi:10.1590/1980-265X-TCE-2018-0260.
- Samsudin, S. et al. (2023) 'The Impact of Structured Kangaroo Care Education on Premature Infants' Weight Gain, Breastfeeding and Length of Hospitalization in Malaysia', *Journal of Multidisciplinary Healthcare*, 16, pp. 1023–1035. doi:10.2147/JMDH.S403206.
- Shobo, O.G. et al. (2020) 'Factors influencing the early initiation of breast feeding in public primary healthcare facilities in Northeast Nigeria: A mixed-method study', *BMJ Open*, 10(4). doi:10.1136/bmjopen-2019-032835.
- Singh, K. et al. (2017) 'The importance of skin-to-skin contact for early initiation of breastfeeding in Nigeria and Bangladesh', *Journal of Global Health*, 7(2), pp. 1–9. doi:10.7189/jogh.07.020505.
- Sinha, B. et al. (2021) 'Effect of Community-Initiated Kangaroo Mother Care on Postpartum Depressive Symptoms and Stress among Mothers of Low-Birth-Weight Infants: A Randomized Clinical Trial', *JAMA Network Open*, 4(4), pp. 1–12. doi:10.1001/jamanetworkopen.2021.6040.
- Taneja, S. et al. (2020) 'Community initiated kangaroo mother care and early child development in low birth weight infants in India-a randomized controlled trial', *BMC Pediatrics*, 20(1), pp. 1–12. doi:10.1186/s12887-020-02046-4.
- Taskou, C. (2023) 'Early direct skin-to-skin contact between mother and newborn in promoting breastfeeding: A literature review', *World Journal of Biology Pharmacy and Health Sciences*, 16(1), pp. 038–043. doi:10.30574/wjbphs.2023.16.1.0414.
- Tully, K.P. et al. (2016) 'A Test of Kangaroo Care on Preterm Infant Breastfeeding Kristin', *Physiology & behavior*, 45(1), pp. 45–61. doi:10.1016/j.jogn.2015.10.004.
- Walsh, A. et al. (2023) 'Improving breastfeeding support through the implementation of the Baby-Friendly Hospital and Community Initiatives: a scoping review', *International Breastfeeding Journal*, 18(1), pp. 1–18. doi:10.1186/s13006-023-00556-2.
- WHO (2022) WHO advises immediate skin to skin care for survival of small and preterm babies, World Health Organization.
- WHO (2023) Exclusive breastfeeding for optimal growth, development, and health of infants. World Health Organization.
- Widström, A.M. et al. (2019) 'Skin-to-skin contact the first hour after birth, underlying implications and clinical practice', *Acta Paediatrica, International Journal of Paediatrics*, 108(7), pp. 1192–1204. doi:10.1111/apa.14754.
- Xu, J. et al. (2024) 'Implementation of early essential neonatal care for newborns delivered by cesarean section in Jiaying: a single-center prospective randomized controlled trial', *International Breastfeeding Journal*, 19(1), pp. 1–7. doi:10.1186/s13006-024-00635-y.
- Zavala-Soto, J.O., Hernandez-Rivero, L. and Tapia-Fonllem, C. (2022) 'Pro-lactation cesarean section: Immediate skin-to-skin contact and its influence on prolonged breastfeeding', *Frontiers in Sociology*, 7. doi:10.3389/fsoc.2022.908811.