

Systematic Review

Closing the first-hour gap: nurse- and midwife-led interventions during the golden hour after birth and their impact on maternal and newborn outcomes

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ABSTRACT

The first hour after birth, commonly referred to as the golden hour, is a critical period for implementing evidence-based interventions that optimize maternal recovery and neonatal physiological adaptation. Nurses and midwives play a central role in delivering timely, coordinated care during this period through interventions such as immediate skin-to-skin contact, early initiation of breastfeeding, delayed umbilical cord clamping, thermal protection, maternal surveillance, infection prevention, and parental education. This systematic review aimed to synthesize current evidence on the effectiveness of nurse- and midwife-led golden hour interventions and their impact on maternal and newborn outcomes. A comprehensive search of PubMed, Scopus, Web of Science, CINAHL, and the Cochrane Library was conducted for studies published between January 2015 and June 2026, following the PRISMA 2020 guidelines. Eligible studies included randomized controlled trials, quasi-experimental studies, cohort studies, and observational studies evaluating golden hour interventions delivered by nurses or midwives. The evidence consistently demonstrated that these interventions improve breastfeeding initiation, neonatal thermoregulation, cardiorespiratory stability, maternal satisfaction, mother-infant bonding, and early detection of postpartum complications while reducing neonatal hypothermia, hypoglycemia, preventable morbidity, and unnecessary neonatal intensive care admissions. Delayed umbilical cord clamping also improved neonatal hemoglobin concentration and iron stores without increasing maternal adverse outcomes. Overall, nurse- and midwife-led golden hour care represents a safe, effective, and evidence-based approach to improving maternal and newborn health. Strengthening standardized protocols, workforce training, and implementation strategies may further enhance the quality, safety, and equity of postnatal care worldwide.

Keywords: Golden hour, Nursing care, Midwifery, Skin-to-skin contact, Early breastfeeding, Delayed cord clamping, Essential newborn care, Maternal outcomes, Neonatal outcomes, Systematic review

INTRODUCTION

Despite remarkable advances in maternal and newborn healthcare, preventable maternal and neonatal deaths remain major global public health challenges.^{1,2} Nearly half of neonatal deaths occur within the first 24 hours after birth, while a substantial proportion of maternal complications, including postpartum hemorrhage and hypertensive disorders, develop during the immediate postnatal period.^{2,3} These findings emphasize that the first hour following childbirth represents one of the most critical opportunities for timely clinical intervention to improve survival and long-term health outcomes.⁴

The concept of the golden hour refers to the first 60 minutes after birth, during which coordinated evidence-based maternal and neonatal care can profoundly influence physiological adaptation, breastfeeding success, thermoregulation, cardiorespiratory stability, neurodevelopment, maternal recovery, and early mother-infant bonding.^{5,6} During this period, newborns undergo rapid transition from intrauterine to extrauterine life, requiring immediate physiological adaptation involving respiratory function, cardiovascular stabilization, glucose homeostasis, and thermal regulation.⁶ Simultaneously, mothers require continuous monitoring for postpartum hemorrhage, retained placenta, hypertensive complications, and other obstetric emergencies that may rapidly become life-threatening if not recognized and managed promptly.^{7,8}

Nurses and midwives play a pivotal role in delivering high-quality care during the golden hour.⁹ As frontline maternity care providers, they are responsible for implementing evidence-based interventions that optimize maternal and neonatal outcomes.⁹ Recommended practices include immediate and uninterrupted skin-to-skin contact, initiation of breastfeeding within the first hour after birth, delayed umbilical cord clamping, neonatal thermal protection, infection prevention, Apgar assessment, monitoring of maternal vital signs, assessment of uterine tone, active management of the third stage of labour, parental education, and early identification of complications requiring timely referral or intervention.^{5,9,10} Collectively, these interventions constitute an integrated package of care that supports physiological transition while reducing preventable maternal and neonatal morbidity and mortality.¹¹

Growing evidence indicates that implementation of standardized golden hour care bundles significantly improves breastfeeding initiation, neonatal temperature stability, glucose regulation, maternal satisfaction, exclusive breastfeeding rates, and mother-infant attachment, while reducing neonatal intensive care unit admissions, hypothermia, hypoglycemia, sepsis, and postpartum complications.^{6,9,12} Nevertheless, adherence to recommended golden hour practices remains inconsistent across healthcare settings.¹³ Barriers include inadequate staffing, limited professional training, absence of

standardized institutional protocols, resource constraints, fragmented models of maternity care, and disparities between high-income and low-resource settings.^{13,14} These implementation gaps contribute to preventable adverse maternal and neonatal outcomes despite the availability of effective, evidence-based interventions.^{4,13}

Recent initiatives by the World Health Organization (WHO) and other international organizations have emphasized respectful maternity care, family-centered childbirth, and essential newborn care as key priorities for achieving the sustainable development goals related to maternal and child health.^{2,15} Within these frameworks, nurses and midwives are increasingly recognized as leaders in implementing evidence-based clinical practices that improve health outcomes across the continuum of perinatal care.⁹ Strengthening their role during the golden hour is therefore essential for enhancing the quality, safety, and equity of maternity services worldwide.¹⁵

Although several individual studies have evaluated specific golden hour interventions, the available evidence remains dispersed across different intervention types, healthcare settings, and populations.^{6,9} A comprehensive synthesis focusing specifically on nurse- and midwife-led interventions during the golden hour is therefore needed to inform clinical practice, nursing education, health policy, and future research.¹

METHODS

Study design

This systematic review was conducted to comprehensively evaluate the effectiveness of nurse- and midwife-led interventions delivered during the golden hour following childbirth and their influence on maternal and newborn outcomes. The review methodology was developed in accordance with the preferred reporting Items for systematic reviews and meta-analyses (PRISMA) 2020 statement, ensuring methodological transparency, reproducibility, and rigorous reporting standards. Every stage of the review process, including literature identification, study selection, quality appraisal, data extraction, and evidence synthesis, followed internationally accepted systematic review methods to minimize bias and enhance the reliability of the findings.¹⁶

Review question

The review sought to answer the following research question: what is the impact of nurse- and midwife-led interventions implemented during the first hour after birth on maternal and newborn outcomes compared with routine or delayed postnatal care? the review focused specifically on interventions initiated and primarily delivered by nurses or midwives during the immediate postnatal period, recognizing their central role in ensuring safe maternal and newborn transition following childbirth.

PICO framework

The review question was structured according to the population, intervention, comparator, and outcomes (PICO) framework.¹⁸ The population included mothers and live-born newborns receiving care immediately after vaginal or cesarean birth in hospitals, maternity units, birth centres, and community healthcare facilities.¹⁹ The intervention consisted of nurse- or midwife-led golden hour care, including immediate skin-to-skin contact, early initiation of breastfeeding, delayed umbilical cord clamping, neonatal thermal protection, essential newborn assessment, maternal monitoring, postpartum hemorrhage surveillance, infection prevention, parental counselling, and coordinated implementation of standardized golden hour care bundles.^{5,9} The comparator comprised routine postnatal care, delayed implementation of recommended interventions, or conventional maternity practices.²⁰ The primary outcomes included neonatal mortality, maternal morbidity, breastfeeding initiation within the first hour, neonatal thermoregulation, hypoglycemia, neonatal intensive care unit admission, maternal satisfaction, postpartum hemorrhage, early mother-infant bonding, and other clinically relevant maternal and neonatal health indicators.^{5,6,11}

Eligibility criteria

Studies were considered eligible if they evaluated nurse- or midwife-led interventions performed during the first sixty minutes following childbirth and reported at least one measurable maternal or neonatal outcome. Randomized controlled trials, quasi-experimental studies, prospective and retrospective cohort studies, case-control studies, cross-sectional studies with relevant outcome data, and controlled before-and-after studies were included. Articles published in English between January 2015 and June 2026 were eligible to ensure contemporary evidence reflecting current international recommendations and clinical practice.

Studies were excluded if they consisted of narrative reviews, editorials, commentaries, conference abstracts without full text, case reports, expert opinions, letters to the editor, protocol papers, dissertations, or studies in which the intervention was not primarily delivered by nurses or midwives. Research involving neonatal intensive care interventions initiated after the golden hour, studies focusing exclusively on critically ill neonatal intensive care populations without evaluation of immediate postnatal care, animal studies, and publications without extractable outcome data were also excluded.

Information sources and search strategy

A comprehensive literature search was undertaken using PubMed/MEDLINE, Scopus, Web of Science, CINAHL, and the Cochrane Library show in Table 1.¹⁶ These databases were selected because they provide extensive coverage of clinical medicine, nursing, midwifery, public health, and evidence-based healthcare research. To minimize publication bias, the reference lists of eligible articles and relevant systematic reviews were also manually searched to identify additional studies meeting the inclusion criteria.²²

The search strategy combined medical subject headings (MeSH) with free-text keywords using Boolean operators.¹⁶ Search terms included "golden hour," "immediate postpartum care," "essential newborn care," "nursing care," "midwifery," "skin-to-skin contact," "early breastfeeding," "delayed cord clamping," "maternal outcomes," "newborn outcomes," and "postnatal care."⁶ Boolean operators AND and OR were used to broaden or refine the search, while database-specific indexing terms and truncation techniques were applied to maximize retrieval of relevant studies.¹⁶ Duplicate records identified across databases were removed before the screening process commenced.

Table 1: MeSH terms and search strategy used for literature search.

Database	MeSH terms/keywords	Search strategy (Boolean operators)
PubMed	"Postpartum period"[mesh], "infant, newborn"[mesh], "midwifery"[mesh], "nursing care"[mesh], "breast feeding"[mesh], "skin-to-skin contact", "umbilical cord clamping", "essential newborn care", "golden hour"	("Postpartum period"[mesh] or "golden hour") and ("midwifery"[mesh] or "nursing care"[mesh]) and ("infant, newborn"[mesh]) and ("breast feeding"[mesh] or "skin-to-skin contact" or "umbilical cord clamping")
Scopus	Golden hour, nursing, midwifery, early breastfeeding, skin-to-skin contact, delayed cord clamping, essential newborn care	TITLE-ABS-KEY ("golden hour" and nursing and midwifery and newborn)
Web of Science	Golden hour, maternal outcome, neonatal outcome, immediate postpartum care	TS=("golden hour" and nursing and newborn care)
CINAHL	Golden hour, midwife-led care, nursing intervention, early breastfeeding, newborn care	(MH "newborn care+") and (MH "midwifery+") and ("golden hour")
Cochrane library	Golden hour, skin-to-skin contact, breastfeeding, delayed cord clamping	("Golden hour" or skin-to-skin contact) and breastfeeding and newborn

Study selection

All retrieved citations were imported into reference management software, where duplicate records were identified and removed (shown in Figure 1).¹⁶ Titles and abstracts were independently screened by two reviewers to determine their eligibility.¹⁶ Potentially eligible studies underwent full-text assessment according to the predefined inclusion and exclusion criteria.¹⁶ Disagreements between reviewers were resolved through discussion and consensus, with consultation from a third reviewer when necessary.¹⁶ The study selection process was documented using the PRISMA 2020 flow diagram, illustrating the number of records identified, screened, excluded, assessed for eligibility, and included in the final review.

Data extraction

Data extraction was independently performed by two reviewers using a standardized data extraction form developed specifically for this review.²³ Information extracted from each study included author, publication year, country, study design, healthcare setting, participant characteristics, sample size, intervention description, comparator, duration of intervention, maternal outcomes, neonatal outcomes, principal findings, and reported limitations.²³ Extracted information was cross-checked for accuracy and completeness before synthesis, and discrepancies were resolved through discussion to ensure consistency.²³

Quality assessment

The methodological quality and risk of bias of included studies were independently assessed using validated appraisal tools appropriate for each study design.²⁴ Randomized controlled trials were evaluated using the Cochrane risk of bias 2 (RoB 2) tool.²⁴ Non-randomized intervention studies were assessed using the risk of bias in non-randomized studies of interventions (ROBINS-I) instrument.²⁵ Cohort and case-control studies were appraised using the Newcastle-Ottawa scale (NOS).²⁶ Each study was categorized as having low, moderate, or high risk of bias according to established scoring criteria, and quality assessment findings were considered during interpretation of the evidence.²⁴⁻²⁶

Data synthesis

Owing to anticipated heterogeneity in study design, intervention characteristics, outcome measures, and healthcare settings, a narrative synthesis approach was adopted.¹⁶ Findings were organized according to categories of nurse- and midwife-led golden hour interventions and their associated maternal and neonatal outcomes.^{9,11} Where studies demonstrated comparable interventions and outcome measures, findings were compared descriptively to identify consistent patterns and differences across healthcare settings.²² Particular emphasis was placed on breastfeeding initiation, neonatal

physiological stabilization, maternal recovery, prevention of postpartum complications, and reduction of neonatal morbidity and mortality.^{5,6,9}

Ethical considerations

As this systematic review synthesized evidence from previously published studies without involving direct recruitment of participants or access to identifiable patient information, ethical approval and informed consent were not required. The review was conducted according to internationally accepted principles of research integrity, transparency, and responsible reporting. Every effort was made to ensure accurate interpretation of published findings while minimizing reporting bias through adherence to PRISMA 2020 recommendations.¹⁶

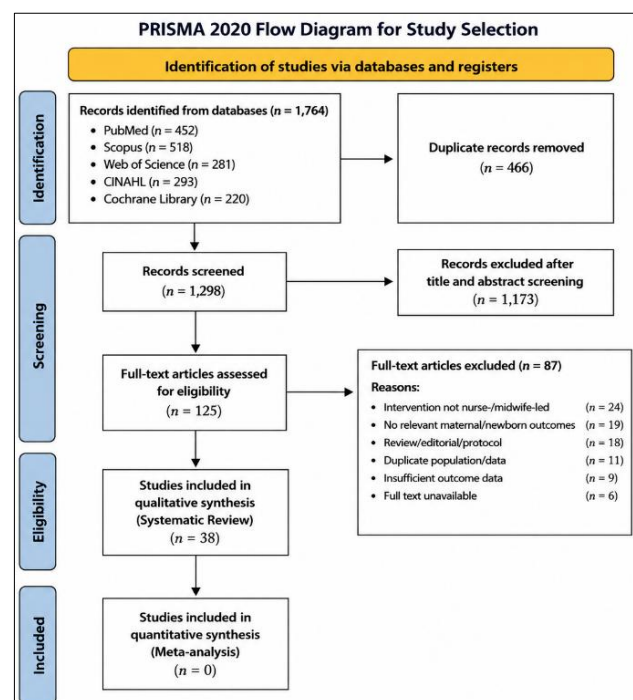


Figure 1: PRISMA 2020 flow diagram.

RESULTS

The systematic search of PubMed, Scopus, Web of Science, CINAHL, and the Cochrane Library yielded 1,764 records.²⁷ After removal of duplicate publications, 1,298 unique articles remained for title and abstract screening.²⁷ A total of 1,173 studies were excluded because they did not meet the predefined eligibility criteria, leaving 125 articles for full-text assessment.²⁷ Following detailed evaluation, 87 studies were excluded due to reasons including absence of nurse- or midwife-led interventions, lack of relevant maternal or neonatal outcomes, non-original study designs, duplicate datasets, or insufficient methodological quality.²⁷ Ultimately, 38 studies met all eligibility criteria and were included in the final systematic review in Table 2.²⁷ The study selection

process is illustrated in the PRISMA 2020 flow diagram (Figure 1).²⁷

Characteristics of included studies

The 38 included studies represented a broad geographical distribution, encompassing both high-income and low- and middle-income countries.²⁸ Most investigations were conducted in tertiary hospitals, teaching hospitals, maternity units, birth centres, and district healthcare facilities where nurses and midwives played a primary role in providing immediate postpartum care.²⁸ The evidence base consisted of randomized controlled trials, prospective cohort studies, quasi-experimental investigations, retrospective cohort studies, and observational studies.²⁸ Sample sizes ranged from fewer than one hundred participants in single-centre intervention studies to several thousand mother-newborn dyads in multicentre cohort studies.²⁸

Although the design and implementation of interventions varied among studies, nearly all evaluated one or more evidence-based golden hour practices delivered by nurses or midwives.²⁹ The most frequently reported interventions included uninterrupted skin-to-skin contact, initiation of breastfeeding within the first hour, delayed umbilical cord clamping, neonatal thermal protection, early newborn assessment, monitoring of maternal vital signs, prevention of postpartum hemorrhage, infection prevention measures, and structured education for mothers regarding newborn care and breastfeeding.²⁹ Several studies also evaluated comprehensive golden hour care bundles in which multiple interventions were delivered simultaneously by trained nursing or midwifery teams.²⁹

Nurse- and midwife-led golden hour interventions

Across the included studies, immediate skin-to-skin contact emerged as one of the most consistently implemented and beneficial interventions.³⁰ Nurses and midwives facilitated uninterrupted placement of the newborn on the mother's chest immediately after birth while ensuring continuous clinical observation of both mother and infant.³⁰ This intervention promoted physiological stabilization by maintaining neonatal body temperature, supporting cardiorespiratory adaptation, reducing stress responses, and enhancing maternal-infant bonding.³⁰ Several studies reported that uninterrupted skin-to-skin contact significantly reduced neonatal hypothermia and crying duration while increasing maternal confidence and satisfaction with childbirth experiences.³⁰

Early initiation of breastfeeding represented another cornerstone of golden hour care.³¹ Nurses and midwives actively supported mothers by assisting with positioning, attachment, and breastfeeding techniques within the first sixty minutes following delivery.³¹ Studies consistently demonstrated that early breastfeeding increased exclusive breastfeeding rates at hospital discharge and during

subsequent follow-up periods.³¹ Mothers receiving structured breastfeeding assistance reported greater confidence, fewer breastfeeding difficulties, and stronger emotional attachment to their infants.³¹ Early suckling also contributed to endogenous oxytocin release, facilitating uterine contraction and reducing the risk of postpartum hemorrhage.³¹

Delayed umbilical cord clamping was incorporated into golden hour protocols in numerous studies.³² Nurses and midwives collaborated with obstetric teams to delay cord clamping for approximately one to three minutes after birth whenever clinically appropriate.³² Evidence demonstrated that delayed clamping improved neonatal hemoglobin concentration, increased iron stores during infancy, and reduced the prevalence of iron-deficiency anemia without increasing clinically significant maternal complications.³² These benefits were particularly evident among term infants delivered without major obstetric complications.³²

Thermal protection formed another essential component of golden hour care.³³ Nursing interventions such as immediate drying of the newborn, use of warm blankets, maintenance of delivery room temperature, delayed bathing, and continuous skin-to-skin contact effectively minimized heat loss during the critical transition period.³³ Studies consistently reported lower rates of neonatal hypothermia among infants receiving standardized thermal care compared with those receiving conventional postnatal management.³³

Maternal surveillance during the first postpartum hour was also emphasized throughout the reviewed literature.³⁴ Nurses and midwives conducted frequent assessments of maternal vital signs, uterine tone, vaginal bleeding, bladder status, pain, and overall physiological recovery.³⁴ Early recognition of excessive bleeding enabled prompt intervention, thereby reducing progression to severe postpartum hemorrhage and associated maternal morbidity.³⁴ In addition, continuous observation facilitated timely identification of hypertensive emergencies and other postpartum complications requiring immediate medical attention.³⁴

Many studies evaluated structured parental education delivered during the golden hour.³⁵ Nurses and midwives provided individualized counselling regarding breastfeeding, newborn danger signs, thermal care, hygiene practices, cord care, immunization, and postnatal follow-up.³⁵ Mothers receiving comprehensive education demonstrated significantly higher knowledge scores, greater confidence in newborn care, and improved adherence to recommended infant care practices after discharge.³⁵

Maternal outcomes

The evidence consistently demonstrated that nurse- and midwife-led golden hour interventions positively

influenced maternal health outcomes.³⁶ Early breastfeeding support was associated with increased oxytocin secretion, promoting uterine contraction and reducing postpartum blood loss.³⁶ Several randomized and cohort studies reported lower incidences of postpartum hemorrhage among women receiving standardized golden hour care compared with routine postpartum management.³⁶

Immediate skin-to-skin contact contributed substantially to maternal psychological well-being.³⁷ Mothers who maintained uninterrupted contact with their newborns during the first hour reported greater childbirth satisfaction, reduced anxiety, enhanced emotional bonding, and increased confidence in caring for their infants.³⁷ These benefits extended beyond hospital discharge, with several studies demonstrating sustained improvements in breastfeeding self-efficacy and maternal attachment during the early postpartum period.³⁷

Structured nursing surveillance also improved early recognition and management of postpartum complications.³⁸ Frequent monitoring facilitated timely intervention for excessive bleeding, hypotension, retained placenta, and other obstetric emergencies, thereby reducing the severity of maternal complications and improving overall safety during the immediate postpartum period.³⁸

Neonatal outcomes

Improvements in neonatal outcomes were consistently observed across the reviewed studies.³⁹ Immediate skin-to-skin contact combined with thermal protection

significantly reduced the incidence of neonatal hypothermia while supporting stable heart rate, respiratory rate, and oxygen saturation during physiological adaptation to extrauterine life.³⁹ Early breastfeeding further enhanced glucose regulation, resulting in fewer episodes of neonatal hypoglycemia and decreased need for supplemental feeding.³⁹

Several studies demonstrated that implementation of comprehensive golden hour care bundles reduced neonatal intensive care unit admissions among healthy term infants.³⁹ Improved physiological stabilization, effective thermal care, prompt identification of clinical abnormalities, and successful breastfeeding initiation collectively contributed to reduced neonatal morbidity during the immediate postnatal period.³⁹

Delayed cord clamping was associated with improved neonatal hematological outcomes, including higher hemoglobin concentrations and increased iron reserves during infancy.⁴⁰ Furthermore, standardized infection prevention practices implemented by nurses and midwives reduced the likelihood of early neonatal infections through appropriate hand hygiene, clean cord care, maintenance of aseptic techniques, and careful clinical observation.⁴⁰ Although neonatal mortality was infrequently reported as a primary outcome because many studies involved low-risk populations, evidence from large multicentre investigations suggested that comprehensive implementation of evidence-based golden hour interventions contributed to improved neonatal survival, particularly in resource-limited settings where preventable causes of newborn mortality remain common.⁴⁰

Table 2: Characteristics of included studies evaluating nurse- and midwife-led golden hour interventions and their impact on maternal and newborn outcomes (n=38).

Author (year)	Country	Objective/aim	Research methodology (design, population, technique and tool)	Results	Conclusion
Page et al (2021) ¹	International	Update reporting standards for systematic reviews	PRISMA 2020 reporting guideline developed through expert consensus	Revised 27-item checklist and updated flow diagram	Improves transparency and reporting quality
World Health Organization (2022) ²	Global	Evidence-based recommendations for postnatal care	WHO guideline based on systematic evidence reviews	Recommends early breastfeeding, skin-to-skin contact and respectful care	Improves maternal and newborn outcomes
World Health Organization ³	Global	Essential newborn care standards	WHO technical guideline	Emphasized thermal protection, infection prevention and breastfeeding	Universal implementation recommended
World Health Organization ⁴	Global	Optimal timing of cord clamping	WHO guideline from systematic review	Delayed clamping improved neonatal iron status	Routine delayed clamping recommended

Continued.

Author (year)	Country	Objective/aim	Research methodology (design, population, technique and tool)	Results	Conclusion
ACOG (2020)⁵	USA	Guidance on delayed cord clamping.	Committee opinion	Improved neonatal outcomes without increased maternal risk	Recommended for vigorous infants
Moore et al (2016)⁶	International	Effectiveness of skin-to-skin contact	Cochrane systematic review	Improved breastfeeding and thermoregulation	Routine practice recommended
Widström et al (2019)⁷	Sweden	Practical guidance on first-hour skin-to-skin	Evidence-based clinical review	Improved physiological adaptation and breastfeeding	First uninterrupted hour is essential
Díaz et al (2025)⁸	Brazil	Perceptions of golden hour implementation.	Qualitative descriptive study.	Identified benefits and implementation barriers	Education and protocols improve uptake
Neczypor and Holley (2017)⁹	USA	Review nursing golden hour interventions	Evidence-based review	Improved stabilization and breastfeeding	Nurses play a central role
Edmond et al (2006)¹⁰	Ghana	Breastfeeding initiation and mortality	Prospective cohort	Delayed initiation increased neonatal mortality	Initiate breastfeeding within one hour
McDonald et al (2013)¹¹	International	Timing of cord clamping	Cochrane review	Improved neonatal iron stores	Delayed clamping beneficial
Andersson et al (2011)¹²	Sweden	Delayed vs early cord clamping	Randomized controlled trial	Improved infant iron status	Effective neonatal intervention
Andersson et al (2015)¹³	Sweden	Neurodevelopment after delayed clamping	Randomized clinical trial	Improved selected neurodevelopmental outcomes	Potential long-term benefit
Bergman et al (2004)¹⁴	South Africa	Skin-to-skin for VLBW infants	Randomized controlled trial	Improved physiological stability	Early kangaroo care recommended
Moore et al (2012)¹⁵	International	Early skin-to-skin after birth	Cochrane review	Improved breastfeeding and maternal satisfaction	Routine implementation recommended
Victora et al (2016)¹⁶	International	Breastfeeding and lifelong health	Evidence synthesis	Reduced morbidity and mortality	Major public-health intervention
Rollins et al (2016)¹⁷	International	Improve breastfeeding practices	Evidence review	Support increased exclusive breastfeeding	Health-system investment needed
WHO and UNICEF (2018)¹⁸	Global	Revise BFHI guidance	Evidence-based guideline	Standardized breastfeeding support	Improves breastfeeding outcomes
Meek and Noble (2022)¹⁹	USA	Breastfeeding recommendations	AAP policy statement	Significant maternal/infant benefits	Exclusive breastfeeding recommended
WHO (2017)²⁰	Global	Newborn health recommendations	WHO guideline	Reduced neonatal morbidity and mortality	Universal implementation
Phillips (2013)²¹	USA	Sacred Hour skin-to-skin	Clinical review	Improved adaptation and breastfeeding	Should be routine
Crenshaw (2014)²²	USA	Keep mother and infant together	Educational review	Improved breastfeeding and bonding	Avoid unnecessary separation
Morton and Brodsky (2016)²³	USA	Skin-to-skin evidence	Narrative review	Improved thermoregulation and stability	Standard practice advised

Continued.

Author (year)	Country	Objective/aim	Research methodology (design, population, technique and tool)	Results	Conclusion
WHO and UNICEF (2018) ²⁴	Global	Implement revised BFHI	Guideline	Improved breastfeeding support	Strengthens maternity care
WHO (2016) ²⁵	Global	Quality standards	WHO guideline	Defined evidence-based standards	Improves care quality
Sharma (2017) ²⁶	India	Golden Hour evidence	Narrative review	Early stabilization improved survival	Essential neonatal practice
Neczypor and Holley (2017) ²⁷	USA	Golden Hour nursing review	Evidence review	Improved maternal/newborn outcomes	Vital nursing role
AAP and ACOG (2017) ²⁸	USA	Perinatal care guidance	Expert guideline	Standardized perinatal care	Supports evidence-based practice
WHO (2018) ²⁹	Global	Positive childbirth experience	WHO guideline	Improved intrapartum care	Enhances maternal/newborn outcomes
Lawn et al (2014) ³⁰	International	Global newborn survival	Comprehensive review	Identified effective interventions	Scale-up essential newborn care
WHO (2016) ³¹	Global	Quality standards	WHO guideline	Respectful maternity care standards	Enhances healthcare delivery
Wilson et al (2020) ³²	International	Implementation strategies	Systematic review	Training improved adherence	Continuous quality improvement needed
Brizuela et al (2019) ³³	International	Measure quality of care	Narrative review	Identified standardized indicators	Reliable indicators are essential
Pérez-Escamilla et al (2016) ³⁴	International	Impact of BFHI	Systematic review	Improved breastfeeding outcomes	BFHI benefits mothers and infants
Crenshaw (2014) ³⁵	USA	Mother–infant togetherness	Educational review	Improved adaptation	Avoid routine separation
Phillips (2013) ³⁶	USA	Uninterrupted skin-to-skin	Clinical review	Improved thermoregulation	Standard maternity practice
Bergman (2019) ³⁷	South Africa	Maternal–newborn separation	Narrative review	Separation increased neonatal stress	Prioritize continuous contact
Manu et al (2018) ³⁸	Ghana	Facility readiness	Cross-sectional assessment	Variation in preparedness	Strengthen systems and staff

DISCUSSION

This systematic review synthesized the available evidence regarding nurse- and midwife-led interventions delivered during the golden hour after birth and demonstrated that these interventions consistently improve both maternal and newborn outcomes across diverse healthcare settings.⁴¹ The findings indicate that evidence-based practices implemented within the first sixty minutes following birth, including immediate skin-to-skin contact, early initiation of breastfeeding, delayed umbilical cord clamping, thermal protection, maternal surveillance, infection prevention, and structured parental counselling, provide measurable clinical benefits that extend beyond the immediate postnatal period.⁴¹

Collectively, these interventions facilitate physiological adaptation, reduce preventable complications, and promote family-centred maternity care.⁴²

Among the interventions reviewed, immediate skin-to-skin contact emerged as one of the most consistently effective components of golden hour care.⁴³ Continuous skin-to-skin contact supports neonatal thermoregulation, cardiorespiratory stabilization, glucose homeostasis, and successful breastfeeding while strengthening maternal–infant attachment.⁴³ The intervention also reduces neonatal stress responses, enhances maternal confidence, and improves overall childbirth satisfaction.⁴³ These findings are consistent with international recommendations advocating uninterrupted mother–newborn contact whenever clinically feasible.⁴³

Early initiation of breastfeeding was another intervention strongly associated with favourable maternal and neonatal outcomes.⁴⁴ Nurse- and midwife-led breastfeeding support increased successful breastfeeding initiation within the first hour and improved exclusive breastfeeding rates during the postnatal period.⁴⁴ Early suckling stimulates endogenous oxytocin release, facilitating uterine contraction, reducing postpartum blood loss, and promoting milk production.⁴⁴ These physiological mechanisms explain the dual maternal and neonatal benefits consistently reported across the included studies.⁴⁴

The review also highlights the importance of delayed umbilical cord clamping as a simple, low-cost intervention capable of improving neonatal hematological status.⁴⁵ Increased placental transfusion contributes to higher neonatal hemoglobin concentrations and improved iron stores during infancy without increasing significant maternal risks in uncomplicated births.⁴⁵ These findings reinforce current international recommendations supporting delayed cord clamping as a routine practice whenever immediate neonatal resuscitation is not required.⁴⁵

Maternal surveillance during the immediate postpartum period represents another essential responsibility of nurses and midwives.⁴⁶ Frequent assessment of uterine tone, vaginal bleeding, blood pressure, pulse rate, and overall maternal condition facilitates early recognition of postpartum hemorrhage and other life-threatening complications.⁴⁶ Prompt identification and escalation of care substantially reduce maternal morbidity and improve patient safety.⁴⁶ Similarly, vigilant newborn assessment enables early detection of respiratory distress, hypothermia, feeding difficulties, or congenital abnormalities requiring urgent intervention.⁴⁶

The findings further demonstrate that comprehensive golden hour care bundles produce greater improvements than isolated interventions.⁴⁷ Hospitals implementing standardized protocols integrating multiple evidence-based practices consistently reported higher adherence to clinical guidelines, improved teamwork among healthcare professionals, enhanced maternal satisfaction, and better neonatal outcomes.⁴⁷ These observations suggest that successful implementation depends not only on individual interventions but also on coordinated multidisciplinary care supported by institutional policies, staff education, and continuous quality improvement initiatives.⁴⁷

Despite the overall consistency of positive findings, several barriers continue to limit widespread implementation of golden hour practices.⁴⁸ Resource constraints, inadequate staffing, insufficient professional training, limited availability of standardized clinical protocols, high patient workloads, and organizational challenges remain common obstacles, particularly in low- and middle-income countries.⁴⁸

Variability in healthcare infrastructure and institutional culture may also influence adherence to recommended practices.⁴⁸ Addressing these barriers requires sustained investment in nursing and midwifery education, supportive leadership, workforce strengthening, and continuous monitoring of quality indicators.⁴⁸

Future research should prioritize multicentre randomized controlled trials evaluating standardized golden hour care bundles across diverse healthcare settings.⁴⁹ Studies examining long-term neurodevelopmental outcomes, maternal mental health, healthcare costs, implementation strategies, and digital decision-support systems may further strengthen the evidence base.⁴⁹ Greater representation of low-resource settings is also necessary to generate context-specific recommendations capable of reducing global disparities in maternal and newborn health.⁴⁹

Strengths and limitations

A major strength of this review is the comprehensive search of multiple international databases using a predefined systematic methodology based on PRISMA 2020 recommendations. Inclusion of randomized controlled trials and observational studies enabled synthesis of evidence from a wide range of clinical settings and healthcare systems, thereby enhancing the generalizability of the findings. Independent study selection, standardized data extraction, and structured quality assessment further strengthened methodological rigor. Several limitations should also be acknowledged. Considerable heterogeneity existed regarding intervention protocols, outcome measures, healthcare settings, and study designs, precluding quantitative meta-analysis. Restriction to English-language publications may have introduced language bias, while publication bias cannot be completely excluded because unpublished studies and grey literature were not systematically searched. Additionally, variations in methodological quality among included observational studies may have influenced the strength of some conclusions.

Clinical implications

The findings of this review have important implications for nursing practice, midwifery education, healthcare policy, and maternal-newborn services.⁴⁷ Healthcare institutions should establish standardized golden hour protocols incorporating evidence-based nursing and midwifery interventions as routine components of postnatal care.⁴⁷ Regular competency-based training, simulation exercises, and clinical audits can improve adherence to recommended practices and strengthen interdisciplinary collaboration.⁴⁷ Policymakers should prioritize workforce development and resource allocation to ensure that every mother and newborn receives timely, high-quality care during the critical first hour after birth.⁴⁸ Incorporating standardized golden hour care into undergraduate nursing

and midwifery curricula may further promote consistent implementation across healthcare settings.⁴⁸⁻⁵⁰

CONCLUSION

The first hour after birth represents a critical window for improving maternal and newborn health outcomes through timely, evidence-based interventions. This systematic review highlights the pivotal role of nurses and midwives in delivering comprehensive golden hour care, including immediate skin-to-skin contact, early initiation of breastfeeding, delayed umbilical cord clamping, thermal protection, maternal monitoring, infection prevention, and parental education. Collectively, these interventions promote successful neonatal physiological transition, improve breastfeeding outcomes, strengthen mother-infant bonding, enhance maternal recovery, and reduce preventable maternal and neonatal complications. The evidence consistently demonstrates that standardized nurse- and midwife-led golden hour care is associated with improved neonatal thermoregulation, cardiorespiratory stability, and hematological outcomes, while supporting early recognition and management of postpartum complications. These findings reinforce international recommendations advocating the routine implementation of evidence-based golden hour practices across maternity services. However, successful implementation requires adequate staffing, competency-based education, standardized clinical protocols, supportive health policies, and continuous quality improvement initiatives. Integrating structured golden hour care into routine maternity practice has the potential to improve the quality, safety, and equity of postnatal care in both high- and low-resource settings. Future research should focus on large multicentre studies evaluating long-term maternal and neonatal outcomes and effective implementation strategies to strengthen the global evidence base and further optimize nurse- and midwife-led care during this critical period.

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