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Pregnancy and newborn care: A comprehensive narrative review of the maternal–newborn continuum of care

Abstract

Background: Pregnancy, childbirth, and the neonatal period represent interconnected stages of the maternal–newborn continuum of care, during which timely access to high-quality health services can substantially influence maternal and neonatal outcomes. Although advances in maternal and newborn health services have contributed to reductions in preventable morbidity and mortality, important challenges remain, particularly in the early identification and management of maternal and newborn complications and in ensuring continuity of care.

Objective: This narrative review synthesizes current evidence on evidence-based maternal and newborn care from pregnancy through childbirth and the postnatal period, with particular emphasis on antenatal care, maternal nutrition, high-risk pregnancy, hypertensive disorders, gestational diabetes mellitus, anaemia, fetal assessment, birth preparedness, skilled intrapartum care, immediate newborn care, breastfeeding, preterm and low-birth-weight infant care, kangaroo mother care (KMC), neonatal danger signs, and postnatal follow-up.\

Review approach: Relevant literature and recommendations were identified from PubMed/MEDLINE, Scopus, Web of Science, the Cochrane Library, Google Scholar, World Health Organization (WHO) publications, and selected Government of India resources. Priority was given to WHO guidelines, systematic reviews, meta-analyses, and recent peer-reviewed literature published primarily between 2020 and 2026, while retaining earlier landmark guidance where it remained applicable.

Key findings: Evidence indicates that quality antenatal care provides an important platform for health promotion, nutritional support, maternal and fetal assessment, prevention and detection of complications, birth preparedness, and referral when required. High-risk conditions, including hypertensive disorders, gestational diabetes, anaemia, fetal growth abnormalities, and preterm birth, require timely identification and appropriate management. Essential newborn care includes immediate assessment, thorough drying, thermal protection, skin-to-skin contact, appropriate cord care, breastfeeding support, infection prevention, recognition of danger signs, and neonatal resuscitation when indicated. For preterm and low-birth-weight infants, KMC is supported by substantial evidence and is associated with reduced neonatal mortality and severe infection. Continuity of person-centred and respectful care from pregnancy through the postnatal period is important for maternal and newborn well-being.

Conclusion: The evidence supports an integrated maternal–newborn continuum of care that links antenatal, intrapartum, immediate newborn, and postnatal services. Nurses and midwives have central roles in assessment, health education, early identification of complications, breastfeeding support, newborn care, KMC, family counselling, referral, and continuity of care. Strengthening quality, respectful, equitable, and evidence-based maternal and newborn services should remain a priority for clinical practice, nursing education, health-system planning, and future research.

Keywords: pregnancy, antenatal care, maternal health, newborn care, neonatal health, high-risk pregnancy, breastfeeding, preterm birth, kangaroo mother care, postnatal care, nursing, midwifery, continuum of care

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Introduction

Pregnancy, childbirth, and the postnatal period constitute interconnected stages of maternal and newborn health rather than isolated episodes of care. Health and nutritional status before and during pregnancy, the quality of antenatal care, skilled care during childbirth, immediate newborn practices, and continued postnatal support can influence maternal, fetal, and neonatal outcomes across the continuum. Contemporary maternal-health guidance therefore emphasizes integrated, person-centred, evidence-based care that addresses prevention, early detection, management of complications, and continuity of support across pregnancy, childbirth, and the postnatal period.[1]

Antenatal care provides an important platform for health promotion, screening, prevention, maternal and fetal assessment, nutritional counselling, preparation for childbirth, and identification of conditions requiring referral or treatment.[2] The WHO framework for a

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positive pregnancy experience emphasizes that antenatal care should extend beyond routine clinical assessment and should incorporate communication, dignity, respect, and support for women's physical and psychosocial well-being.[2] The updated WHO compilation of maternal-health recommendations published in 2025 further consolidates recommendations covering antenatal, intrapartum, postnatal, breastfeeding, and complication-management care.[1]

The health of the mother and newborn is closely interconnected. Maternal anaemia, hypertensive disorders of pregnancy, diabetes, infections, inadequate nutrition, and other maternal conditions may influence fetal growth, gestational age, birth weight, and neonatal health. Conversely, complications arising during labour and birth may contribute to neonatal morbidity and the need for advanced newborn care.[1] A recent systematic review and meta-analysis found that comprehensive prenatal interventions, including nutritional and psychosocial components, were associated with improved neonatal outcomes, although substantial heterogeneity across interventions and settings limits the interpretation of a single uniform effect.[3]

The period immediately after birth is particularly important because the newborn must rapidly transition from intrauterine to extrauterine life. WHO's Essential Newborn Care Course identifies immediate care at birth, resuscitation when required, breast-milk feeding, thermal care, infection prevention, and recognition and response to newborn danger signs as core components of essential newborn care.[4] These interventions are closely linked to the quality of intrapartum care and to the preparedness and competence of the health professionals attending birth.

Preterm and low-birth-weight infants require additional attention because of their increased vulnerability to hypothermia, infection, feeding difficulties, respiratory complications, and death. WHO recommends kangaroo mother care as routine care for preterm or low-birth-weight infants, with immediate initiation as soon as possible after birth when clinically appropriate.[5] Evidence from a 2023 systematic review and meta-analysis involving 31 trials and 15,559 infants demonstrated that KMC was associated with lower mortality and probable reduction in severe infection compared with conventional care.[6]

The postnatal period represents another critical opportunity to identify maternal and newborn complications, establish effective breastfeeding, support parental involvement, address maternal well-being, and arrange appropriate follow-up. WHO's recommendations for a positive postnatal experience emphasize person-centred, respectful, informative, and supportive care for women, newborns, partners, parents, caregivers, and families during the first six weeks after birth.[7]

Nurses and midwives are central to this continuum because they frequently provide or coordinate care across antenatal, intrapartum, newborn, and postnatal settings. Their responsibilities include assessment, health education, risk identification, breastfeeding support, newborn assessment, thermal protection, recognition of danger signs, family counselling, KMC support, referral, and follow-up. Strengthening nursing and midwifery competencies and continuity of care is therefore an important component of improving maternal and newborn health outcomes.

In India, maternal and newborn health services are supported through national programmes and initiatives that aim to improve access to antenatal care, skilled birth attendance, emergency referral, newborn care, breastfeeding support, and respectful maternity services. However, differences in access, quality, health-system capacity, socioeconomic circumstances, and continuity of care continue to influence maternal and newborn health across populations. A comprehensive review of the maternal–newborn continuum is therefore relevant to nursing practice, midwifery education, clinical service delivery, public-health programming, and future research.

Accordingly, this narrative review synthesizes current evidence concerning pregnancy, childbirth, immediate newborn care, care of preterm and low-birth-weight infants, breastfeeding, kangaroo mother care, neonatal danger signs, and postnatal care, with particular attention to the implications for nursing and midwifery practice.

Review objective

The objective of this narrative review was to synthesize contemporary evidence on the maternal–newborn continuum of care from pregnancy through childbirth and the postnatal period. Particular emphasis was placed on evidence-based antenatal care, maternal nutrition, identification and management of high-risk pregnancy, hypertensive disorders of pregnancy, gestational diabetes mellitus, maternal anaemia, fetal assessment, birth preparedness, skilled intrapartum care, immediate and essential newborn care, breastfeeding, care of preterm and low-birth-weight infants, kangaroo mother care, recognition of neonatal danger signs, postnatal care, and the roles of nurses and midwives. The review also considered the Indian maternal and newborn healthcare context, health-system challenges, and implications for nursing practice, education, service delivery, and future research.

Review methodology

Review design

This article was conducted as a **narrative review** of contemporary evidence concerning maternal and newborn health across the continuum of care from pregnancy through childbirth and the postnatal and neonatal periods. A narrative review approach was selected because the purpose was to integrate evidence from clinical guidelines, systematic reviews, meta-analyses, observational studies, intervention studies, and relevant policy documents addressing multiple interrelated components of maternal and newborn care.

The review focused on evidence relevant to antenatal care, maternal nutrition, high-risk pregnancy, hypertensive disorders of pregnancy, gestational diabetes mellitus, maternal anaemia, fetal well-being, birth preparedness, intrapartum care, essential newborn care, breastfeeding, preterm and low-birth-weight infant care, kangaroo mother care, neonatal danger signs, postnatal care, and the roles of nurses and midwives.

Information sources

Literature and relevant guidance were identified from the following electronic databases and authoritative sources:

PubMed/MEDLINE

Scopus

Web of Science

Cochrane Library

Google Scholar

World Health Organization (WHO)

UNICEF

Ministry of Health and Family Welfare (MoHFW), Government of India

Other relevant national and international health-agency publications where applicable

Priority was given to peer-reviewed systematic reviews, meta-analyses, clinical practice guidelines, WHO recommendations, national health-policy documents, and recent primary research relevant to maternal and newborn health.

Search strategy

A structured literature search was undertaken using combinations of keywords and Boolean operators. The principal concepts included maternal health, pregnancy, antenatal care, intrapartum care, newborn care, neonatal health, breastfeeding, preterm birth, low birth weight, kangaroo mother care, and postnatal care.

Representative search combinations included:

"pregnancy" AND "antenatal care" AND "maternal health"

"Antenatal care" AND "neonatal outcomes"

"High-risk pregnancy" AND "maternal outcomes"

"High-risk pregnancy" AND "neonatal outcomes"

"Hypertensive disorders of pregnancy" AND "perinatal outcomes"

"Gestational diabetes" AND "neonatal outcomes"

"Maternal anaemia" AND "pregnancy outcomes"

"Essential newborn care" AND "neonatal outcomes"

"Newborn danger signs" AND "neonatal health"

"Breastfeeding" AND "newborn health"

"Preterm" AND "low birth weight" AND "kangaroo mother care"

"Kangaroo mother care" AND "neonatal mortality"

"Postnatal care" AND "maternal and neonatal outcomes"

"Nursing" AND "maternal newborn care"

"Midwifery" AND "continuity of care"

Search terms were adapted according to the indexing and search requirements of individual databases. Reference lists of key systematic reviews, guidelines, and relevant articles were also examined to identify additional publications that were directly relevant to the objectives of the review.

Eligibility criteria

Inclusion criteria

Literature was considered eligible when it:

1. addressed one or more components of maternal, fetal, newborn, or postnatal health;
2. provided evidence relevant to antenatal, intrapartum, newborn, or postnatal care;
3. examined interventions or outcomes relevant to nursing, midwifery, maternal health, or neonatal health;
4. included systematic reviews, meta-analyses, clinical guidelines, WHO recommendations, national policy documents, observational studies, intervention studies, or other peer-reviewed research of direct relevance;
5. was published predominantly between **2020 and 2026**, while earlier landmark guidelines or evidence were retained when they remained clinically or policy relevant; and
6. was available in English or had sufficient information available in English for interpretation.

Exclusion criteria

Publications were excluded when they:

1. were unrelated to maternal, fetal, newborn, or postnatal health;
2. addressed populations or clinical conditions outside the scope of the review without direct relevance to maternal–newborn care;
3. were duplicate publications;
4. consisted solely of opinion or commentary without sufficient relevance to the review objectives;
5. contained insufficient information to interpret the findings; or
6. were identified as non-relevant conference material, promotional content, or non-scientific web material.

Selection and synthesis of evidence

The retrieved literature was assessed for relevance to the objectives of the review. Priority was given to evidence with higher methodological strength, including systematic reviews, meta-analyses, evidence-based clinical guidelines, and recommendations from recognized international and national health authorities.

The evidence was organized thematically into the following major domains:

1. pregnancy and antenatal care;
2. maternal nutrition;
3. high-risk pregnancy and major maternal complications;
4. fetal assessment and birth preparedness;
5. intrapartum care;
6. immediate and essential newborn care;
7. breastfeeding and newborn nutrition;
8. preterm and low-birth-weight infant care;
9. kangaroo mother care;
10. neonatal complications and danger signs;
11. postnatal care;
12. nursing and midwifery roles;
13. maternal and newborn healthcare in India;
14. health-system challenges and future directions.

Because this was a narrative review, findings were synthesized descriptively rather than statistically pooled. Where evidence was heterogeneous, the findings were interpreted cautiously and differences in populations, interventions, settings, and study designs were considered.

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Quality and currency of evidence

Particular emphasis was placed on current WHO recommendations, recent systematic reviews and meta-analyses, and contemporary peer-reviewed evidence. Where older publications were cited, they were retained because they represented established guidance, foundational evidence, or recommendations that remained relevant to current maternal and newborn care.

Evidence was not interpreted solely on the basis of publication year. The relevance, methodological design, clinical applicability, and authority of the source were also considered when synthesizing the literature.

Ethical considerations

As this article involved synthesis of previously published literature and publicly available guidelines and policy documents, no direct recruitment of human participants or collection of primary human data was undertaken. Therefore, institutional ethical approval was not required for this narrative review.

Pregnancy and maternal health

Pregnancy is a dynamic physiological state accompanied by substantial anatomical, physiological, metabolic, and psychosocial changes. Although pregnancy is a normal life event for most women, complications may develop at any stage and can adversely affect maternal, fetal, and newborn health. Consequently, high-quality antenatal care (ANC) is an essential component of the maternal–newborn continuum and provides opportunities for health promotion, disease prevention, screening, early identification of complications, appropriate treatment, and preparation for childbirth and parenthood.[1,2]

The World Health Organization (WHO) recommends that antenatal care should be organized around the concept of a positive pregnancy experience, with care that is evidence-based, person-centred, respectful, and responsive to the individual needs of pregnant women and their families. WHO recommends a minimum of eight antenatal contacts during pregnancy to increase opportunities for assessment, prevention, counselling, and timely identification and management of complications.[2] The current WHO maternal-health recommendations, updated and consolidated in 2025, include recommendations addressing health promotion, prevention, maternal and fetal assessment, management of complications, and care during pregnancy, childbirth, and the postnatal period.[1]

Antenatal care should therefore extend beyond routine physical examination. It should integrate maternal assessment, fetal assessment, nutritional care, screening and preventive interventions, health education, psychosocial support, birth preparedness, complication readiness, and appropriate referral. WHO's implementation framework identifies routine interventions such as measurement of blood pressure and weight, laboratory testing, screening for infections, nutritional counselling, fetal growth assessment, and counselling on birth preparedness and breastfeeding as important components of antenatal care (Table 1).[3]

Table 1 Major components of antenatal care

Component	Major activities
Initial maternal assessment	Comprehensive history, physical examination, identification of previous obstetric and medical risk factors, blood pressure, weight and nutritional assessment
Routine laboratory assessment	Haemoglobin assessment, blood group and Rh status, infection screening, urine assessment, and glucose testing according to gestational age and applicable guidelines
Maternal disease screening and management	Screening and management of anaemia, hypertensive disorders, diabetes in pregnancy, infections, and other clinically relevant conditions
Fetal assessment	Assessment of gestational age, fetal growth, fetal heart rate, fundal height, fetal movements, and other investigations as clinically indicated
Ultrasound assessment	Ultrasound to assist with gestational-age assessment and identification of multiple pregnancy or fetal abnormalities, according to availability and clinical indication
Nutritional care	Assessment of nutritional status, dietary counselling, appropriate micronutrient supplementation, and counselling regarding healthy gestational weight gain
Preventive care	Appropriate immunization, infection prevention, counselling regarding tobacco, alcohol and other substance use, and preventive interventions according to national recommendations
Risk assessment	Identification of high-risk pregnancy and conditions requiring closer surveillance, specialist consultation, or referral
Health education and counselling	Information regarding nutrition, physical activity, hygiene, medication use, warning signs, mental well-being, and healthy behaviours
Birth preparedness and complication readiness	Planning for place of birth, skilled birth attendance, transportation, emergency contacts, financial/social preparedness, and referral arrangements
Breastfeeding preparation	Counselling regarding early initiation of breastfeeding, exclusive breastfeeding, positioning and attachment, and management of common breastfeeding concerns
Postnatal planning	Education regarding maternal and newborn postnatal care, family planning, newborn danger signs, follow-up, and timely care-seeking

Source: Adapted from WHO recommendations on antenatal care and current WHO maternal-health guidance.[1–3]

WHO's antenatal-care framework emphasizes that each contact should provide meaningful assessment and support rather than functioning simply as a scheduled visit. The recommended model includes repeated opportunities to assess maternal and fetal well-being, identify complications, provide preventive interventions, and address the woman's questions and preferences.[2] The 2022 WHO update also reaffirmed the role of ultrasound before 24 weeks of pregnancy for improving gestational-age assessment and detection of multiple pregnancy and fetal abnormalities.[4]

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The quality of antenatal care is also important in relation to newborn outcomes. A recent systematic review and meta-analysis reported associations between comprehensive prenatal interventions and improved neonatal outcomes, although considerable heterogeneity between interventions and settings means that the magnitude and consistency of benefit cannot be assumed to be uniform across all populations.[5] Therefore, the value of ANC should be considered not only in terms of the number of contacts but also in terms of the content, quality, continuity, accessibility, and responsiveness of care.

Maternal health during pregnancy is closely linked to fetal and newborn health. Conditions such as anaemia, hypertension, diabetes, infections, inadequate nutrition, and other maternal disorders may influence fetal growth, gestational age, mode of birth, birth weight, and neonatal adaptation. Identification and appropriate management of these conditions are therefore fundamental components of the maternal–newborn continuum.[1,3]

Antenatal care should also incorporate assessment of social and psychosocial circumstances. Barriers such as financial constraints, geographical distance, inadequate transportation, limited health literacy, social disadvantage, and lack of continuity of care may affect timely access to services. A person-centred approach should therefore recognize both clinical and non-clinical determinants of maternal health and facilitate appropriate referral and support.

Overall, effective pregnancy care requires an integrated approach that combines clinical assessment with prevention, nutrition, education, psychosocial support, respectful communication, birth preparedness, and timely management or referral of complications. Such an approach provides the foundation for safer childbirth and improved maternal and newborn outcomes.[1,2]

Maternal nutrition during pregnancy

Maternal nutrition is an important determinant of maternal well-being, fetal growth, birth outcomes, and the health of the child. Nutritional requirements increase during pregnancy because of physiological adaptations, expansion of maternal tissues and blood volume, placental development, and fetal growth. Consequently, antenatal nutritional care should include assessment of nutritional status, dietary counselling, appropriate micronutrient supplementation, monitoring of gestational weight gain, and identification of women who require additional nutritional support.[1,2]

WHO recommends that nutritional counselling should be integrated into antenatal care and provided throughout pregnancy. Nutritional counselling should promote a diverse and balanced diet and should be adapted to the woman's nutritional status, dietary practices, cultural context, socioeconomic circumstances, and specific pregnancy-related needs.[1,2] Current WHO antenatal-care guidance includes nutritional counselling among the interventions to be offered from the initial antenatal contact and throughout pregnancy.[3]

Assessment of maternal nutritional status

Assessment of maternal nutritional status should begin early in pregnancy and should be repeated during subsequent antenatal contacts. Relevant components include pre-pregnancy or early-pregnancy body mass index (BMI), weight, changes in weight during pregnancy, dietary history, clinical assessment, and screening for nutritional deficiencies where indicated. Women who are underweight, overweight, or obese before pregnancy may have different nutritional and obstetric risks and therefore require individualized counselling and monitoring.

Maternal undernutrition remains particularly important in settings where food insecurity, micronutrient deficiencies, poverty, or limited access to nutritious foods are prevalent. In undernourished populations, WHO recommends balanced energy and protein supplementation as a population-level intervention to reduce the risk of stillbirth and small-for-gestational-age newborns.[1,4] However, this recommendation should not be interpreted as routine high-protein supplementation for every pregnant woman. WHO specifically does not recommend high-protein supplementation as an intervention to improve maternal and perinatal outcomes.[1,5]

Dietary counselling and healthy eating

Antenatal dietary counselling should encourage consumption of a varied diet containing adequate sources of protein, whole grains and other nutrient-rich carbohydrate sources, vegetables, fruits, pulses or legumes, and appropriate sources of healthy fats. Counselling should also address food safety, adequate hydration, avoidance of tobacco and alcohol, and appropriate use of medications or supplements.

The purpose of dietary counselling is not simply to increase food intake but to improve the nutritional quality and adequacy of the maternal diet. Counselling should be individualized according to maternal nutritional status and should take into account cultural food practices, food availability, affordability, and household circumstances.

Evidence summarized by WHO indicates that nutritional education and balanced energy-protein supplementation may be beneficial particularly among undernourished pregnant women. Balanced energy and protein supplementation has been associated with increased birth weight and reduced risks of stillbirth and small-for-gestational-age birth, whereas evidence for high-protein supplementation is insufficient and includes findings suggesting possible harm.[4,5] Therefore, nutritional interventions should be targeted and evidence-based rather than based on indiscriminate increases in protein intake.

Iron and Folic Acid Supplementation

Iron and folic acid supplementation is a major component of antenatal nutritional care. WHO recommends daily oral supplementation containing **30–60 mg of elemental iron and 400 µg (0.4 mg) of folic acid** during pregnancy to reduce the risk of maternal anaemia, low birth weight, and preterm birth and to contribute to improved maternal and neonatal outcomes.[1,6]

The current WHO maternal-health recommendations also provide a context-specific intermittent regimen of **120 mg elemental iron and 2.8 mg folic acid once weekly** where daily supplementation is not acceptable because of side effects and where the prevalence of anaemia among pregnant women is below 20%, with appropriate haemoglobin assessment and monitoring.[1]

When anaemia is diagnosed during pregnancy, WHO recommends therapeutic iron and folic acid management rather than continuation of a routine preventive dose alone. According to the current WHO maternal-health guidance, women diagnosed with anaemia during antenatal care should receive 120 mg of elemental iron and 400 µg of folic acid daily until haemoglobin returns to the normal range, followed by the standard antenatal preventive regimen.[1]

The 2024 WHO guideline on haemoglobin cut-offs further emphasizes the importance of standardized assessment and interpretation of haemoglobin concentrations for diagnosing anaemia across different populations and clinical contexts.[7] Thus, assessment of haemoglobin and appropriate clinical interpretation should form part of comprehensive antenatal care.

Calcium and other micronutrients

Calcium has an important role in maternal and fetal health. WHO recommends calcium supplementation during pregnancy in populations where dietary calcium intake is low, particularly to reduce the risk of pre-eclampsia.[1] The current WHO recommendation specifies **1.5–2.0 g of elemental calcium daily** in such settings.[1]

Other micronutrient interventions should be guided by the woman's nutritional status, local prevalence of deficiencies, national policies, and applicable WHO recommendations. Vitamin A supplementation during pregnancy is not recommended universally; WHO recommends it only in areas where vitamin A deficiency is a severe public-health problem, primarily to prevent maternal night blindness.[1]

Accordingly, routine antenatal nutritional care should avoid indiscriminate use of multiple supplements without an evidence-based indication. The choice, dose, timing, and duration of supplementation should follow current national and international recommendations.

Gestational weight gain

Monitoring gestational weight gain is an important component of nutritional assessment during pregnancy. Both inadequate and excessive weight gain may be associated with adverse maternal and neonatal outcomes. Therefore, weight should be assessed regularly during antenatal contacts and interpreted in relation to pre-pregnancy BMI, gestational age, and applicable population-specific recommendations.[2,3]

A large systematic review and meta-analysis published in 2025 included observational data from more than 1.6 million women and found that gestational weight gain below or above recommended ranges was associated with different adverse maternal and neonatal outcomes. In particular, inadequate gestational weight gain was associated with increased risks of preterm birth, small-for-gestational-age birth, low birth weight, and respiratory distress, while excessive gestational weight gain was associated with a broader range of adverse maternal and neonatal outcomes.[8] Because these findings are based predominantly on observational evidence and because recommended weight-gain ranges vary according to BMI classification and population, they should be interpreted as evidence of association rather than proof of causation.

For this reason, pregnant women should not be advised simply to gain as much weight as possible. Instead, antenatal providers should monitor weight trajectory and provide individualized dietary and lifestyle counselling according to pre-pregnancy nutritional status, gestational age, and clinical circumstances.

Maternal nutrition and the maternal–newborn continuum

Maternal nutrition has implications extending beyond pregnancy. Adequate maternal nutritional status supports fetal growth and may influence birth weight, gestational age, maternal recovery, and the mother's capacity to initiate and sustain breastfeeding. Nutritional counselling during pregnancy therefore provides an opportunity to establish healthy dietary practices that can continue during the postpartum period and contribute to appropriate infant and young-child feeding.

This continuity is particularly relevant in settings where maternal and child undernutrition coexist. Evidence from an Indian descriptive study by Mehta, Galav, and Prakash found an association between maternal feeding practices and selected nutritional parameters among children under five years of age, highlighting the importance of maternal knowledge and appropriate feeding practices in the broader continuum of maternal and child nutrition.[9] However, because that study was observational and focused on mothers and children rather than pregnancy nutrition itself, its findings should be interpreted as supportive contextual evidence rather than evidence of a causal effect of antenatal nutrition.

Overall, maternal nutrition should be regarded as an integral component of antenatal care rather than a separate intervention. Effective nutritional care requires early assessment, individualized dietary counselling, appropriate micronutrient supplementation, monitoring of gestational weight gain, identification of undernutrition and anaemia, and referral or additional nutritional support when clinically indicated. Integrating these measures into routine antenatal contacts can strengthen the maternal–newborn continuum and contribute to healthier pregnancy and birth outcomes.[1–4]

High-risk pregnancy

A high-risk pregnancy is a pregnancy in which maternal, fetal, or placental factors increase the likelihood of complications during pregnancy, childbirth, or the postnatal period. High-risk status may be identified before conception, during early pregnancy, or at any later stage of gestation. It is not necessarily a permanent classification; risk may change as pregnancy progresses and as new clinical or social factors emerge.

High-risk pregnancy may result from pre-existing maternal diseases, pregnancy-related complications, fetal or placental conditions, previous adverse obstetric outcomes, or social and environmental circumstances. Common maternal risk factors include chronic hypertension, diabetes mellitus, renal disease, cardiac disease, thyroid disorders, epilepsy, severe anaemia, obesity, undernutrition, infectious diseases, and mental-health concerns. Obstetric and fetal risk factors may include previous stillbirth, recurrent pregnancy loss, previous preterm birth, previous caesarean birth, multiple pregnancy, fetal growth restriction, abnormal placentation, malpresentation, and suspected fetal anomalies.

The identification of high-risk pregnancy requires a comprehensive assessment rather than reliance on a single risk factor. The assessment should include the woman's medical and obstetric history, current symptoms, physical examination, vital signs, laboratory findings, fetal assessment, nutritional status, medication history, psychosocial circumstances, and access to emergency care. Risk assessment should be repeated during antenatal contacts because a woman initially classified as low risk may subsequently develop complications.

Major categories of high-risk pregnancy

High-risk pregnancies may be broadly categorized as follows:

Category	Examples
Pre-existing maternal conditions	Chronic hypertension, diabetes mellitus, renal disease, cardiac disease, epilepsy, thyroid disease, autoimmune disorders and severe respiratory disease
Maternal nutritional conditions	Severe anaemia, undernutrition, obesity, micronutrient deficiencies and inadequate gestational weight gain
Pregnancy-induced conditions	Gestational hypertension, pre-eclampsia, gestational diabetes, antepartum haemorrhage and severe hyperemesis gravidarum
Obstetric history	Previous stillbirth, recurrent pregnancy loss, previous preterm birth, previous caesarean birth, previous postpartum haemorrhage or previous complicated pregnancy

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Fetal and placental conditions	Multiple pregnancy, fetal growth restriction, suspected fetal anomaly, abnormal fetal presentation, placenta praevia and placental abruption
Infectious conditions	HIV, syphilis, hepatitis B, tuberculosis, malaria in endemic settings and other clinically significant infections
Social and environmental factors	Poverty, food insecurity, domestic violence, inadequate transportation, limited access to health services, low health literacy and occupational or environmental hazards

Principles of care for high-risk pregnancy

Management of high-risk pregnancy should be individualized according to the type and severity of risk, gestational age, available resources, and the needs and preferences of the pregnant woman. Important principles include:

1. Early identification and risk classification: Risk factors should be identified at the first antenatal contact and reassessed throughout pregnancy.
2. Individualized care planning: The frequency and content of antenatal contacts should be adapted to clinical requirements.
3. Multidisciplinary collaboration: Women with complex conditions may require coordinated care involving obstetricians, physicians, nurses, midwives, nutritionists, anaesthetists, neonatologists, mental-health professionals, and other specialists.
4. Enhanced maternal and fetal surveillance: Additional laboratory investigations, imaging, fetal monitoring, or specialist assessment should be undertaken when clinically indicated.
5. Timely referral: Women with complications beyond the capacity of the attending facility should be referred promptly to an appropriately equipped centre.
6. Birth preparedness and complication readiness: The woman and her family should be informed about the anticipated place of birth, emergency transportation, blood availability where relevant, referral arrangements, and warning signs.
7. Respectful and person-centred care: Women should be involved in decisions concerning their care and should receive clear information about benefits, risks, alternatives, and expected follow-up.
8. Postnatal continuity: High-risk status may persist after childbirth; therefore, maternal monitoring, medication review, newborn assessment, and follow-up should continue after delivery.

Nursing and midwifery responsibilities

Nurses and midwives have an important role in the early recognition and continuing management of high-risk pregnancy. Their responsibilities include obtaining a detailed history, measuring and recording vital signs, monitoring weight and symptoms, assessing fetal well-being within their scope of practice, identifying warning signs, supporting adherence to investigations and treatment, providing nutritional and health education, and facilitating referral.

Nurses and midwives should be particularly alert to symptoms such as severe headache, visual disturbance, epigastric or upper abdominal pain, vaginal bleeding, leaking of fluid, reduced fetal movement, fever, breathlessness, convulsions, persistent vomiting, and sudden swelling associated with other concerning symptoms. Such findings require prompt clinical assessment rather than routine reassurance.

Communication and documentation are essential components of high-risk pregnancy care. All significant findings, interventions, referrals, patient education, and follow-up plans should be accurately recorded. Clear communication between healthcare providers can reduce delays in diagnosis and treatment and can support safer transitions between primary, secondary, and tertiary levels of care.

High-risk pregnancy and newborn outcomes

High-risk pregnancy is relevant to newborn health because maternal and placental complications may contribute to preterm birth, fetal growth restriction, low birth weight, stillbirth, birth asphyxia, neonatal infection, and admission to a neonatal care unit. However, the presence of a risk factor does not inevitably result in an adverse outcome. Early detection, appropriate treatment, continuity of care, skilled birth attendance, and access to emergency obstetric and newborn services can modify the risk.

High-risk pregnancy should therefore be managed as a continuum rather than as an isolated antenatal classification. Antenatal identification of risk should be linked with an appropriate delivery plan, neonatal preparedness, postnatal monitoring, and referral pathways. This integrated approach is especially important in resource-constrained settings, where delays in recognizing complications, reaching an appropriate facility, or receiving definitive care may contribute to preventable maternal and newborn morbidity and mortality.

Hypertensive disorders of pregnancy

Hypertensive disorders of pregnancy are among the important causes of maternal and perinatal morbidity and mortality. They include chronic hypertension, gestational hypertension, pre-eclampsia, pre-eclampsia superimposed on chronic hypertension, and eclampsia. These conditions may affect maternal neurological, renal, hepatic, cardiovascular, and haematological systems and may also compromise placental function and fetal growth.

According to the World Health Organization (WHO), pre-eclampsia generally develops after 20 weeks of pregnancy and may progress to eclampsia, a life-threatening condition characterized by seizures. Hypertensive disorders of pregnancy are associated with complications such as preterm birth, fetal growth restriction, placental abruption, organ dysfunction, stillbirth, and maternal or neonatal death.[1,2] Early detection, appropriate assessment, timely treatment, and effective referral are therefore essential components of antenatal and intrapartum care.

Classification

The principal hypertensive disorders of pregnancy can be summarized as follows:

Condition	General description
Chronic hypertension	Hypertension that predates pregnancy or is identified before 20 weeks of gestation, or hypertension that persists beyond the postpartum period
Gestational hypertension	New-onset hypertension after 20 weeks of gestation without the diagnostic features of pre-eclampsia at the time of assessment
Pre-eclampsia	New-onset hypertension after 20 weeks of gestation accompanied by proteinuria and/or maternal organ dysfunction or other evidence of significant disease, according to the diagnostic framework used

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Pre-eclampsia superimposed on chronic Hypertension	Development of pre-eclampsia-related findings in a woman with pre-existing chronic hypertension
eclampsia	Occurrence of seizures in a woman with pre-eclampsia that cannot be explained by another neurological or medical cause

Hypertension is generally defined as a blood pressure of **140 mmHg systolic or 90 mmHg diastolic or higher**. Diagnosis should be based on appropriate measurement technique and confirmation according to the relevant clinical guideline. Severe hypertension, particularly when persistent, requires urgent assessment and management because it increases the risk of stroke and other life-threatening complications.[1,3]

Pre-eclampsia is not defined solely by the presence of proteinuria. In addition to hypertension, it may involve renal, hepatic, neurological, haematological, or cardiopulmonary abnormalities, or evidence of uteroplacental dysfunction. Diagnostic criteria should therefore be interpreted using current national or institutional guidelines and in consultation with an appropriately qualified clinician.

Risk factors

Risk factors for hypertensive disorders of pregnancy include:

a. first pregnancy;

b. previous history of pre-eclampsia;

c. multiple pregnancy;

d. chronic hypertension;

e. pre-existing diabetes;

f. chronic kidney disease;

g. autoimmune disease;

h. obesity;

i. family history of pre-eclampsia;

j. advanced maternal age;

k. assisted reproductive technology in some populations; and

l. certain thrombophilic or placental-risk conditions.

The presence of a risk factor does not establish that pre-eclampsia will develop. However, women with significant risk factors may require enhanced surveillance and preventive interventions according to current recommendations.

Clinical features and warning signs

Some women with hypertensive disorders remain asymptomatic, which makes routine blood-pressure assessment during antenatal care essential. Possible clinical features of pre-eclampsia include:

I. persistent or severe headache;

II. visual disturbance;

III. epigastric or right-upper-quadrant pain;

IV. nausea or vomiting occurring with other concerning features;

V. sudden or marked swelling of the face or hands;

VI. shortness of breath;

VII. reduced urine output;

VIII. elevated blood pressure;

IX. proteinuria; and

X. abnormal laboratory findings involving the kidneys, liver, platelets, or other organ systems.

These symptoms are not individually diagnostic and may occur in other conditions. Nevertheless, they should prompt immediate clinical assessment. Convulsions in a pregnant or recently postpartum woman require emergency management, and eclampsia should be considered after other causes have been assessed.

Maternal and fetal complications

Hypertensive disorders may produce complications through systemic maternal disease, impaired placental perfusion, or both. Maternal complications may include cerebrovascular accident, eclampsia, pulmonary oedema, acute kidney injury, liver injury, thrombocytopenia, disseminated intravascular coagulation, placental abruption, and maternal death.

Fetal and neonatal complications may include fetal growth restriction, oligohydramnios, medically indicated preterm birth, low birth weight, fetal distress, stillbirth, and neonatal complications associated with prematurity. The risk depends on the type and severity of hypertension, gestational age at onset, associated organ dysfunction, placental involvement, and access to appropriate care.

Prevention and management

Prevention and management should be based on the woman's risk profile, blood-pressure level, symptoms, gestational age, laboratory findings, fetal condition, and available services.

Important approaches include**:**

1. Routine blood-pressure assessment: Blood pressure should be measured accurately at antenatal contacts and interpreted in the context of symptoms and other findings.

2. Risk assessment: Women at increased risk of pre-eclampsia should be identified early and managed according to current recommendations.

3. Low-dose aspirin when indicated: WHO recommends low-dose aspirin for women at high risk of pre-eclampsia, subject to clinical assessment and applicable national guidance.[2,4]

4. Calcium supplementation in low-intake populations: WHO recommends calcium supplementation during pregnancy in populations with low dietary calcium intake to reduce the risk of pre-eclampsia.[5]

5. Treatment of hypertension: Antihypertensive treatment should be selected and monitored by qualified clinicians according to the severity of hypertension and current guidelines.

6. Magnesium sulfate: Magnesium sulfate is recommended for prevention and treatment of eclamptic seizures in appropriate clinical circumstances. WHO reports that it substantially reduces the risk of progression from pre-eclampsia to eclampsia.[1,2]

7. Maternal and fetal surveillance: Depending on severity, care may include repeated blood-pressure measurement, urine assessment, laboratory investigations, fetal growth assessment, fetal movement assessment, cardiotocography, ultrasound, or other clinically indicated investigations.

8. Timely delivery and referral: The decision regarding timing and mode of birth should be individualized according to maternal and fetal status, gestational age, severity of disease, and available neonatal and obstetric facilities.
9. Postpartum monitoring: Hypertension and pre-eclampsia may first appear or worsen after childbirth. Monitoring should therefore continue during the postpartum period, with clear instructions regarding warning signs and follow-up.

The use of magnesium sulfate, antihypertensive medicines, corticosteroids, aspirin, calcium, and other interventions should follow current clinical protocols. This review should not be interpreted as a substitute for individualized emergency or specialist management.

Nursing and midwifery management

Nurses and midwives contribute substantially to early recognition, monitoring, education, emergency response, and continuity of care for women with hypertensive disorders. Their responsibilities include:

a) measuring blood pressure using an appropriate technique;

b) assessing headache, visual symptoms, epigastric pain, dyspnoea, oedema, and neurological changes;

c) monitoring urine output and relevant laboratory results;

d) observing for signs of worsening disease;

e) assessing fetal movements and reporting concerning changes;

f) maintaining accurate clinical records;

g) administering prescribed medicines safely;

h) monitoring for adverse effects and toxicity where magnesium sulfate is used;

i) ensuring availability of emergency equipment according to institutional protocols;

j) preparing for referral or urgent birth when indicated;

k) providing clear information to the woman and family; and

l) reinforcing postpartum follow-up and danger-sign education.

When magnesium sulfate is administered, nursing observation should follow the local protocol and include assessment of respiratory rate, deep tendon reflexes, urine output, level of consciousness, and other relevant indicators of toxicity. Calcium gluconate and emergency support should be available according to institutional policy. Any deterioration should be reported immediately.

Postpartum and long-term considerations

The risk associated with hypertensive disorders does not end at childbirth. Blood pressure may remain elevated or may worsen after delivery, and women require appropriate postpartum assessment, medication review, counselling, and follow-up. Women who experience pre-eclampsia or other hypertensive disorders should also receive information regarding future pregnancy planning and long-term cardiovascular risk, as these conditions may identify an increased risk of later-life cardiovascular disease.

A coordinated approach involving obstetric services, primary healthcare, nursing and midwifery professionals, and other relevant providers is necessary to ensure that women receive appropriate care after discharge. The newborn should also be assessed for complications associated with prematurity, growth restriction, or medically indicated early birth.

In summary, hypertensive disorders of pregnancy require systematic screening, accurate diagnosis, timely treatment, close maternal and fetal surveillance, emergency preparedness, and postpartum continuity. Strengthening these elements within the maternal–newborn continuum can reduce avoidable complications and improve the safety and quality of care.

Gestational diabetes mellitus

Gestational diabetes mellitus (GDM) is an important metabolic complication of pregnancy and forms an important component of the maternal–newborn continuum because maternal hyperglycaemia can affect both maternal and fetal health. Diabetes during pregnancy includes pre-existing type 1 or type 2 diabetes and hyperglycaemia first detected during pregnancy. WHO's 2025 recommendations emphasize the need for appropriate screening, diagnosis, monitoring, lifestyle modification, pharmacological treatment when indicated, and coordinated maternal and fetal care.[1,5]

GDM is associated with an increased risk of maternal and perinatal complications, including hypertensive disorders of pregnancy, excessive fetal growth, operative birth, stillbirth, neonatal hypoglycaemia, birth injury and other neonatal complications. The clinical significance of these risks depends on the severity and duration of hyperglycaemia and the quality of glycaemic management.[5]

Screening and diagnosis should follow locally adopted evidence-based protocols. Once GDM is identified, management should include individualized nutritional counselling, appropriate physical activity, glucose monitoring, maternal and fetal surveillance, and pharmacological therapy when glycaemic targets are not achieved through lifestyle measures alone. Care should also include counselling regarding birth planning and neonatal preparedness.[5]

Nurses and midwives have an important role in GDM care through health education, reinforcement of dietary recommendations, monitoring of blood glucose where within their scope of practice, recognition of maternal and fetal warning signs, support for treatment adherence, preparation for delivery, and postpartum follow-up. Women with GDM should also receive appropriate postpartum counselling because hyperglycaemia during pregnancy identifies an increased risk of future metabolic disease and requires continued preventive care.[1,5–10]

Maternal anaemia

Maternal anaemia is one of the most common medical conditions during pregnancy and is particularly important in settings where nutritional deficiencies and limited access to preventive services remain prevalent. Anaemia during pregnancy can adversely affect maternal well-being and is associated with several adverse pregnancy and neonatal outcomes.[1,4,6]

The assessment of haemoglobin should be undertaken using appropriate methods and interpreted according to current population- and pregnancy-specific guidance. The 2024 WHO guideline on haemoglobin cut-offs provides updated recommendations for the diagnosis and interpretation of anaemia and emphasizes the importance of standardized assessment across populations.[4]

Maternal anaemia has been associated with increased risks of preterm birth, low birth weight, hypertensive disorders, postpartum haemorrhage and neonatal complications. A 2025 systematic review and meta-analysis of cohort studies reported associations between maternal anaemia and increased risks of preterm birth, low birth weight, gestational hypertension, postpartum haemorrhage and neonatal asphyxia. Because these data were derived primarily

from observational studies, the findings should be interpreted as associations rather than proof of causation.[6]

Prevention and management include early antenatal screening, appropriate iron and folic acid supplementation, dietary counselling, investigation of the underlying cause, treatment of confirmed anaemia and referral for severe or refractory cases. WHO recommends daily iron and folic acid supplementation during pregnancy, while therapeutic treatment should be provided when anaemia is diagnosed according to current guidelines.[1,2,4]

Nurses and midwives contribute to anaemia prevention through screening, counselling regarding iron- and folate-rich foods, reinforcement of supplementation adherence, identification of symptoms and risk factors, monitoring of treatment response, and timely referral. Anaemia management should be integrated into the broader maternal–newborn continuum because maternal nutritional status can influence fetal growth, birth weight and neonatal health.[1,4,6]

Fetal assessment and birth preparedness

Assessment of fetal well-being is an integral component of antenatal care. Depending on gestational age and clinical circumstances, assessment may include estimation of gestational age, monitoring of fetal growth, assessment of fetal movements, measurement of fundal height, fetal heart-rate assessment, and ultrasound or other investigations when clinically indicated. Early ultrasound before 24 weeks can improve gestational-age assessment and facilitate identification of multiple pregnancy and selected fetal abnormalities.[1,2]

Fetal assessment should be interpreted together with maternal clinical findings and risk factors rather than as an isolated investigation. Pregnant women should receive clear information regarding reduced fetal movements and other warning signs that require prompt assessment.[11–17]

Birth preparedness and complication readiness should begin during pregnancy and should include discussion of the intended place of birth, skilled birth attendance, transportation arrangements, emergency contacts, financial and social preparedness, availability of blood where relevant, and referral arrangements. Women with identified risk factors require individualized delivery planning and appropriate communication with the receiving facility.[1,18]

In the Indian context, the Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA) emphasizes comprehensive antenatal assessment, screening and management of anaemia, hypertensive disorders and gestational diabetes, identification of high-risk pregnancy, and birth planning and complication readiness.[18]

Skilled intrapartum care

Skilled intrapartum care is a critical link between antenatal preparation and maternal and newborn outcomes. WHO recommends a woman-centred model of care that combines clinical safety with respectful communication, dignity, privacy, informed decision-making and emotional support.[1,12]

Intrapartum care includes ongoing assessment of maternal and fetal condition, monitoring of labour, timely recognition of complications, infection-prevention practices, appropriate pain-relief and supportive measures, preparedness for obstetric emergencies, and neonatal preparedness. The WHO Labour Care Guide provides a structured approach for monitoring labour while supporting respectful and evidence-based care.[12,13]

Normal labour should not be subjected to unnecessary intervention solely because labour progression does not conform to a rigid cervical-dilatation threshold. Clinical decisions should consider the overall condition of the woman and fetus, the stage and progress of labour, and the presence of maternal or fetal complications.[12,13]

Respectful maternity care is an essential component of quality intrapartum care. Women should receive information about their condition and available options, be involved in decisions concerning their care, and be protected from disrespectful or abusive treatment. Continuous emotional and practical support, including the presence of a companion of choice where feasible and appropriate, can contribute to a positive childbirth experience.[12]

Nurses and midwives are central to intrapartum care through continuous observation, documentation, supportive communication, pain and comfort measures, monitoring of maternal and fetal parameters, early recognition of complications, preparation for emergency intervention and coordination with obstetric and neonatal teams.

Immediate and essential newborn care

The first minutes and hours after birth are a critical period for newborn adaptation. Essential newborn care includes immediate assessment of breathing, thorough drying, thermal protection, skin-to-skin contact, support for early breastfeeding, infection-prevention practices, appropriate cord care, recognition of newborn complications and resuscitation when required.[10,11]

For a newborn who is breathing normally and does not require resuscitation, immediate skin-to-skin contact with the mother supports thermal stability and facilitates early breastfeeding. Unnecessary separation of the mother and newborn should be avoided. Routine interventions that are not clinically indicated should not interrupt early mother–newborn contact.[10,11]

Newborn resuscitation must be undertaken promptly when a newborn is not breathing adequately or requires assistance with transition after birth. Birth attendants should therefore maintain preparedness for neonatal resuscitation, including appropriate equipment, trained personnel and effective referral arrangements.[10,19]

Thermal protection is particularly important because newborns have limited ability to regulate body temperature. Drying, skin-to-skin contact, appropriate clothing or wrapping, and avoidance of unnecessary exposure help prevent hypothermia. Infection prevention requires appropriate hand hygiene, clean delivery and newborn-care practices, and appropriate cord care.[10,11,19]

Nurses and midwives should document the newborn's condition at birth, monitor temperature, respiration, colour and feeding, support early breastfeeding, recognize danger signs, and communicate concerns promptly to the appropriate clinical team.

Breastfeeding and newborn nutrition

Breastfeeding is a central component of newborn care and should be supported from the antenatal period through the postnatal period. WHO recommends that mothers receive practical support to initiate breastfeeding as early as possible after birth and that infants be exclusively breastfed for the first six months, unless medically indicated alternatives are required.[9,10]

Immediate skin-to-skin contact and early initiation of breastfeeding can facilitate maternal–newborn bonding, support thermal regulation and assist establishment of breastfeeding. Mothers should receive

practical assistance with positioning and attachment and should be supported to recognize and respond to infant feeding cues.[9,10]

Exclusive breastfeeding requires that breast milk be the sole source of nutrition for the infant during the first six months, except when medically indicated alternatives are necessary. Health professionals should therefore avoid unnecessary supplementation and should provide evidence-based counselling regarding common breastfeeding difficulties.[9,10]

Nurses and midwives have an important role in breastfeeding support through antenatal counselling, observation of feeding, assistance with positioning and attachment, identification of feeding difficulties, prevention of unnecessary prelacteal feeds, and referral when specialized lactation or clinical support is required.

WHO's current infant-feeding guidance continues to recommend immediate skin-to-skin contact, breastfeeding within the first hour, responsive breastfeeding and exclusive breastfeeding to six months.

Preterm and low-birth-weight infant care

Preterm and low-birth-weight infants have increased vulnerability to hypothermia, feeding difficulties, infection, respiratory complications, hypoglycaemia and mortality. Care therefore requires a combination of thermal protection, appropriate feeding, infection prevention, respiratory support when required, monitoring of growth and development, family involvement and timely referral.[8,19]

WHO's 2022 recommendations substantially expanded evidence-based interventions for preterm and low-birth-weight infants and emphasized that care should not be limited to specialized neonatal units. Depending on clinical condition and available resources, appropriate care may be provided in health facilities and, for selected stable infants, at home with adequate support and follow-up.[8]

Family involvement is an important component of care. Parents should receive education and practical support regarding feeding, thermal protection, recognition of danger signs, KMC, infection prevention, medication or treatment plans, and follow-up after discharge.[8]

Discharge planning should include assessment of feeding adequacy, temperature stability, weight trajectory, parental competence, access to follow-up and the family's ability to recognize signs requiring urgent medical attention. High-risk infants require structured follow-up for growth, feeding, development and other clinically relevant outcomes.[8,19]

WHO's preterm/LBW guideline contains recommendations covering KMC, thermal care, feeding, family involvement, education, discharge preparation and follow-up.

Kangaroo mother care

Kangaroo Mother Care (KMC) is an important evidence-based intervention for preterm and low-birth-weight infants. It consists primarily of prolonged skin-to-skin contact between the infant and mother or another appropriate caregiver, together with appropriate feeding support and continued monitoring. WHO recommends KMC as routine care for preterm or low-birth-weight infants and recommends initiation as soon as possible after birth when clinically appropriate.[8]

Evidence supporting KMC has strengthened considerably. A 2023 systematic review and meta-analysis including 31 trials and 15,559 infants found that KMC reduced mortality compared with conventional care (RR 0.68, 95% CI 0.53–0.86) and probably reduced severe infection (RR 0.85, 95% CI 0.79–0.92). Early initiation within 24 hours was also associated with lower neonatal mortality compared with later initiation.[7]

KMC may also have benefits for mothers and families. A systematic review and meta-analysis reported reductions in moderate-to-severe postpartum depressive symptoms among mothers receiving KMC and suggested improvements in maternal stress, anxiety and mother–infant bonding, although certainty varied across outcomes.[15]

KMC should be integrated into facility-based newborn care and continued after discharge when appropriate. Mothers, fathers, partners and other family members may participate when the mother is unable to provide KMC continuously. Appropriate positioning, maintenance of airway patency, monitoring of the infant's clinical condition and support for breastfeeding are essential components of safe KMC.[8]

Nurses and midwives have a central role in initiating and sustaining KMC. Their responsibilities include educating parents, assisting with positioning, monitoring temperature and clinical condition, supporting feeding, documenting duration of KMC, addressing parental concerns and facilitating continuity after discharge.

The 2023 indexed systematic review is particularly strong for this section: 31 trials, 15,559 infants, with high-certainty evidence for reduced mortality.

WHO's updated KMC recommendation is also stronger than the wording in your current manuscript: it recommends routine KMC for **all preterm/LBW infants**, with initiation as soon as possible and 8–24 hours/day as many hours as possible.

Neonatal danger signs and timely referral

Early recognition of neonatal danger signs is essential because newborn deterioration can occur rapidly. Parents, caregivers and health workers should be educated to recognize abnormalities in breathing, temperature, feeding, activity, colour and neurological status and to seek urgent medical attention when concerning signs occur.[9,10,19]

Important danger signs include difficulty or abnormal breathing, severe chest indrawing, persistent poor feeding or inability to feed, repeated vomiting, fever or hypothermia, marked lethargy or reduced responsiveness, convulsions, jaundice with concerning features, abnormal colour such as cyanosis or severe pallor, and other signs of serious infection or clinical deterioration.

Education regarding danger signs should begin before discharge and should use simple language and practical examples. Families should be informed about where and how to obtain emergency care and should understand that deterioration in a newborn requires prompt assessment rather than waiting for a routine follow-up appointment.[9,19]

Nurses and midwives should assess newborns systematically, document abnormalities, communicate findings promptly and facilitate referral according to the level of care required. In India, facility-based newborn-care systems include newborn care corners, newborn stabilization units and special newborn care units to support stabilization, management and referral of newborns according to clinical need.[19]

Postnatal care of the mother and newborn

The postnatal period is a critical phase of the maternal–newborn continuum. WHO defines the first six weeks after birth as a period requiring structured care for both women and newborns, with attention to physical health, emotional well-being, breastfeeding, family

support, contraception, prevention and recognition of complications, and appropriate follow-up.[9]

Postnatal assessment of the mother should include vital signs, uterine involution, vaginal bleeding, wound or perineal assessment where relevant, breast and breastfeeding assessment, nutritional status, urinary and bowel function, pain, signs of infection and symptoms of hypertensive or other complications. Emotional well-being and psychosocial needs should also be addressed.[9]

Newborn postnatal care should include assessment of temperature, respiration, feeding, activity, colour, weight and other clinically relevant parameters. Screening and preventive interventions should follow national recommendations and include appropriate immunization and screening programmes.[9,19]

WHO recommends quality facility-based care during the early postnatal period followed by additional contacts during the first six weeks. The timing and content of postnatal contacts should be adapted to the clinical needs of the mother and newborn and should include education concerning danger signs, breastfeeding, nutrition, hygiene, contraception and appropriate care-seeking.[9]

Continuity between facility-based and community-based care is particularly important. Before discharge, families should receive clear written or verbal instructions, understand follow-up arrangements, and know when and where to seek urgent care.

Nursing and midwifery roles across the maternal–newborn continuum

Nurses and midwives have a central role in translating evidence-based maternal and newborn recommendations into continuous clinical care. Their responsibilities extend from antenatal assessment and health education to intrapartum monitoring, immediate newborn care, breastfeeding support, KMC, postnatal assessment, family counselling and referral.

During pregnancy, nurses and midwives contribute to early identification of risk, monitoring of maternal and fetal well-being, nutritional counselling, support for supplementation, health education, screening and referral. They also assist women and families in birth preparedness and complication readiness.

During labour, nurses and midwives provide continuous observation and supportive care, monitor maternal and fetal status, document labour progression, identify complications, support respectful communication and prepare for emergency intervention when required. Their role is particularly important in ensuring continuity of information between antenatal, intrapartum and newborn teams.

At birth, nurses and midwives should be prepared to provide immediate essential newborn care, support thermal protection and skin-to-skin contact, facilitate early breastfeeding, identify newborns requiring resuscitation or referral and maintain appropriate documentation.[10,11]

In the postnatal period, nurses and midwives assess both mother and newborn, support breastfeeding, provide KMC where indicated, teach families to recognize maternal and neonatal danger signs, reinforce medication and follow-up plans, address psychosocial concerns and coordinate referral when necessary.[8,9]

Evidence also supports models of midwife continuity of care. A 2024 Cochrane review found that women receiving midwife continuity models were less likely to experience caesarean or instrumental birth and were more likely to experience spontaneous vaginal birth and report a positive childbirth experience, although certainty varied across individual outcomes.[14]

Thus, strengthening nursing and midwifery competencies, communication, documentation, clinical decision-making and continuity of care is an important strategy for improving the quality and responsiveness of maternal and newborn services.

Maternal–newborn continuum of care in India

India has developed multiple national programmes and service-delivery strategies addressing maternal and newborn health across pregnancy, childbirth and the postnatal period. These include initiatives supporting antenatal care, high-risk pregnancy identification, institutional delivery, respectful maternity care, emergency referral, newborn stabilization, breastfeeding and KMC.

The Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA) aims to provide assured, comprehensive and quality antenatal care, including screening and management of anaemia, pregnancy-induced hypertension and gestational diabetes, identification of high-risk pregnancies, and birth planning and complication readiness.[18]

The National Health Mission's facility-based newborn-care framework provides a continuum of newborn services through newborn care corners, newborn stabilization units and special newborn care units. These services include resuscitation, thermal protection, infection prevention, breastfeeding support, stabilization and referral of sick newborns according to the level of care required.[19]

Government of India guidance also supports KMC and family participation in newborn care. The integration of KMC into facility-based newborn services provides an important opportunity to reduce separation between mothers and small or sick newborns and to strengthen parental participation in care.[19,20]

Despite these programmes, effective implementation depends on availability of trained personnel, infrastructure, referral systems, essential medicines and equipment, continuity between levels of care, health literacy and timely care-seeking. Therefore, programme availability alone does not guarantee equivalent quality of care across settings.

Strengthening the maternal–newborn continuum in India requires attention not only to service coverage but also to quality, respectful care, timely referral, documentation, family participation and continuity after discharge.

Health-system challenges and future directions

The effectiveness of evidence-based maternal and newborn interventions depends on the capacity of health systems to deliver them consistently. Important challenges include delayed recognition of complications, shortages of skilled health workers, inadequate infrastructure, gaps in referral and transport systems, limited availability of essential medicines and equipment, fragmented communication between levels of care, financial and geographical barriers, and inequities in access to high-quality services.

Continuity of care is particularly important because maternal and newborn complications may develop between scheduled contacts. Effective referral systems should therefore provide clear pathways between community, primary, secondary and tertiary levels of care. Communication during transfer and return referral is essential for avoiding duplication, treatment delays and loss to follow-up.

Quality improvement should include clinical training, audit and feedback, respectful maternity care, appropriate documentation,

infection prevention, newborn resuscitation preparedness, breastfeeding support and family participation. Digital health and telehealth may provide additional opportunities for communication, education and follow-up, although implementation should be guided by local infrastructure, digital literacy, privacy and equity considerations.

Future research should increasingly evaluate integrated maternal–newborn models rather than isolated interventions. Priority areas include continuity of care, respectful maternity services, implementation of KMC, family-participatory newborn care, post-discharge follow-up, maternal mental health, digital health interventions, and strategies for reducing inequities in access and outcomes.

Discussion

The evidence reviewed in this narrative synthesis supports the concept that pregnancy, childbirth, newborn care and the postnatal period should be approached as a continuous rather than fragmented pathway of care. Antenatal care provides opportunities for prevention, nutritional support, screening and early identification of complications, while skilled intrapartum care links antenatal risk assessment with safe childbirth and newborn preparedness.[1–3,12]

The evidence also demonstrates that maternal conditions can influence newborn outcomes. Hypertensive disorders, diabetes and anaemia may contribute to fetal growth abnormalities, preterm birth, low birth weight and other neonatal complications. This emphasizes the importance of early detection and integrated management rather than treating maternal and neonatal health as separate clinical domains.[1,5,6]

The period immediately following birth represents another major opportunity for intervention. Essential newborn care, thermal protection, skin-to-skin contact, early breastfeeding and timely resuscitation can influence immediate neonatal adaptation. For preterm and low-birth-weight infants, KMC has particularly strong evidence, with recent meta-analysis demonstrating reductions in neonatal mortality and severe infection.[7,8,10]

Postnatal care completes the continuum by providing opportunities to identify maternal and newborn complications, support breastfeeding, address maternal well-being, strengthen family participation and arrange appropriate follow-up.[9] The evidence therefore supports an integrated model in which information, responsibility and communication are maintained across antenatal, intrapartum, newborn and postnatal services.

An important implication for nursing and midwifery is that continuity, education and clinical surveillance are not secondary components of care but central elements of quality. Nurses and midwives frequently interact with women and families across multiple stages of care and are therefore well positioned to identify deterioration, reinforce preventive interventions, facilitate referral and support families after discharge. Evidence regarding midwife continuity-of-care models further supports the potential value of sustained professional relationships during pregnancy and childbirth.[14]

However, evidence should be interpreted in relation to differences in health systems, population characteristics, intervention intensity and resource availability. Findings from high-income settings cannot automatically be generalized to resource-constrained environments. Similarly, observational associations should not be interpreted as causal relationships. Future implementation research should therefore examine how evidence-based recommendations can be adapted and sustainably delivered in different health-system contexts.

Implications for nursing and midwifery practice

The findings have several implications for nursing and midwifery practice. First, nurses and midwives should use every antenatal contact as an opportunity for systematic assessment, health education, nutritional counselling, risk identification and referral. Second, competency in recognition of maternal danger signs, neonatal resuscitation, breastfeeding support and KMC should be maintained through continuing education and skills-based training. Third, discharge education should include practical counselling regarding maternal and neonatal danger signs, breastfeeding, KMC when indicated, hygiene, medication adherence, follow-up and emergency referral. Finally, nursing documentation and communication between levels of care should be strengthened to support continuity and reduce delays in management.

Limitations of the review

This narrative review has several limitations. First, although multiple databases and authoritative sources were considered, the review was not conducted as a formal systematic review and therefore did not include formal quantitative meta-analysis or comprehensive risk-of-bias assessment of every included publication. Second, the search was primarily limited to English-language literature, which may have resulted in language and publication bias. Third, the breadth of the maternal–newborn continuum resulted in substantial heterogeneity in populations, interventions, outcomes and study designs, limiting direct comparison between studies. Fourth, some recommendations were derived from international guidelines and may require adaptation to national or institutional protocols. Finally, evidence continues to evolve, particularly in areas such as digital health, preterm care, KMC implementation and diabetes during pregnancy; therefore, recommendations should be interpreted alongside the most recent national and international guidance.

Conclusion

Pregnancy, childbirth, immediate newborn care and the postnatal period constitute an interconnected maternal–newborn continuum in which timely, respectful and evidence-based care can influence maternal and neonatal outcomes. High-quality antenatal care provides opportunities for nutritional support, screening, risk identification and management of complications, while skilled intrapartum care and appropriate newborn preparedness support safer childbirth and neonatal transition. Essential newborn care, early breastfeeding, thermal protection, timely resuscitation and appropriate infection-prevention practices remain fundamental components of newborn health.

Preterm and low-birth-weight infants require additional evidence-based interventions, particularly KMC, which is supported by substantial evidence for reduction in neonatal mortality and severe infection. Postnatal care is equally important for identifying maternal and newborn complications, supporting breastfeeding, addressing maternal well-being and ensuring continuity after discharge.

Nurses and midwives are central to the delivery and coordination of this continuum through assessment, health education, risk identification, clinical monitoring, breastfeeding support, KMC, family counselling, referral and follow-up. Future maternal and newborn health strategies should therefore focus not only on increasing service coverage but also on improving quality, respectful care, continuity,

equity, family participation and effective implementation of evidence-based interventions.

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Conflict of interest

The author declared no conflict of interest.

References

1. *WHO recommendations on maternal health: guidelines approved by the WHO Guidelines Review Committee*. 2nd ed. Geneva: World Health Organization; 2025.
2. *WHO recommendations on antenatal care for a positive pregnancy experience*. Geneva: World Health Organization; 2016.
3. *WHO recommendations on antenatal care for a positive pregnancy experience: implementation considerations*. Geneva: World Health Organization; 2017.
4. *Essential newborn care course*. 2nd ed. Geneva: World Health Organization; 2025.
5. Albarqi MN. The impact of prenatal care on the prevention of neonatal outcomes: a systematic review and meta-analysis of global health interventions. *Healthcare (Basel)*. 2025;13(9):1076.
6. Sivanandan S, Sankar MJ. Kangaroo mother care for preterm or low birth weight infants: a systematic review and meta-analysis. *BMJ Glob Health*. 2023;8:e010728.
7. WHO recommendations on antenatal care for a positive pregnancy experience. Geneva: World Health Organization; 2016. 3, Evidence and recommendations.
8. World Health Organization. *WHO recommendations for care of the preterm or low-birth-weight infant*. Geneva: World Health Organization; 2022.
9. Mehta A K, Galav C, Prakash S. Feeding methods practiced by Mothers and nutritional status of their Children: A Descriptive Survey Approach. *Pediatric Oncall J*. 2024.
10. Breastfeeding. Geneva: World Health Organization; 2025.
11. Essential newborn care. Geneva: World Health Organization; 2025.
12. *WHO recommendations: intrapartum care for a positive childbirth experience*. Geneva: World Health Organization; 2018.
13. *WHO labour care guide: user's manual*. Geneva: World Health Organization; 2021.
14. Sandall J, Fernandez Turienzo C, Devane D, et al. Midwife continuity of care models versus other models of care for childbearing women. *Cochrane Database Syst Rev*. 2024;4(4):CD004667.
15. Pathak BG, Sinha B, Sharma N, et al. Effects of kangaroo mother care on maternal and paternal health: systematic review and meta-analysis. *Bull World Health Organ*. 2023;101(6):391-402.
16. *Kangaroo mother care: a transformative innovation in health care. Global position paper*. Geneva: World Health Organization; 2023.
17. *Guideline on haemoglobin cutoffs to define anaemia in individuals and populations*. Geneva: World Health Organization; 2024.
18. *Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA): guidelines/operational framework*. New Delhi: Ministry of Health and Family Welfare, Government of India.
19. *Facility Based Newborn Care: operational guidelines*. New Delhi: Ministry of Health and Family Welfare, Government of India.
20. *Kangaroo Mother Care and optimal feeding of low birth weight infants: operational guidance*. New Delhi: Ministry of Health and Family Welfare, Government of India.