

Effectiveness of nurse-led active management of the third stage of labor in reducing postpartum hemorrhage in low-resource healthcare settings: A systematic review

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Abstract:

Postpartum hemorrhage (PPH) remains one of the leading direct causes of maternal morbidity and mortality worldwide, with the greatest burden occurring in low-resource healthcare settings. Limited access to skilled obstetric care, shortages of essential uterotonic medicines, inadequate blood transfusion services, delayed referral systems, and weak healthcare infrastructure increase the risk of preventable maternal deaths. Active Management of the Third Stage of Labor (AMTSL) is an evidence-based strategy for preventing PPH through the timely administration of a prophylactic uterotonic, appropriate management of placental delivery, and systematic assessment of uterine tone. In many resource-constrained settings, nurses and midwives are the principal healthcare professionals responsible for conducting deliveries and providing immediate postpartum care. This systematic review aimed to evaluate the effectiveness of nurse-led AMTSL in reducing postpartum hemorrhage and improving maternal outcomes in low-resource healthcare settings. A systematic review of contemporary literature published between 2015 and early 2026 was undertaken. Studies examining nurse-, midwife-, or skilled birth attendant-led implementation of AMTSL in rural healthcare facilities, primary health centres, district hospitals, community maternity units, and other resource-constrained settings were considered. The review focused primarily on the incidence of PPH, severe PPH, and maternal blood loss. Secondary outcomes included the need for blood transfusion, emergency referral, maternal anaemia, severe maternal morbidity, and maternal mortality. Evidence relating to intervention components, implementation fidelity, provider training, availability of uterotonics, task-sharing, and health-system barriers was also synthesized. The reviewed evidence demonstrated that consistent nurse-led implementation of AMTSL was associated with a meaningful reduction in postpartum hemorrhage and related maternal complications. Timely prophylactic administration of uterotonic agents, particularly oxytocin, emerged as the most important component of the intervention. Where reliable cold-chain systems were unavailable, alternative uterotonics provided practical options for maintaining PPH prevention services. Nurse-led monitoring of uterine tone, early recognition of uterine atony, improved estimation of postpartum blood loss, and prompt escalation of care further strengthened maternal safety. Competency-based education, simulation training, standardized clinical protocols, supportive supervision, emergency obstetric drills, and task-sharing improved nurses' adherence to AMTSL practices. However, implementation was constrained by shortages of trained personnel, inconsistent availability and storage of uterotonics, excessive workloads, inadequate continuing education, weak referral systems, poor documentation, and limited access to emergency obstetric and transfusion services. Nurse-led AMTSL represents an effective, practical, and potentially sustainable approach to preventing postpartum hemorrhage in low-resource healthcare settings. Strengthening nursing competency, ensuring reliable access to quality-assured uterotonics, standardizing clinical protocols, expanding appropriate task-sharing, and improving supportive supervision can enhance implementation fidelity and maternal outcomes. Integration of nurse-led AMTSL into routine maternal health services and national quality-improvement strategies may contribute substantially to reducing preventable maternal morbidity and mortality in underserved populations.

Keywords:

Active Management of the Third Stage of Labor; Postpartum Hemorrhage; Nurse-Led Care; Maternal Mortality; Low-Resource Settings; Midwifery; Uterotonics.

1. Introduction:

The third stage of labor, extending from the birth of the baby to the complete expulsion of the placenta and fetal membranes, is one of the shortest yet most clinically critical periods of childbirth. Although this stage normally lasts only a few minutes, failure of normal physiological mechanisms can result in rapid and severe maternal blood loss. Effective management during this period is therefore essential for preventing postpartum hemorrhage (PPH), a major obstetric emergency and an important contributor to preventable maternal morbidity and mortality worldwide.

The physiological prevention of excessive bleeding following placental separation depends primarily on effective contraction and retraction of the uterine myometrium. During pregnancy, the placental implantation site is supplied by a high-flow vascular network. After delivery of the placenta, contraction of the interlacing myometrial muscle fibres compresses the exposed uterine blood vessels and produces a natural haemostatic effect. These contracting muscle fibres function as physiological or “living ligatures.” When the uterus fails to contract adequately, the placental bed remains insufficiently compressed, resulting in continued blood loss and potentially life-threatening hemorrhage.

Postpartum hemorrhage is particularly dangerous because maternal clinical deterioration can occur rapidly. The principal causes of PPH are commonly described through the “Four Ts”: **Tone, Trauma, Tissue, and Thrombin**. Uterine atony, or failure of the uterus to contract effectively after childbirth, is the most common cause. Other important causes include genital tract trauma, retained placental tissue, and coagulation abnormalities. Women with pre-existing anaemia, malnutrition, prolonged or obstructed labor, multiple pregnancy, fetal macrosomia, polyhydramnios, infection, and other obstetric risk factors may have reduced physiological reserve or an increased risk of severe bleeding.

The consequences of PPH are disproportionately severe in low-resource healthcare settings. Women living in rural and underserved communities may encounter multiple barriers to receiving timely emergency obstetric care. These include long distances to healthcare facilities, inadequate transportation, shortages of skilled healthcare professionals, limited availability of essential medicines, unreliable electricity and refrigeration, inadequate laboratory facilities, insufficient blood supplies, and restricted access to surgical interventions. Under such circumstances, even a potentially manageable episode of postpartum bleeding can progress to severe anaemia, hypovolemic shock, coagulation abnormalities, organ dysfunction, emergency hysterectomy, or maternal death.

Another major challenge is delayed recognition of excessive blood loss. Visual estimation of blood loss, which remains common in resource-constrained facilities, may underestimate the true volume of bleeding. In young and otherwise healthy women, compensatory physiological mechanisms can initially maintain blood pressure despite substantial blood loss. Consequently, hypotension and other obvious signs of shock may appear only after significant circulatory compromise has already developed. Prevention and early recognition are therefore especially important in settings where advanced resuscitation, blood transfusion, and emergency surgery are not immediately available.

Active Management of the Third Stage of Labor was developed as a proactive strategy to reduce the risk of postpartum hemorrhage. In contrast to expectant or physiological management, which relies largely on spontaneous uterine contraction and placental separation, AMTSL uses evidence-based interventions to promote effective uterine contraction and facilitate safe management of the placenta. Contemporary AMTSL primarily emphasizes the timely administration of a prophylactic uterotonic after birth, with controlled cord traction performed where appropriate by a trained provider and systematic assessment of uterine tone during the immediate postpartum period.

Among these components, prophylactic uterotonic administration is considered the central preventive intervention. Oxytocin is widely used because of its effectiveness in stimulating uterine contraction and its generally favourable safety profile. However, its dependence on appropriate storage conditions can create operational challenges in remote and low-resource environments. In facilities with unreliable refrigeration or disrupted supply chains, alternative uterotonic options may be required according to clinical guidelines, medicine availability, patient characteristics, and local protocols.

The growing emphasis on universal access to skilled birth attendance and evidence-based maternal care has increased the importance of strengthening frontline nursing and midwifery services. Preventing PPH at the

point of childbirth is particularly valuable in settings where advanced emergency interventions are difficult to access. A relatively simple preventive intervention delivered correctly and promptly by a trained nurse may reduce the need for blood transfusion, emergency surgery, referral, and other resource-intensive treatments. Accordingly, this systematic review evaluates the effectiveness of nurse-led Active Management of the Third Stage of Labor in reducing postpartum hemorrhage in low-resource healthcare settings. It further examines the principal components of nurse-led AMTSL, maternal outcomes associated with its implementation, the influence of training and clinical competency, and the structural barriers and facilitators affecting implementation. By synthesizing evidence from resource-constrained healthcare environments, the review seeks to clarify the role of nurses and midwives in strengthening PPH prevention and improving maternal safety.

2. Materials and methods:

2.1. Study design:

This study employed a systematic review design to identify, evaluate, and synthesize available evidence regarding the effectiveness of nurse-led Active Management of the Third Stage of Labor (AMTSL) in reducing postpartum hemorrhage (PPH) in low-resource healthcare settings. A systematic review approach was considered appropriate because the topic involves evidence derived from different healthcare environments, professional cadres, and intervention models. The review focused not only on the clinical effectiveness of AMTSL but also on the practical conditions influencing its implementation by nurses, midwives, nurse-midwives, and skilled birth attendants.

2.2. Eligibility criteria:

Studies were considered eligible when they evaluated AMTSL or closely related evidence-based third-stage management practices delivered primarily by nurses, midwives, nurse-midwives, community health nurses, or skilled birth attendants. The review focused on studies conducted in low-resource or resource-constrained healthcare settings, including rural health facilities, primary healthcare centres, community maternity units, district hospitals, peripheral clinics, and comparable maternal healthcare environments.

Studies were included when they reported at least one clinically relevant maternal outcome associated with the implementation of AMTSL. These outcomes included postpartum blood loss, incidence of PPH, severe PPH, requirement for additional uterotonics, blood transfusion, emergency obstetric referral, maternal anaemia, severe morbidity, or mortality. Studies evaluating training interventions were also considered when they reported measurable changes in AMTSL knowledge, clinical competency, protocol adherence, or maternal outcomes.

Evidence published between **2015 and early 2026** was prioritized to ensure that the synthesis reflected contemporary AMTSL practices, updated recommendations regarding uterotonic use and cord management, and current approaches to task-sharing and nurse-led maternal healthcare.

2.3. Information sources and search strategy:

A structured literature search was undertaken to identify relevant peer-reviewed studies and authoritative evidence addressing nurse-led AMTSL, prevention of postpartum hemorrhage, skilled birth attendance, and maternal healthcare in resource-constrained settings. The search strategy was designed to capture both direct evaluations of AMTSL and studies addressing major implementation components, including uterotonic administration, nurse and midwife training, task-sharing, blood-loss assessment, and quality improvement.

Search terms were used individually and in different combinations. The principal terms included:

2.4. Study selection process:

The study selection process was undertaken in sequential stages. Initially, records identified through the literature search were screened by title to remove publications that were clearly unrelated to AMTSL, postpartum hemorrhage, maternal care, or nursing and midwifery practice. The abstracts of potentially relevant publications were then reviewed to determine whether they met the predefined population, intervention, setting, and outcome criteria.

Full texts of potentially eligible studies were subsequently assessed in greater detail. Particular attention was given to the professional cadre responsible for delivering the intervention, the characteristics of the healthcare setting, the components of AMTSL implemented, and the maternal outcomes reported.

2.5. Data extraction:

A structured data extraction approach was used to ensure consistency in the synthesis of evidence. Relevant information was extracted from each eligible study, including the author and year of publication, country or geographical region, study design, healthcare setting, study population, characteristics of the healthcare providers, intervention components, comparison conditions, and reported maternal outcomes.

The principal intervention variables extracted included:

- timing and type of prophylactic uterotonic administration;
- use of oxytocin, misoprostol, or other appropriate uterotonic agents;
- use of controlled cord traction where clinically appropriate;
- assessment and monitoring of uterine tone;
- methods used to recognize or quantify postpartum blood loss;
- provider education and competency training;
- simulation-based obstetric emergency training;
- implementation of standardized AMTSL protocols;
- supportive supervision and quality-improvement measures; and
- task-sharing or expansion of nursing and midwifery responsibilities.

2.6. Quality assessment:

The methodological quality of the included evidence was considered during the synthesis process. Study design, sample characteristics, clarity of intervention description, appropriateness of outcome measurement, completeness of reporting, and relevance to the review question were evaluated.

2.7. Outcome measures:

The primary outcomes evaluated in this systematic review were:

1. **Incidence of postpartum hemorrhage**, generally defined as clinically significant blood loss following childbirth;
2. **Incidence of severe postpartum hemorrhage**, commonly associated with blood loss of 1,000 mL or greater; and
3. **Overall maternal blood loss during the third stage and immediate postpartum period.**

Secondary outcomes included the requirement for additional uterotonic medication, maternal anaemia, blood transfusion, emergency referral, severe maternal morbidity, hysterectomy, and maternal mortality.

Provider- and system-level outcomes were also evaluated because the effectiveness of AMTSL depends substantially on implementation fidelity. These outcomes included nurses' and midwives' knowledge, technical competency, adherence to recommended protocols, timely administration of prophylactic uterotonics, accuracy of blood-loss assessment, availability of essential medicines, and readiness to recognize and respond to postpartum bleeding.

2.8. Data synthesis:

Because the identified evidence differed in study design, healthcare setting, intervention characteristics, provider cadre, and outcome measurement, a narrative synthesis approach was used. The findings were organized into major thematic categories reflecting both clinical outcomes and implementation determinants.

The principal synthesis domains were:

1. effectiveness of nurse-led AMTSL in reducing PPH;
2. effectiveness in reducing severe PPH and excessive maternal blood loss;
3. role of prophylactic uterotonic administration;
4. influence of nurse and midwife training on implementation fidelity;
5. contribution of standardized protocols and task-sharing;
6. effects on secondary maternal and health-service outcomes; and
7. barriers and facilitators to implementation in low-resource healthcare settings.

2.9. Ethical considerations:

As this study was a systematic review based exclusively on previously published literature, no direct recruitment of human participants, clinical intervention, or collection of personally identifiable patient information was undertaken. Therefore, individual informed consent was not required for the review itself. Ethical principles were maintained through accurate representation of published evidence, appropriate acknowledgement of original sources, and avoidance of fabrication or manipulation of study findings.

3. Analysis:

3.1. Overview of the evidence:

The evidence synthesized in this review consistently indicated that nurse- and midwife-led implementation of Active Management of the Third Stage of Labor can contribute substantially to the prevention of postpartum hemorrhage in low-resource healthcare settings. The reviewed studies represented diverse maternal healthcare environments, including rural maternity units, primary healthcare facilities, district hospitals, community-based services, and other resource-constrained clinical settings.

3.2. Common components of nurse-led AMTSL:

Across the reviewed literature, prophylactic uterotonic administration emerged as the most consistently reported and clinically important component of AMTSL. Nurses and midwives were frequently responsible for preparing and administering the uterotonic immediately following childbirth. Oxytocin was the preferred agent where appropriate storage and supply conditions were available.

Other frequently reported components included assessment of placental separation, controlled cord traction when performed by appropriately trained personnel, post-delivery assessment of uterine tone, early recognition of a soft or poorly contracted uterus, and continued monitoring during the immediate postpartum period.

Table. 1: Common Components of Nurse-Led AMTSL Identified Across the Reviewed Evidence

Component	Principal Nursing Action	Expected Clinical Contribution
Prophylactic uterotonic administration	Timely administration after birth according to protocol	Promotes effective uterine contraction and reduces uterine atony
Appropriate placental management	Observation of placental separation and safe assistance with delivery	Supports timely placental delivery and reduces complications
Controlled cord traction	Performed by trained personnel when clinically appropriate	May facilitate placental delivery
Assessment of uterine tone	Palpation and continued postpartum monitoring	Enables early identification of uterine relaxation or atony
Blood-loss assessment	Observation and, where available, objective measurement	Supports earlier recognition of excessive bleeding
Early emergency response	Immediate first-line management and escalation	Reduces delays in treatment of developing PPH
Documentation and communication	Recording interventions, blood loss, and maternal condition	Improves continuity and coordination of care

3.3. Effect on postpartum haemorrhage:

The overall direction of evidence supported a reduction in postpartum haemorrhage when AMTSL was implemented consistently by trained nurses, midwives, and skilled birth attendants. The preventive effect was primarily attributed to timely stimulation of uterine contraction before significant atony and blood loss developed.

In low-resource settings, this preventive effect had particular clinical importance because advanced treatment options were frequently limited. Prevention of uterine atony at the point of childbirth reduced the likelihood that women would progress to severe haemorrhage requiring blood transfusion, surgical intervention, or emergency referral.

The findings also suggested that incomplete implementation could reduce the effectiveness of the intervention. Delayed administration of uterotonics, inconsistent availability of essential medicines, inadequate monitoring after delivery, and insufficient provider competency were repeatedly identified as factors capable of weakening the protective effect of AMTSL.

3.4. Role of prophylactic uterotonics:

Prophylactic uterotonic administration was the central clinical intervention associated with PPH prevention. Oxytocin was generally considered the preferred first-line option because of its strong uterotonic effect and favourable clinical profile. Its effectiveness, however, depended on timely administration and preservation of medicine quality.

In low-resource environments, unreliable electricity and refrigeration could compromise the storage of temperature-sensitive medicines. The evidence therefore highlighted the importance of matching uterotonic strategies to local health-system capacity. Alternative options may be valuable where the quality and potency of oxytocin cannot be reliably maintained.

The role of the nurse extended beyond simply administering a medicine. Effective practice required ensuring that the correct uterotonic was available, preparing the appropriate dose, administering it promptly, monitoring the maternal response, assessing uterine contraction, and recognizing when additional intervention was required.

3.5. Influence of training and competency development:

Training was one of the strongest recurring determinants of successful nurse-led AMTSL implementation. Nurses and midwives who received structured competency-based education demonstrated improved knowledge, greater adherence to recommended practices, and increased confidence in recognizing and responding to postpartum bleeding.

Simulation-based training was particularly relevant because PPH is a time-critical emergency requiring rapid clinical decision-making. Practical drills enabled healthcare professionals to rehearse the sequence of preventive and emergency interventions in a controlled environment. Regular refresher training was also important because clinical skills may decline when they are not reinforced.

The evidence suggested that one-time educational sessions were less likely to produce sustained improvements than programmes combining initial training with repeated skills practice, supervision, feedback, and periodic competency assessment.

3.6. Effect of standardized protocols and task-sharing:

Standardized clinical protocols supported more consistent implementation of AMTSL by reducing uncertainty regarding the timing and sequence of essential interventions. Clearly defined nursing responsibilities were particularly important in facilities where physicians were not continuously available.

Task-sharing allowed appropriately trained nurses and midwives to undertake essential preventive interventions without unnecessary delays. In remote healthcare settings, the ability of a nurse or midwife to administer a prophylactic uterotonic and initiate immediate management of uterine atony could be critical for maternal survival.

However, task-sharing was most effective when accompanied by formal authorization, competency-based training, adequate supplies, clinical supervision, and clear referral criteria. Expanding responsibilities without strengthening these supporting systems could place additional pressure on already overburdened healthcare workers.

3.7. Secondary maternal and operational outcomes:

Beyond reducing PPH, effective nurse-led AMTSL was associated with improvements in several secondary maternal and operational outcomes. Prevention of severe blood loss reduced the potential need for additional uterotonic treatment, blood transfusion, emergency referral, and advanced obstetric intervention.

Reduced blood loss also had implications for postpartum recovery. Women who avoid severe haemorrhage are less likely to experience profound postpartum anaemia, prolonged weakness, delayed recovery, and complications associated with emergency resuscitation.

At the health-system level, effective prevention may reduce pressure on referral hospitals, blood banks, emergency transport systems, and surgical services. This is particularly important in low-resource settings where a single severe obstetric emergency can consume a substantial proportion of available clinical resources.

3.8. Barriers to effective implementation:

Despite the demonstrated benefits of AMTSL, several barriers limited consistent nurse-led implementation. These barriers operated at individual, facility, and health-system levels.

Table. 2: Major Barriers and Corresponding Strategies for Nurse-Led AMTSL

Implementation Barrier	Potential Effect	Required Strategy
Shortage of trained nursing personnel	Delayed or incomplete intervention	Workforce strengthening and task-sharing
Heavy clinical workload	Reduced monitoring and protocol adherence	Improved staffing and workflow organization

Uterotonic stock-outs	Inability to provide timely prophylaxis	Reliable procurement and supply systems
Inadequate cold-chain infrastructure	Reduced medicine potency	Strengthened storage systems and context-appropriate alternatives
Limited refresher training	Decline in practical competency	Regular simulation and competency assessment
Poor blood-loss estimation	Delayed recognition of PPH	Improved objective assessment methods
Weak referral systems	Delayed advanced management	Clear referral pathways and emergency transport
Poor documentation	Reduced continuity and quality monitoring	Standardized records and clinical audit
Limited supportive supervision	Inconsistent practice	Regular feedback, mentoring, and quality improvement

The interaction of these barriers was particularly important. For example, a trained nurse could still be unable to provide effective AMTSL if uterotonic medicines were unavailable. Similarly, medicine availability alone could not ensure effective care if staff lacked the competency to administer treatment promptly or recognize developing haemorrhage.

3.8.1. Effectiveness of nurse-led AMTSL in preventing PPH:

The findings demonstrate that nurse-led implementation of AMTSL can provide an effective first line of protection against postpartum haemorrhage. The intervention is particularly suitable for nurse- and midwife-led care because its core preventive actions occur during a period when these professionals are already continuously involved in maternal monitoring.

A critical advantage of nurse-led implementation is the reduction of treatment delays. Postpartum haemorrhage can develop rapidly, and waiting for a physician or specialist to initiate basic preventive interventions may result in avoidable blood loss. When trained nurses and midwives are authorized and equipped to administer prophylactic uterotonics and monitor the immediate postpartum period, essential preventive care can be delivered at the point of birth.

However, the review also demonstrates that the term “nurse-led AMTSL” should not be interpreted as a single uniform intervention. The effectiveness of the model depends on what components are actually implemented, how quickly they are performed, whether the healthcare professional has adequate competency, and whether the required medicines and equipment are available. Therefore, variation in implementation fidelity may explain differences in outcomes across healthcare settings.

The most successful models were characterized by timely uterotonic administration, systematic monitoring of uterine tone, early recognition of abnormal bleeding, clear clinical protocols, and immediate escalation when first-line measures were insufficient. In contrast, fragmented implementation—for example, delayed uterotonic administration without adequate postpartum monitoring—may provide substantially less protection.

3.8.2. Importance of timing:

The effectiveness of AMTSL depends strongly on timely intervention. The period immediately following childbirth represents a narrow clinical window during which rapid establishment of uterine tone can prevent substantial blood loss. A correctly selected uterotonic administered after a prolonged delay may not provide the same preventive benefit as one delivered promptly according to protocol.

Nurses and midwives are strategically positioned to minimize this delay because they are usually present at the bedside during childbirth. However, prompt administration requires advance preparation. The healthcare professional must have immediate access to the required medicine and supplies rather than searching for them after delivery.

3.8.3. Challenges in blood-loss assessment:

Accurate recognition of postpartum blood loss remains a significant challenge. Visual estimation is commonly used because it requires no specialized equipment, but it may underestimate blood loss, particularly when bleeding is substantial or distributed across clothing, bedding, floors, and delivery materials.

Underestimation can create a dangerous delay in treatment. If the clinical team believes that blood loss remains within an acceptable range, escalation may be postponed until the woman develops more advanced signs of hypovolemia.

The review therefore supports strengthening nurses' ability to assess postpartum blood loss through practical training and, where feasible, more objective methods. The exact approach should be adapted to local resources. The central objective is not simply to generate a precise numerical measurement but to identify clinically significant bleeding early enough to permit effective intervention.

Documentation is also important. Recording estimated or measured blood loss, uterine tone, uterotonic administration, vital signs, and subsequent interventions creates a clearer picture of the woman's clinical trajectory. Standardized documentation can additionally support clinical audits and quality-improvement programmes.

3.8.4. Role of controlled cord traction:

Controlled cord traction has historically been considered an important component of AMTSL. The findings of this review suggest that its role should be interpreted in the context of provider competency and contemporary evidence.

When performed appropriately by a trained healthcare professional, controlled cord traction can facilitate placental delivery. However, the procedure requires correct technique, including appropriate counter-traction and recognition of placental separation. Improper performance may create avoidable risks.

This issue is particularly relevant in low-resource settings where healthcare professionals may have variable levels of obstetric training. The review supports prioritizing the most effective and feasible components of AMTSL rather than insisting on complex procedural elements when adequate competency cannot be ensured. Therefore, nurse-led AMTSL should not be evaluated solely according to whether every historical component is performed. Greater emphasis should be placed on timely prophylactic uterotonic administration, safe placental management, and continued postpartum assessment.

3.8.5. Training as a determinant of intervention effectiveness:

The effectiveness of nurse-led AMTSL depends substantially on clinical competency. Knowledge of the protocol is necessary but insufficient. Healthcare professionals must be able to translate theoretical knowledge into rapid and accurate clinical action.

The reviewed evidence supports competency-based education rather than exclusive reliance on lecture-based instruction. Simulation and practical training allow nurses and midwives to rehearse clinical sequences, identify errors, and improve decision-making without placing patients at risk.

Training should address not only routine AMTSL but also the transition from prevention to emergency management. A nurse should understand when normal postpartum bleeding becomes abnormal, how to identify uterine atony, when to initiate first-line measures, and when urgent escalation or referral is necessary. Regular refresher training is also important. Skills that are not frequently used may decline over time, particularly in rural facilities with relatively low delivery volumes. Short, repeated facility-based drills may therefore be more sustainable than relying exclusively on occasional centralized training programmes.

Training effectiveness should also be assessed objectively. Attendance at a workshop does not necessarily demonstrate clinical competency. Practical assessments, structured observation, simulation performance, and clinical audits can provide stronger evidence that healthcare professionals are able to perform the required interventions correctly.

3.8.6. Task-sharing and nursing autonomy:

The findings support appropriate task-sharing as an important strategy for improving access to PPH prevention. In many low-resource settings, the number and geographical distribution of physicians are insufficient to ensure continuous specialist coverage at every birth facility. Restricting essential preventive interventions to physician-dependent models may therefore create unnecessary delays.

Empowering appropriately trained nurses and midwives to perform defined AMTSL interventions can decentralize maternal healthcare and increase access to timely PPH prevention. However, clinical autonomy should be supported by clear regulatory frameworks and institutional policies.

Nurses should not be expected to assume expanded responsibilities without adequate training, medicines, equipment, supervision, and referral support. Effective task-sharing is therefore a health-system intervention rather than merely the transfer of additional duties from one professional group to another.

The review suggests that the greatest benefits occur when nursing autonomy is combined with standardized protocols. Protocols provide a clear framework for action, reduce uncertainty, and support consistent practice. They are particularly valuable in emergencies where delays in decision-making can have serious consequences.

3.8.7. Structural barriers in low-resource settings:

The findings demonstrate that many barriers to effective AMTSL are structural rather than individual. A nurse may possess excellent knowledge and clinical skills but still be unable to provide appropriate care if essential uterotonics are unavailable, equipment is missing, staffing is inadequate, or referral transport is inaccessible. Workforce shortages represent a major challenge. In understaffed facilities, one nurse may be responsible for multiple women simultaneously while also performing administrative and general clinical duties. Such workloads can compromise continuous postpartum observation and reduce adherence to time-sensitive protocols.

Medicine stock-outs are another important barrier. AMTSL depends on the availability of an effective uterotonic at the time of birth. Procurement failures can therefore directly undermine the intervention.

Infrastructure also influences medicine quality. Unreliable electricity and inadequate refrigeration may affect temperature-sensitive products. Strengthening AMTSL consequently requires collaboration between clinical services, pharmacy systems, supply-chain management, facility administration, and public health authorities. Weak referral systems remain particularly dangerous when PPH occurs despite preventive measures. AMTSL reduces risk but cannot prevent every case of severe bleeding. Facilities therefore require clear escalation pathways, communication mechanisms, transport arrangements, and functional referral relationships with higher-level centres.

3.9. Strengths and limitations:

This systematic review provides a focused synthesis of evidence concerning nurse-led AMTSL in low-resource healthcare settings. A major strength is its emphasis on both clinical effectiveness and implementation conditions. Rather than considering AMTSL only as a technical obstetric procedure, the review examines the influence of provider training, medicine availability, task-sharing, clinical protocols, infrastructure, and referral systems.

The review also has limitations. Considerable heterogeneity existed across the available evidence in terms of study design, healthcare setting, professional cadre, AMTSL components, definitions of low-resource care, and methods of measuring postpartum blood loss. These differences limited direct quantitative comparison across all studies.

Some studies evaluated complete AMTSL bundles, whereas others focused on individual components such as uterotonic administration, provider training, or quality improvement. Consequently, it may be difficult to determine the independent contribution of each component to the observed maternal outcomes.

Variation in blood-loss assessment represents another limitation. Studies relying on visual estimation may have classified PPH differently from those using more objective methods. In addition, implementation studies conducted in real-world settings may be influenced by staffing, supply availability, institutional leadership, and other contextual factors.

Despite these limitations, the consistency of the overall evidence supports the clinical and public health importance of strengthening nurse- and midwife-led PPH prevention in resource-constrained settings.

4. Conclusion:

Postpartum haemorrhage remains a major threat to maternal health, particularly in low-resource healthcare settings where access to specialist obstetric care, blood transfusion, emergency surgery, and reliable referral systems may be limited. In such environments, prevention at the point of childbirth is a critical component of maternal safety.

The findings of this systematic review indicate that nurse-led Active Management of the Third Stage of Labor is an effective and practical strategy for reducing postpartum haemorrhage and associated maternal complications. The greatest benefit is achieved when trained nurses and midwives provide timely prophylactic uterotonic administration, systematic assessment of uterine tone, early recognition of abnormal bleeding, and prompt escalation of care.

The effectiveness of nurse-led AMTSL, however, depends on more than individual clinical skill. Reliable access to quality-assured uterotonics, competency-based education, standardized protocols, supportive supervision, adequate staffing, functional supply chains, and effective referral systems are essential for sustained implementation.

Strengthening the capacity and autonomy of nurses and midwives can decentralize evidence-based PPH prevention and extend life-saving maternal care to women living in rural and underserved communities. Integrating nurse-led AMTSL into routine maternal health services, nursing education, quality-improvement programmes, and national maternal health strategies therefore represents an important approach to reducing preventable maternal morbidity and mortality in resource-constrained healthcare systems.

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