

Review

Tranexamic Acid for Postpartum Haemorrhage in Low-, Middle-, and High-Income Countries: An Integrative Review Aligned with the WHO PPH Roadmap (2023–2030)

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Abstract: The World Health Organization recommends Tranexamic acid (TXA) in the treatment of postpartum haemorrhage (PPH) as part of the PPH care bundle. We conducted integrative review of 36 studies from three databases namely PubMed, Google Scholar, and Dimensions. The integrative review followed PRISMA guidelines and evaluated clinical efficacy of TXA, prophylactic use, cost-effectiveness, alternative administration routes, and real-world implementation challenges and facilitators. The review found that early administration of TXA within three hours of PPH onset significantly reduces maternal mortality by 31%. Despite concerns about thrombosis, pooled data from large-scale cohorts demonstrate minimal thromboembolic risk which reinforces the safety profile of TXA. However, the WOMAN-2 trial revealed no significant benefit in women with moderate-to-severe anaemia which highlights the necessity for patient-specific TXA protocols. Economic evaluations reveal that integrating TXA into national guidelines requires a modest budget increase (approximately 2.3%) but promises substantial cost savings through reduced surgeries and hospital stays. While intravenous TXA remains recommended route by WHO, emerging evidence supports intramuscular and topical administration which is crucial in rural or primary-care settings lacking intravenous facilities. Yet, questions about bioavailability and rapid haemostatic efficacy persist, awaiting outcomes from ongoing trials such as I'M WOMAN, which is currently recruiting women aged 18 years from five countries with results anticipated by late 2025. Significant barriers to widespread adoption of TXA include limited healthcare provider training, lack of budgetary allocation by government and cultural misconceptions associating TXA with “dangerous clotting” in some settings. Successful initiatives, like China’s Strategies and Tools to Enhance Parturient Safety (STEPS) programme, illustrate how enhanced perinatal care bundles, interdisciplinary team training, and continuous monitoring using statistical process control (SPC) tools can overcome these obstacles. To accelerate progress towards reducing preventable maternal deaths globally, future research must address variable effectiveness when TXA is used as prophylaxis, clarify subpopulations most likely to benefit, and rigorously assess alternative routes of TXA administration.

Keywords: postpartum haemorrhage; tranexamic acid; maternal mortality; low- and middle-income countries; cost-effectiveness; healthcare systems; WHO roadmap; maternal health equity



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1. Introduction

Postpartum haemorrhage (PPH) remains a crucial challenge in global maternal health, affecting approximately 14 million women worldwide each year [1–3]. Although overall maternal mortality has declined over the past three decades, this progress has been uneven, with Sub-Saharan Africa and South Asia carrying a disproportionate share of the global burden [4,5]. In these high-burden regions, factors such as inadequate availability of skilled birth attendants, suboptimal blood transfusion infrastructure, and poor referral systems continue to drive high rates of haemorrhage-related deaths [6,7]. Consequently, interventions that can arrest or significantly reduce excessive bleeding soon after birth remain paramount for reducing preventable maternal deaths.

Tranexamic acid (TXA) has emerged as a potential cornerstone in managing PPH due to its antifibrinolytic capability. TXA inhibits the conversion of plasminogen to plasmin, facilitates the stabilisation of fibrin clots, and curtails ongoing bleeding. Although TXA was initially studied in trauma settings, most notably in the CRASH-2 trial [8,9], subsequent investigations have reinforced its applicability in obstetric contexts [10]. The landmark WOMAN trial reported a 31% reduction in PPH-related mortality when TXA was administered within 3 h of childbirth [6,11]. This finding has been central to the global shift in how PPH is conceptualised. Clinicians have increasingly recognised TXA as part of the bundled care and a critical lifesaving intervention during the acute management of obstetric haemorrhage.

Recent policy directions underscore this evolution. In the WHO's Postpartum Haemorrhage Roadmap (2023–2030), TXA appears prominently among the interventions recommended for curbing PPH mortality [2,12,13]. However, unanswered questions persist about when and how TXA should be administered. While the WHO strongly recommends administering TXA once a clinical diagnosis of PPH is made, debate continues over its prophylactic use, particularly in women who are at moderate to severe risk of haemorrhage but may not yet demonstrate overt bleeding. The trajectory of research has consequently broadened from the initial evidence that TXA saves lives in active PPH to more nuanced studies exploring whether prophylactic doses might help avert dire complications in women with anaemia, coagulopathies, or other high-risk profiles [14,15].

Several large trials have indicated that prophylactic TXA can reduce postpartum blood loss. However, meta-analyses are not unanimous in validating the prophylactic benefits of TXA in terms of hard endpoints such as maternal mortality or the necessity for surgical intervention [16,17]. Even in cohorts likely to benefit from prophylaxis, clinicians must weigh concerns about the costs of medication, potential adverse effects such as thromboembolism, and logistical barriers to timely administration. Furthermore, a substantial proportion of births in low- and middle-income countries occur in primary-level facilities or community settings with limited emergency resources. The notion of administering prophylactic TXA in such environments, where vital oversight or additional therapies might be scarce, raises implementation dilemmas that go beyond efficacy [18,19].

Against this backdrop, the present review aims to consolidate growing evidence on the role of TXA in postpartum haemorrhage, focusing on five crucial domains. First, we revisit TXA's proven efficacy in acute PPH treatment scenarios and detail how early administration can reduce mortality. Second, we examine emerging data on prophylactic administration and address the contradictory outcomes that continue to generate controversy. Third, we assess cost-effectiveness in varying health system contexts, including LMICs, where health budgets are often constrained. Fourth, we evaluate how different routes of delivery, particularly intramuscular TXA, could expand access in rural areas. Finally, we discuss the practical challenges and solutions encountered in real-world LMIC implementation, from supply chain and regulatory barriers to provider knowledge and capacity gaps, as

well as the cultural nuances that sometimes overshadow clinical progress. By synthesising these pieces of evidence, this integrative review seeks to provide policymakers, clinicians, and global health advocates with a more cohesive understanding of the utility of TXA in postpartum care. Ultimately, our goal is to clarify how best to integrate TXA into existing maternal health strategies and how to address residual gaps in knowledge that hinder its maximal lifesaving potential. Therefore, the primary purpose of this integrative review is to systematically consolidate the evidence on TXA for postpartum haemorrhage—including its efficacy and applications in the management of PPH, as well as evidence about its prophylactic potential, cost-effectiveness, and implementation barriers—while aligning our findings with the WHO Postpartum Haemorrhage Roadmap (2023–2030).

2. Results

2.1. Overview of Studies and Participant Characteristics

A total of 36 studies from sub-Saharan Africa, South Asia, and a few high-income countries (the United States, France, etc.) and several international randomised trials met our inclusion criteria [4,17,20]. Sample sizes ranged from small single-centre investigations enrolling a few hundred participants to the WOMAN trial, which included over 20,000 women, as well as some cohorts that included millions of eligible women. Most studies examined intravenous TXA at a standard 1 g dose [4,17], often repeated once if bleeding persisted. However, recent work has explored higher or additional prophylactic doses, such as 2 g, particularly in populations with severe anaemia or a documented history of postpartum haemorrhage [15,18,21]. Maternal risk factors varied significantly. Certain trials focused on women at high risk (e.g., those with placenta previa, multiple gestations, or moderate to severe anaemia), whereas others enrolled broader, unselected populations undergoing either vaginal or caesarean deliveries. This heterogeneity offered a comprehensive perspective on the effectiveness of TXA across diverse clinical contexts. Almost all studies used standard uterotonics, most commonly oxytocin, as first-line prophylaxis for uterine atony. In doing so, they positioned TXA primarily as part of the PPH care bundle rather than as a stand-alone intervention which reflects how TXA is typically integrated within existing postpartum haemorrhage management protocols.

Below, we present our findings under five headings aligned with our objectives: (1) Evidence of TXA efficacy in acute PPH treatment scenarios and the role of early administration; (2) Contradictory outcomes in prophylactic use; (3) Cost-effectiveness across different health system contexts; (4) Emerging data on intramuscular TXA and other routes; and (5) Real-world facilitators and barriers to TXA implementation.

2.2. Efficacy of TXA in Acute PPH Treatment: Impact of Early Administration

Multiple studies reinforced the landmark finding of the WOMAN Trial that TXA significantly decreases mortality when given promptly [4,17,22]. In Nigeria and Pakistan, the administration of TXA within three hours of the onset of bleeding led to a 31% reduction in maternal deaths attributable to PPH [4]. A subsequent trial evaluating high-dose TXA (loading dose 4 g followed by infusion) also demonstrated a shorter duration of bleeding and reduced progression to severe PPH [21]. Although clinicians often cite the risk of thrombosis as a deterrent to administering TXA, pooled data from large cohorts found little or no differences between TXA and control groups regarding venous thromboembolism (VTE) [4,22]. Studies on TXA pharmacovigilance similarly reported no spike in thromboembolic events among obstetric populations receiving recommended TXA doses [23,24]. Women with severe anaemia or inherited bleeding disorders also experienced meaningful clinical benefits from timely TXA infusion. In a retrospective Canadian cohort of inherited bleeding disorders, PPH incidence declined from 50% to 13% with prophylactic TXA [25].

In LMICs, similarly, when TXA was administered within the recommended window, laparotomies and blood transfusions were significantly reduced [17,26].

2.3. Available Evidence on the Prophylactic Use of TXA in PPH Management

Many randomised trials in both caesarean and vaginal deliveries have reported that prophylactic TXA can reduce postpartum blood loss. For example, the TRANOXY study demonstrated that TXA performed comparably to oxytocin in preventing excessive bleeding among low-risk pregnant women [27]. A separate Indian trial showed that prophylactic TXA halved the rate of PPH, from 11.2% to 4.8% [28]. In higher-risk caesarean contexts, other studies have reported significant reductions in PPH [15,26,29]. Moreover, prophylaxis studies in low-risk vaginal deliveries conducted in Nigeria revealed up to a 48% reduction in estimated blood loss, although they did not demonstrate a conclusive effect on the incidence of clinically defined PPH [30]. In a separate Chinese trial enrolling women with risk factors for bleeding after vaginal birth, prophylactic TXA lowered the severity of haemorrhage (≥ 1000 mL) but did not reduce the overall rate of PPH (≥ 500 mL) [31].

Despite these encouraging data, a subset of studies found no clear benefit from prophylactic TXA in PPH management. For instance, in Zimbabwe, a randomised controlled trial observed no meaningful reduction in PPH incidence when TXA was administered during caesarean delivery [32]. In the WOMAN-2 trial (2024), which examined women with moderate and severe anaemia, it was found that administering tranexamic acid within 15 min of the clamping of the umbilical cord did not reduce the risk of clinically diagnosed postpartum haemorrhage [33]. Methodological differences likely account for these discrepancies. Some studies assessed the impact of TXA by measuring blood loss or transfusion requirements, while others relied on endpoints such as mortality or admission to intensive care [34,35].

These divergent outcomes highlight the importance of refining patient selection criteria, clarifying dosing protocols, and unifying outcome measures. Ongoing investigations continue to explore whether prophylactic TXA is most beneficial when targeted to specific risk profiles, such as stratifying women by baseline haemoglobin levels, placental conditions, or history of PPH. As more robust and standardised trials emerge [36], the role of prophylactic TXA, particularly in combination with established uterotonics, will likely be defined with greater precision, which will enable more tailored interventions that optimise maternal safety worldwide.

2.4. Cost-Effectiveness and Budget Impact of TXA Across Different Contexts

Economic analyses consistently assessed TXA as highly cost-effective relative to local GDP thresholds. In India, the incremental cost-effectiveness ratio (ICER) for TXA was INR 1470 (USD 21) per QALY which is well below the per capita GDP. This reflects a justifiable return on investment for national health systems [18]. The study also noted that the introduction of TXA would require only a 2.3% increase in budget allocation for PPH management [18]. Data from Nigeria further show that adopting TXA into postpartum care prevents maternal deaths at minimal additional cost [17,19]. In high-income countries, TXA has similarly proven to be cost saving by reducing transfusion rates and surgical interventions for refractory PPH [37]. A U.S.-based model found that universal TXA treatment in obstetric haemorrhage scenarios produced net savings of millions of dollars annually, with fewer severe haemorrhage episodes and improved maternal outcomes [38]. Some outlier analyses suggested that prophylaxis might not achieve the same cost-effectiveness in very low-risk populations [39,40], but these concerns do not diminish the broader supportive data, especially where baseline PPH risk is higher.

The systematic adoption of TXA in a country's healthcare framework requires up-front investments in healthcare personnel training, public awareness, and supply chain infrastructure [41,42]. Notwithstanding these initial costs, multi-year forecasts indicate net cost savings, as fewer women will require expensive surgeries or prolonged hospital stays [18,43].

2.5. IV Routes of TXA Administration and Ongoing Research into Alternative Routes

The IV route of TXA administration in PPH is widely studied. Rapid administration within three hours is critical to maximising survival benefits, as reported in the WOMAN trial and subsequent meta-analyses [4,22]. However, in many LMIC settings, IV lines may be unavailable, or staff may be untrained, and this contributes to delayed care.

Recent studies have broadened our understanding of intramuscular TXA in obstetrics. These studies sought to address one of the main hurdles to intravenous administration in low-resource settings: the need for reliable venous access. Although much of the early pharmacokinetic evidence on IM TXA emerged from trauma populations, new obstetric-specific data are now emerging. In the WOMAN-PharmacoTXA trial, which examined IV, IM, and oral TXA in women undergoing caesarean section, IM injection achieved therapeutically relevant plasma levels in under 10 min, with no serious safety signals [24]. Building on this, the ongoing I'M WOMAN trial (ClinicalTrials.gov NCT05562609) is evaluating whether IM TXA in higher-risk deliveries can match IV administration in preventing postpartum haemorrhage [44]. Beyond injection routes, a handful of pilot studies also suggest promise for oral or topical TXA, particularly in combination with interventions like uterine balloon tamponade [45,46]. Yet, contradictory data persist regarding absorption profiles and peak plasma concentrations of TXA among postpartum patients [12,24,47]. Until ongoing confirmatory trials are completed, the WHO continues to recommend IV TXA as the first-line route for TXA administration in PPH treatment. Nevertheless, IM TXA is increasingly being studied as a potential alternative when IV lines are impractical. This may ultimately expand access to lifesaving PPH interventions in remote or understaffed facilities.

2.6. Real-World Implementation Barriers and Facilitators of TXA for PPH Management

Supply chain issues and the storage of TXA, along with the unpredictable distribution of medical supplies, are major barriers to rollout and scale-up in LMICs. The WHO notes that PPH commodities, including TXA, face availability issues, and frequent stockouts lead to unnecessary referrals from one hospital to another. The heat stability of carbetocin has gained attention, but stable TXA formulations suited for high-temperature environments are comparatively easier to manage. Nevertheless, ensuring an uninterrupted pipeline remains critical [12,48]. In addition, inadequate or lack of training of the health workforce and uneven implementation of task-shifting policies constitute further challenges. Low awareness among frontline providers regarding correct TXA dosing, timing, and indications impedes consistent usage [19,49,50]. In many lower-resource or fragile settings, national adoption of TXA can also be delayed by policy inertia, limited provider training, and potential medication mix-ups with look-alike ampoules, such as in the case of bupivacaine and TXA [51,52]. Where introduced, TXA has effectively reduced blood loss during high-risk caesarean sections [53], yet confusion over its use with standard uterotonics underscores the need for robust orientation and labelling [54,55]. A recent rapid scoping review notes that most evidence on TXA in low-resource settings is derived from secondary or tertiary facilities. This highlights the need for further implementation research at primary-level maternity units [56]. Even in moderately resourced hospitals, synergy between staff capacity building, standardised protocols, and careful monitoring is vital to harness the mortality and morbidity benefits of TXA [53]. Meanwhile, local beliefs

about postpartum “cleansing” bleeding, combined with hesitancy regarding intravenous injections, may delay acceptance if TXA is portrayed as “dangerous clotting” due to public misinformation [41]. Progressive policies that align national guidelines with WHO recommendations, coupled with broad-based education campaigns, have proven effective. Examples include the STEPS programme, which integrated a PPH bundle (including TXA) in select Chinese provinces. The STEPS intervention led to significant reductions in blood transfusion rates and hospital stays for women with severe PPH [50]. The summary of some of the barriers and facilitators of TXA implementation for PPH management in LMIC is reflected in Figure 1 below.

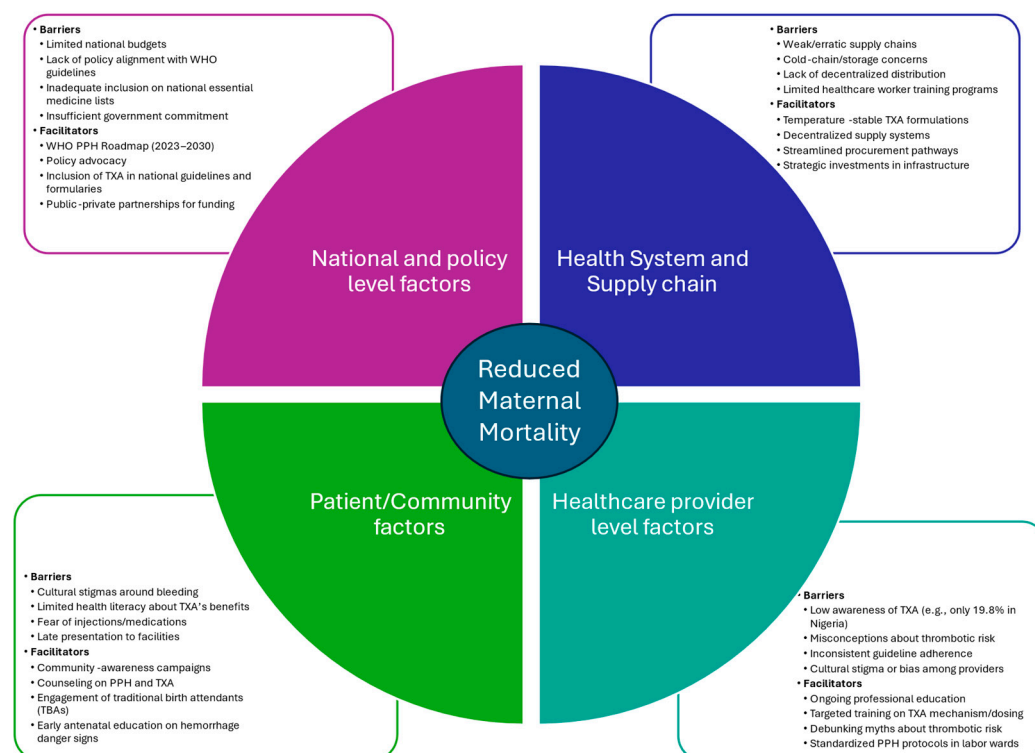


Figure 1. Multi-level barriers and facilitators for TXA implementation for PPH management in LMICs.

3. Discussion

This review systematically consolidates evidence on TXA for PPH and aligns findings with the WHO PPH Roadmap to inform clinical and policy decisions. Its strength lies in its broad scope of 36 studies and practical insights spanning clinical efficacy, cost-effectiveness, route of administration, and implementation barriers and facilitators. However, study limitations include potential publication bias, heterogeneity of included studies, and varying outcome definitions and TXA dosages and timings, as well as modes of delivery (vaginal versus caesarean section), which may affect comparability. Our results confirm the central role of TXA in PPH management. The review underscores its significant survival benefits when used in acute settings and the increasing exploration of TXA in prophylactic applications. Our results align with established evidence that emphasises early administration of TXA (as part of bundled care) for PPH treatment as the foundation for improved survival among women diagnosed with PPH [4,17]. The robust data from large-scale trials confirm that administering TXA within the first three hours of the onset of PPH substantially reduces maternal deaths. This timeframe appears critical, given that TXA will only stabilise clots if administered before advanced fibrinolysis occurs. The minimal changes in thromboembolic risk observed in nearly all large studies further strengthen its safety profile for

emergency use [21,22]. However, the precise timing of TXA in often chaotic PPH scenarios remains a pragmatic challenge. Our review highlights the need for streamlined “shock packs” or standardised PPH kits, which can expedite administration in under-resourced settings. Moreover, broadening training for non-physician providers could reduce early delays in settings where obstetricians are not immediately available.

Despite promising evidence in some trials [27,28], prophylactic TXA in PPH management remains controversial. Our results reveal that although blood loss typically decreases, clinically meaningful outcomes like maternal mortality, blood transfusion requirements, or severe morbidity are less consistently impacted after TXA prophylaxis. In certain populations, prophylactic TXA did not lower PPH incidence or severity [32,33]. A plausible explanation lies in sample composition, baseline risks, and how blood loss is measured. The standard definition of ≥ 500 mL postpartum blood loss in vaginal deliveries, or ≥ 1000 mL for caesarean deliveries, does not account for physiological thresholds and maternal risk factors [34]. Moreover, TXA prophylaxis in low-risk pregnancies may lead to diminishing returns. Future robust trials, especially large multicentre designs, should precisely stratify maternal risk (e.g., preexisting anaemia, placental anomalies, coagulopathies) to clarify which subpopulations truly benefit from TXA prophylaxis.

Nearly all identified economic evaluations converge and support the cost-effectiveness of TXA in PPH treatment, especially when measured against the high costs of blood transfusions, invasive surgical interventions, and extended hospitalisation [17,18,43]. This benefit applies to both LMICs and high-income countries. However, while the prophylactic use of TXA in PPH management potentially saves resources by averting complications, it might be less cost-effective in settings where the baseline risk of PPH is modest. This distinction suggests that national policies could adopt a two-tier approach, which includes universal use of TXA for the treatment of PPH in addition to other uterotonic and targeted TXA prophylaxis in high-risk pregnancy cohorts as more data become available. Our results highlight that such targeted prophylaxis could be especially cost-effective for severely anaemic women, those with prior PPH, or complicated obstetric histories. The next generation of trials should examine real-world “risk-based prophylaxis” protocols along with formal economic analyses.

Intramuscular and oral TXA formulations could offer potential breakthroughs in rural or remote contexts where IV administration might be difficult to access. Our review notes a rising number of small-scale trials showing that the IM route can achieve near-therapeutic plasma levels within minutes [24,47]. Similarly, topical administration combined with uterine balloon tamponade has successfully reduced local bleeding in complicated PPH [45]. However, data remain insufficient to solidly endorse these routes as first-line options. Questions persist regarding bioavailability, especially in situations requiring urgent TXA action within minutes of diagnosis, peak plasma concentrations, and staff training. Furthermore, prophylactic oral TXA might be logistically attractive, but it may be less potent in the critical early postpartum window, where immediate haemostasis is crucial. As trials like I'M WOMAN [44] and WOMAN-PharmacoTXA progress [24], we anticipate more nuanced protocol recommendations from WHO for global deployment.

The repeated appearance of supply chain disruptions, knowledge deficits, and cultural beliefs in the included studies indicates that having effective drugs alone does not guarantee improved outcomes [19,52]. To successfully implement interventions in LMICs, task shifting and training are essential. Midwives, community health workers, and family caregivers could play a crucial role in ensuring the early administration of TXA and help bridge the critical gaps in PPH service delivery where obstetricians are unavailable or insufficient. Public education is equally vital, given that cultural misconceptions about postpartum bleeding necessitate community outreach, potentially through midwives or local women's

groups [41]. Moreover, robust supply chains are indispensable; stakeholders should collaborate with governments and NGOs to subsidise TXA and ensure temperature-stable distribution. Successful partnerships, such as those championed by WHO or UN agencies, have already proven beneficial in India [18]. Ultimately, these structural improvements must be accompanied by country-level policy endorsements and integrated maternal health programmes. Enhancing national postpartum haemorrhage protocols with clear guidelines on the use of TXA as part of the PPH bundle, per current WHO recommendations, will be pivotal in reducing maternal mortality and morbidity.

4. Method

We performed an integrative review of randomised controlled trials, large observational cohorts, economic evaluations, and key guideline documents to provide a comprehensive appraisal of tranexamic acid for postpartum haemorrhage in low-, middle-, and high-income countries [3,5,21]. We included both experimental and non-experimental studies to capture broader insights into the efficacy of TXA in PPH treatment and prevention, real-world implementation challenges, and cost-effectiveness.

4.1. Search Strategy

We searched PubMed, Google Scholar, and Dimensions and restricted publication dates from January 2014 to December 2024. Search strings included “tranexamic acid”, “postpartum haemorrhage”, “LMIC”, “HIC”, “cost-effectiveness”, and “alternative routes”, among others. References from identified articles were also screened to locate additional pertinent sources [20,57].

4.2. Inclusion and Exclusion Criteria

We included studies and case reports that focused on TXA prophylaxis or treatment in diverse PPH contexts. We also prioritised studies reporting maternal mortality, blood loss, transfusion needs, costs, adverse events, or real-world deployment challenges [58]. Documents from the World Health Organization or equivalent governmental or inter-governmental bodies, as well as professional societies like International Federation of Gynecology and Obstetrics (FIGO), were also incorporated if they offered relevant policy or clinical guidance. We excluded the non-English literature lacking accessible full-text data, duplicates, or articles whose primary outcomes were tangential to PPH [39,43].

4.3. Screening and Identification

We followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines for database searching, study selection, and data extraction (see Figure 2). Two reviewers independently screened abstracts and examined full texts. Disagreements were resolved by consensus. The investigators used an Excel-based template to collect study information, including author name/year of publication, country/region, sample size, target population, route and dose of TXA, and main findings (see Table S1 Supplementary Materials). Finally, we synthesised the extracted data narratively by grouping findings on prophylaxis versus treatment, cost analyses, special subgroups such as women with anaemia, emerging routes of administration, and real-world barriers and facilitators to TXA adoption and scale.

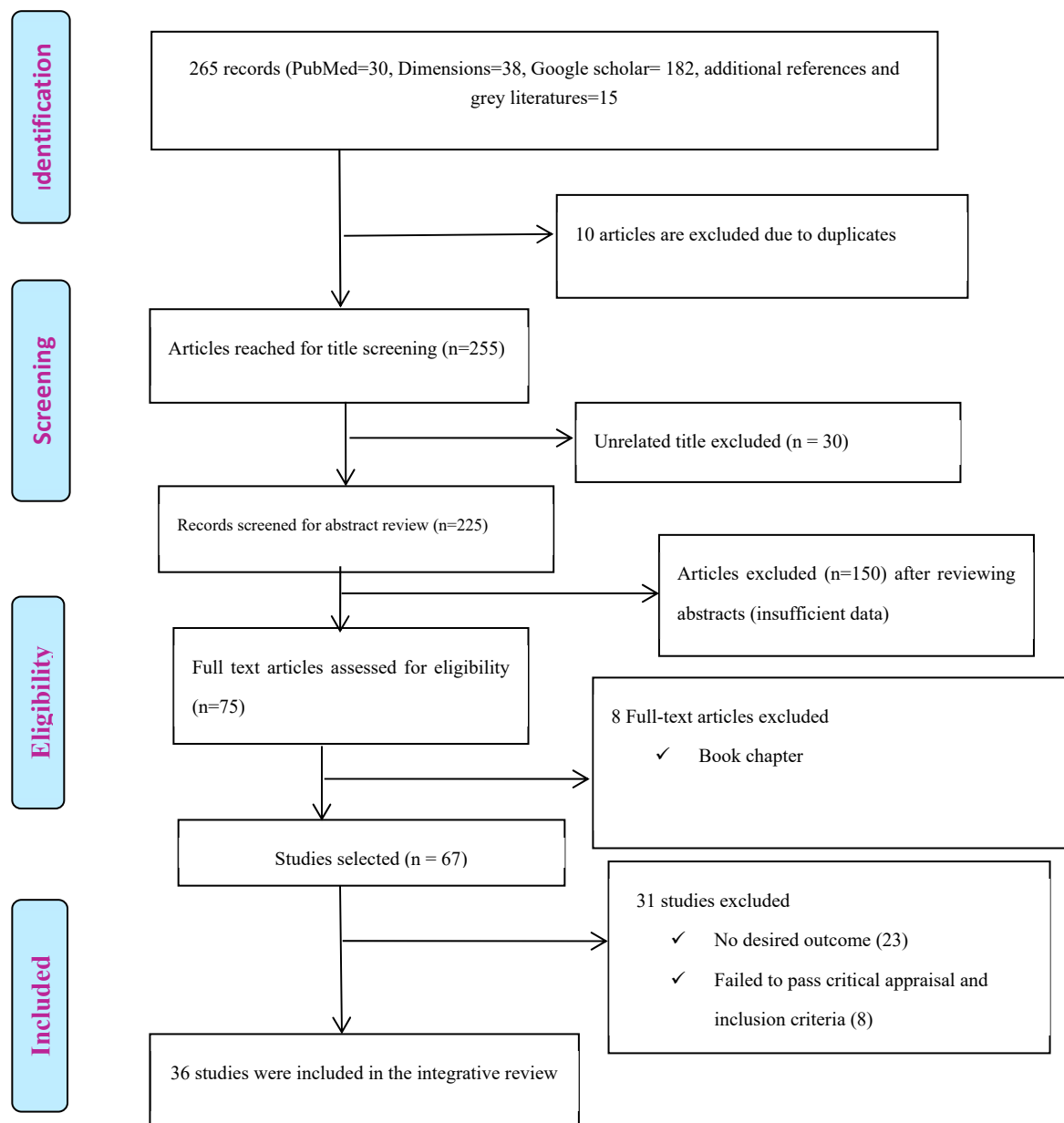


Figure 2. PRISMA flowchart of the selected studies.

5. Conclusions

Our review supports the body of evidence that tranexamic acid is a transformative intervention for mitigating postpartum haemorrhage, particularly when administered early as part of the PPH bundle for the acute treatment of PPH. Mixed results in prophylactic use reflect variability in trial design, patient risk profiles, and contextual factors. However, prophylactic TXA shows promise in high-risk groups. The review also shows consistency in cost-effectiveness data, especially in LMICs, where each dollar invested in TXA is multiplied in lives saved and reduced need for complex interventions. Emerging delivery routes, including intramuscular and oral formulations, hold promise for expanding access in remote settings. Yet, these gains will depend on robust implementation frameworks: adequate training, reliable supply chains, targeted advocacy, and policy alignment with global WHO guidelines. Future large-scale research should further delineate the indications of TXA as prophylaxis and compare alternative TXA routes for their clinical efficacy, economic feasibility, and cultural acceptability. While addressing these gaps, global maternal

health stakeholders can leverage the full potential of TXA to reduce the devastating toll of postpartum haemorrhage and maternal deaths worldwide.

Supplementary Materials: The following supporting information can be downloaded at <https://www.mdpi.com/article/10.3390/women5010010/s1>, Table S1. Summary of Key Studies on the Use of Tranexamic Acid for the treatment of Postpartum Hemorrhage

Author Contributions: Conceptualisation, V.A.A.; methodology, V.A.A. and Q.E.S.A.; formal analysis, V.A.A., Q.E.S.A. and M.O.A.; investigation, V.A.A., Q.E.S.A. and M.O.A.; resources, V.A.A., Q.E.S.A. and M.O.A.; data curation, V.A.A.; writing—original draft preparation, V.A.A., Q.E.S.A. and M.O.A.; writing—review and editing, V.A.A., Q.E.S.A. and M.O.A.; visualisation, V.A.A.; supervision, V.A.A.; project administration, V.A.A.; funding acquisition, V.A.A. and Q.E.S.A. All authors have read and agreed to the published version of the manuscript.

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Abbreviations

The following abbreviations are used in this manuscript:

TXA	Tranexamic acid
PPH	Postpartum haemorrhage
LMIC	Low- and middle-income countries
RCT	Randomised clinical trial

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