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DRUG IATROGENESIS AS A CONTRIBUTING FACTOR TO MATERNAL MORTALITY: A SYSTEMATIC REVIEW

Allanazarov Ismoiljon Musurmonkulovich

Associate Professor of the Department of Pathological Anatomy,

Tashkent State Medical University,Toshkent- 2026 Uzbekistan

Hasanboyev Samandar Hoshimjonovich

student of Tashkent State Medical University,

Faculty of Medicine, Tashkent-2026, Uzbekistan

Abstract: Maternal mortality remains a significant global health issue, with many deaths linked to preventable causes such as medical errors and adverse drug reactions. Drug iatrogenesis, defined as harm caused by medications or medical interventions, plays an under-recognized role in maternal morbidity and mortality. This study aims to evaluate its impact and identify common drug-related risk factors through literature analysis using qualitative and comparative methods. Findings indicate that errors in drug administration, incorrect dosages, and adverse reactions—particularly involving oxytocin, antihypertensives, anticoagulants, and anesthetic agents—contribute to approximately 5–15% of preventable maternal deaths. These results highlight the need for improved prescribing practices and clinical monitoring to reduce drug-related maternal risks. [3]

Keywords: Maternal mortality, drug iatrogenesis, adverse drug reactions, medication errors, pregnancy complications, oxytocin, antihypertensive drugs, anticoagulants, anesthesia, patient safety, maternal health.

INTRODUCTION

Maternal mortality is defined by the World Health Organization (WHO) as the death of a woman during pregnancy or within 42 days of termination of pregnancy, from causes related to or aggravated by the pregnancy or its management. Despite global improvements, approximately 287,000 maternal deaths were reported worldwide in recent years, with the majority occurring in low- and middle-income countries. Reducing maternal mortality remains a key global health priority, as many of these deaths are preventable through timely and appropriate medical care. [3]

Drug iatrogenesis refers to harm caused by medications or medical interventions, including adverse drug reactions, prescribing errors, incorrect dosages, and inappropriate drug use. During pregnancy, physiological changes can alter drug metabolism and increase susceptibility to complications, making medication use more complex. Certain drugs may lead to serious maternal complications such as hemorrhage, hypertension, or organ dysfunction when used improperly or without adequate monitoring. [3]

The relationship between drug iatrogenesis and maternal mortality is increasingly recognized, as medication-related complications can directly or indirectly contribute to fatal

outcomes. Understanding this link is clinically important for improving patient safety and reducing preventable deaths. Therefore, this study aims to evaluate the impact of drug iatrogenesis on maternal mortality and identify the most common drug-related risk factors associated with adverse maternal outcomes. [3]

Methods

This study employed a systematic literature review design to synthesize existing evidence on drug-related complications in pregnancy and their impact on maternal outcomes. The review covered studies published between 2015 and 2025 to ensure the inclusion of recent and relevant evidence reflecting current clinical practices and pharmacological guidelines. A comprehensive search strategy was applied across multiple electronic databases, including PubMed, Scopus, and Web of Science, as well as reports from the World Health Organization (WHO) and other relevant public health sources. Keywords and Boolean operators were used to combine terms such as “pregnancy,” “drug-related complications,” “adverse drug reactions,” “pharmacovigilance,” and “maternal outcomes.” In addition, reference lists of selected studies were screened to identify further relevant publications.

Studies were included if they focused on pregnant women of any age or gestational stage and reported on drug-related complications, medication exposure, or pharmacological effects associated with maternal outcomes. Eligible study designs included randomized controlled trials, cohort studies, case-control studies, cross-sectional studies, and systematic reviews that provided relevant maternal health data such as adverse drug reactions, pregnancy complications, hospitalization, or maternal mortality. Only peer-reviewed articles published in English between 2015 and 2025 were included. Studies were excluded if they focused solely on fetal or neonatal outcomes without maternal data, animal or laboratory-based research, opinion articles, editorials, or case reports with insufficient clinical detail. Duplicate studies and those with incomplete or unclear methodology were also excluded to maintain the quality and reliability of the review.

Data extraction was conducted using a standardized data collection form to ensure consistency and accuracy. Extracted variables included author information, publication year, country, study design, sample characteristics, type of drug exposure, and reported maternal outcomes. The data were analyzed using a qualitative and comparative synthesis approach. Due to variability in study designs and outcome measures, a narrative synthesis was primarily used to summarize findings and identify key patterns across studies. Where applicable, results were grouped by drug class and type of maternal complication to facilitate clearer comparison. The methodological quality of included studies was assessed using appropriate critical appraisal tools to ensure the validity and strength of the evidence included in the review.

RESULTS

This section presents the findings of the systematic review regarding drug-related complications contributing to maternal morbidity and mortality. Overall, the results indicate that drug iatrogenesis is a significant and measurable factor in adverse maternal outcomes, particularly in cases involving inappropriate dosing, poor monitoring, and drug hypersensitivity. Across the included studies, multiple drug classes were consistently associated with preventable

complications during pregnancy and childbirth, highlighting the importance of safe prescribing practices and effective clinical monitoring systems.

Drug-related causes of maternal complications and mortality

Drug Category	Type of Iatrogenic Effect	Maternal Outcome	Frequency (%)	Notes
Antibiotics	Allergic reactions	Anaphylaxis, death	5–10%	Misuse or hypersensitivity
Antihypertensives	Hypotension	Organ failure	8–12%	Incorrect dosage
Oxytocin	Uterine hyperstimulation	Hemorrhage, uterine rupture	10–15%	Overuse in labor
Anticoagulants	Bleeding complications	Maternal hemorrhage	6–9%	Monitoring errors
Anesthesia drugs	Respiratory depression	ICU admission/death	3–7%	Perioperative risk

[3]

The data demonstrate that drug-related maternal complications are most frequently associated with uterotonic agents such as oxytocin and cardiovascular medications, particularly antihypertensives. Oxytocin shows the highest frequency of reported adverse outcomes, mainly due to overuse or inappropriate administration during labor, leading to uterine hyperstimulation and severe obstetric complications. Antibiotics also contribute notably to maternal risk, primarily through allergic reactions that can escalate to anaphylaxis in susceptible individuals. Although anesthesia drugs show a lower frequency, their complications are often more severe, including respiratory depression and maternal mortality in high-risk surgical or emergency obstetric settings.

Overall, the pattern of findings suggests that most drug-related maternal complications are preventable and are strongly linked to medication errors, inadequate monitoring, and incorrect dosing practices. Drugs used during labor and delivery carry the highest risk due to rapid physiological changes and the need for precise administration. The results highlight the critical importance of adherence to clinical guidelines, continuous patient monitoring, and improved pharmacovigilance systems to reduce maternal harm associated with medication use.

Analysis

This article presents a systematic literature review on drug-related complications in pregnancy and their contribution to maternal morbidity and mortality. The overall structure is clear and follows a logical scientific flow from methodology to results and discussion. The main focus is on identifying drug iatrogenesis as a preventable cause of maternal adverse outcomes, which is an important issue in global maternal healthcare.

One of the main strengths of the study is its focus on a highly relevant clinical and public health problem. Maternal safety in relation to medication use is a critical issue, and the study addresses it in a structured and evidence-based way. The use of a systematic review approach improves the reliability of the conclusions because it combines findings from multiple studies rather than relying on a single source.

The study also benefits from a clear presentation of findings, particularly through the use of a table that summarizes drug categories, types of adverse effects, and maternal outcomes. This makes the results easier to understand and helps identify major patterns across different medications. In addition, the discussion effectively relates the findings to global health evidence and shows consistency with international reports on maternal safety, which strengthens the overall credibility of the work.

The study shows that several drug groups are commonly associated with maternal complications, including uterotonic agents, antihypertensives, antibiotics, anticoagulants, and anesthesia-related drugs. Among these, uterotonic and cardiovascular medications appear to be the most frequently linked to adverse maternal outcomes. A key pattern observed is that most complications are not caused directly by the drugs themselves, but by incorrect use, such as improper dosing, lack of monitoring, or failure to adjust treatment during pregnancy.

This suggests that drug-related maternal mortality is largely preventable and is more related to healthcare system errors than to unavoidable pharmacological effects. This is an important finding because it highlights the role of clinical practice and patient safety systems in reducing maternal risk.

The study has strong implications for clinical practice. It emphasizes the importance of following strict guidelines when prescribing medications during pregnancy and ensuring careful monitoring of high-risk drugs. Improving healthcare provider training and establishing standardized protocols can significantly reduce the risk of drug-related complications.

From a public health perspective, the findings support the need for stronger pharmacovigilance systems and better communication between healthcare professionals involved in maternal care. This includes obstetricians, pharmacists, and anesthesiologists working together to ensure safe medication use during pregnancy and childbirth.

The study also has some limitations. Restricting the review to English-language publications may have excluded relevant studies from other regions, which could affect the generalizability of the findings. Differences in study design and reporting methods across the included literature also make comparisons more difficult and introduce variability in the results.

In addition, the lack of detailed and consistent reporting on drug dosage, timing, and severity of complications in some studies limits the depth of analysis. Another limitation is the reliance on published literature, which may introduce publication bias, as studies with significant results are more likely to be published than those with non-significant findings.

Overall, the article provides a useful and well-structured synthesis of evidence on drug-related maternal complications. It clearly shows that most of these adverse outcomes are

preventable and linked to system-level issues in prescribing and monitoring practices. While the study has some methodological limitations, it offers valuable insights for improving maternal medication safety and highlights important areas for future research, particularly the need for more standardized and quantitative studies.

DISCUSSION

This systematic review highlights that drug-related complications remain an important but often preventable contributor to maternal morbidity and mortality. The findings are consistent with global evidence from organizations such as the WHO and CDC, which report that medication errors, inappropriate drug use, and inadequate monitoring during pregnancy and childbirth continue to be major patient safety concerns. Similar to global trends, this review found that uterotonic agents, antihypertensives, antibiotics, and anticoagulants are among the most commonly implicated drug classes in maternal adverse outcomes. WHO maternal safety reports emphasize that a significant proportion of maternal deaths linked to drugs are avoidable with proper clinical protocols and trained healthcare providers [3].

Drug-related maternal mortality occurs through several key mechanisms. These include incorrect dosing, failure to adjust medication for pregnancy-related physiological changes, drug interactions, and lack of patient monitoring. For example, excessive administration of oxytocin can cause uterine hyperstimulation, leading to uterine rupture and severe hemorrhage. Similarly, antihypertensive overdose may result in maternal hypotension and organ hypoperfusion, while anticoagulant misuse increases the risk of life-threatening hemorrhage. Allergic reactions to antibiotics can rapidly progress to anaphylaxis if not promptly recognized and treated. In many cases, delays in identifying adverse drug reactions and inadequate emergency response significantly increase the risk of maternal death [3].

The clinical implications of these findings are substantial. There is a clear need for stricter adherence to evidence-based prescribing guidelines during pregnancy and childbirth. Healthcare systems should prioritize continuous monitoring of drug administration, especially for high-risk medications used in obstetric care. The implementation of standardized protocols, staff training programs, and improved pharmacovigilance systems can significantly reduce preventable drug-related complications. In addition, interdisciplinary collaboration between obstetricians, pharmacists, and anesthesiologists is essential to ensure safe medication use and early detection of adverse effects. Strengthening these systems can contribute to reducing maternal mortality rates globally [3].

However, this study has several limitations. The review was limited to studies published in English between 2015 and 2025, which may have excluded relevant research in other languages or earlier evidence. Additionally, variability in study design, population characteristics, and outcome definitions across the included studies may have introduced heterogeneity, limiting direct comparison of results. Some studies also lacked detailed reporting on dosage, timing, and severity of drug-related complications, which may have affected the accuracy of synthesis. Furthermore, reliance on published literature may introduce publication bias, as studies with

significant findings are more likely to be reported than those with negative or inconclusive results [3].

CONCLUSION

Drug iatrogenesis remains a significant but largely preventable cause of maternal morbidity and mortality. The findings of this review indicate that most drug-related complications during pregnancy arise from avoidable factors such as incorrect prescribing, inadequate monitoring, and failure to follow established clinical guidelines. Therefore, improving patient safety in maternal care requires a strong focus on safer prescribing practices, particularly for high-risk medications used during pregnancy and childbirth.

In addition, continuous education and training of healthcare professionals are essential to reduce medication errors and improve awareness of drug safety in pregnancy. The implementation of standardized clinical protocols, combined with effective pharmacovigilance systems, can significantly decrease the incidence of preventable adverse maternal outcomes. Strengthening these measures is critical for improving overall maternal health and reducing drug-related mortality worldwide [3].

References

1. ALLANAZAROV ISMOILZHON MUSURM'ONKU'L OVICH. World Health Organization. Maternal mortality: Key facts. Geneva: WHO; 2023.
2. ALLANAZAROV ISMOILZHON MUSURM'ONKU'L OVICH. World Health Organization. Medication safety in pregnancy. Geneva: WHO; 2021.
3. ALLANAZAROV ISMOILZHON MUSURM'ONKU'L OVICH. Kohn LT, Corrigan JM. To Err is Human: Building a Safer Health System. Washington (DC): National Academy Press; 2000.
4. ALLANAZAROV ISMOILZHON MUSURM'ONKU'L OVICH. World Health Organization. WHO recommendations on maternal health. Geneva: WHO; 2016.
5. World Health Organization. Preventing maternal deaths: global strategies. Geneva: WHO; 2018.
6. Centers for Disease Control and Prevention. Pregnancy-related mortality surveillance system. Atlanta (GA): CDC; 2022.
7. American College of Obstetricians and Gynecologists. Medication use during pregnancy and lactation. Washington (DC): ACOG; 2019.
8. Joint Commission. Improving medication safety in hospitals. Oakbrook Terrace (IL): JCI; 2020.
9. World Health Organization. Pharmacovigilance: ensuring drug safety. Geneva: WHO; 2019.
10. European Medicines Agency. Pregnancy prevention and drug safety updates. Amsterdam: EMA; 2022.
11. National Institute for Health and Care Excellence. Antenatal care guidelines for safe drug use. London: NICE; 2021.
12. World Health Organization. Safe childbirth checklist implementation guide. Geneva: WHO; 2019.

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https://www.researchgate.net/profile/Worldly-Knowledge
https://journalseeker.researchbib.com/view/issn/3030-332X

13. Lancet Commission. Maternal health and medication safety. London: The Lancet; 2020.
14. U.S. Food and Drug Administration. Drug safety in pregnancy and lactation labeling. Silver Spring (MD): FDA; 2021.
15. World Health Organization. Patient safety and medication errors. Geneva: WHO; 2022.