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Unexplained Stillbirths: Understanding The Complexities

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ABSTRACT

Background: Stillbirth, intrauterine fetal death after 20 weeks of gestation, is a sad and under-recognised complication in obstetrics. Despite technological advancements, a significant proportion of stillbirths are "unexplained," which makes preventive measures impossible.

Objective: It presents a comprehensive overview of different causes of unexplained stillbirths and gives thought to prevailing gaps and possibilities of future investigation.

Methods: Systematic literature review on PubMed, Scopus, and Google Scholar on published literature for the year 2010 through 2025. The key words were "unexplained stillbirth," "placental pathology," "genetic causes," and "immunologic factors." Peer-reviewed human research published in English language was used as the inclusion criteria. The exclusion criteria used were animal model studies, case reports, and non-peer-reviewed literature.

Results: The major findings emphasized the importance of established maternal, fetal, placental, genetic, and environmental determinants. Of the major challenges enumerated were the diagnostic limitations, heterogenous classification schemes, and the inappropriate use of advanced genetic techniques.

Conclusion: Multidisciplinary coordination, expanded utilization of molecular diagnostics, and standardization of postmortem protocols will be necessary to minimize unexplained rates and optimize maternal-fetal outcomes for unexplained stillbirth.

Keywords: *Unexplained stillbirth, fetal growth restriction (FGR), Genetic mutations, Chromosomal microarray, maternal health*

1. INTRODUCTION

Stillbirth is characterized primarily as intrauterine fetal death at or following 20 to 28 weeks of gestation, though the definition varies by national standards and reporting. Fetal death following 28 weeks of gestation is the definition of stillbirth as per the World Health Organization (WHO); however, a criterion of 20 weeks or a birth weight of 350 to 500 grams is used by some nations, like the United States of America, to define stillbirths [1]. Despite progress in maternal health and antenatal care in the past few decades, stillbirth is still a serious public health problem at a global scale. An estimate of almost 1.9 to 2.0 million stillbirths per year in the entire world has been reported, which amounts to one stillbirth every 16 seconds [2, 3]. In the majority of high-income nations, the rates have reduced because of the advancement in prenatal surveillance,

availability of high-quality obstetric care, and effective stillbirth surveillance systems; however, the incidence is

disproportionately higher in low- and middle-income countries (LMICs), particularly in regions like South Asia and sub-Saharan Africa [2]. Alarmingly, India accounted for more than one-fifth of the world's stillbirths in recent years, thus qualifying as a priority country for targeted interventions for prevention of stillbirth [4].

One of the significant issues is that 20% to 50% of stillbirths are labelled as unexplained depending on the provided setting and investigation quality, even after thorough assessments such as fetal autopsy, placental examination, and maternal testing [5,6]. Such "unexplained" stillbirths point to serious deficiencies in diagnostic practice and variability in classification, concealing possibly preventable aetiologies and compromising effective clinical and public health responses.

Unexplained stillbirth not only reflects an absence in the clinical diagnosis and prevention of fetal distress but also an immense reservoir of emotional distress for bereaved families. Parents report persistent bereavement, guilt, and trauma, particularly in instances where no explanation for the death is offered [7]. To doctors and scientists, unexplained stillbirths are a persistent challenge that highlights research strategy, diagnostic technique, and unequal maternal-fetal healthcare globally.The excessive rate of unexplained stillbirths renders epidemiologic data interpretation challenging, undermines the performance of health surveillance systems, and contributes to the insufficient recognition of avoidable determinants like placental insufficiency, fetal growth restriction, infection, and unrecognized maternal illnesses. Cultural stigma, poor training of healthcare workers, and reluctance or refusal of parents to have fetal autopsies also contribute to the difficulty of establishing causes.

This review aims to provide an overall critique of our current knowledge of unexplained stillbirth, current classification constraints, investigation challenges, underlying biological and systemic mechanisms, and the evolving role of state-of-the-art investigative methods like molecular autopsy and placental transcriptomics. In meeting these challenges, the paper suggests using standardized diagnostic guidelines, increased research into placental pathology, and the application of compassionate care models that allow both investigational procedures and bereavement support for affected families.

Aims/Objective

- To explore the variation and constraints in defining and classifying unexplained stillbirth
- To identify biological, pathological, and maternal comorbid conditions often neglected in conventional research
- To determine barriers—systemic and cultural—to finish stillbirth assessment
- To assess current and emerging tools for stillbirth diagnosis and risk estimation
- To recommend simple, culturally relevant, and cost-effective modifications in stillbirth prevention and care

2. METHODOLOGIES

- Eligibility Criteria: English language peer-reviewed articles published between 2000 and 2024 that discuss unexplained stillbirths, classification systems, causes, diagnostics, and prevention measures.
- Used databases are PubMed, Scopus, Web of Science, and Google Scholar.
- Search Terms: "unexplained stillbirth," "placental pathology," "fetal autopsy," "molecular autopsy," "classification systems in stillbirth," "fetal growth restriction."
- Data extraction: Data regarding study design, sample size, primary outcomes, and main findings were extracted and tabulated.

Defining "Unexplained Stillbirth: The term "unexplained stillbirth" is widely used in clinical practice and research but tends to mean an inadequacy or shortfall in the investigation strategy, as opposed to the absence of pathological etiology. It is used where complete post-mortem investigation—fetal autopsy, placental histopathology, genetic enquiry, and detailed maternal medical workup—are not able to diagnose a definite cause of the fetal loss [8].

Indeed, many of the unexplained instances can be explained due to identifiable reasons with the introduction of more detailed or advanced evaluation protocols. The high percentage of unexplained stillbirths found in high-income and low-income countries points toward inherent systemic shortcomings and inconsistencies within clinical practices.

Table 1: Overview of Most Significant Etiological Causes of Unexplained Stillbirths

Etiological Factor	Representative Studies	Summary of Findings
Placental abnormalities	Flenady et al., 2011; [5]	Typically the most frequent etiology; generally subclinical

Genetic causes	McPherson, 2010; Wou& Levy, 2018 [27, 37]	Includes de novo mutations, chromosomal abnormalities
Maternal conditions	Horne et al., 2021 [38]	Obesity, hypertension, diabetes strongly associated
Infections	Martines et al., 2016[39]	TORCH and Zika virus as emerging risks
Fetal growth restriction	Gardosi et al., 2005 [25]	Usually undiagnosed antepartum

Major Challenges Leading to Unexplained Stillbirths

- **Differences in Definitions in Different Countries and Agencies:** There is no single definition of "unexplained stillbirth." Various health care systems employ various gestational age cut-offs, weight, and investigation requirements. For instance, stillbirth is a definition at 24 weeks of gestation in the UK, at 20 weeks in the US, and at 28 weeks in the WHO [2,3].
- This difference results in differences in diagnosis, classification, and epidemiological reporting. In addition, the application of various classification systems e.g., ReCoDe, CODAC, PSANZ, or ICD-10—dictates whether a cause can be assigned. In certain systems, as many as 50% of stillbirths are classed as unexplained due to a lack of sensitivity in diagnosis [9, 10].
- **Refusal or Underuse of Fetal Autopsy and Placental Examination:** Fetal autopsy is recognized everywhere as the gold standard for the determination of stillbirth cause. However, acceptance has been low, typically due to parents refusing, pathologists being inexperienced, cultural or religious beliefs, or due to emotional trauma concerning the procedure [11]. Acceptance rates are typically below 50% and lower in limited-resource or conservative cultures [12].Placental investigation is a useful, yet underutilized, tool. The placenta will often harbour histological evidence of pathologies like chorioamnionitis, infarct, thrombosis, or villitis to account for the stillbirth. However, in most institutions, placental investigation is either not done on a regular basis or by non-experts and hence is susceptible to misinterpretation or to missed diagnosis [13].
- **Restricted Utilization of Genetic and Molecular Diagnostics:** New technologies like chromosomal microarray analysis, whole-exome sequencing, and molecular autopsy have proven useful in elucidating the cause of fetal death that previously had been labelled as mysterious—specifically genetic syndromes, metabolic disorders, or arrhythmogenic channelopathies [14].

Unfortunately, the kind of testing required is too costly and not easily accessible in most health care systems. Even in affluent countries, molecular testing is offered selectively and barely included in national guidelines, thus leaving most potentially diagnosable conditions undetected.

- **Unfavourable Maternal Medical Histories or Untreated Comorbid Conditions**: Maternal illnesses like thrombophilia, autoimmune conditions (e.g., antiphospholipid syndrome), diabetes, hypertension, or sleep apnoea with obstruction are established causes of fetal compromise and stillbirth risk. These, however, are usually undiagnosed or under investigated, especially in LMICs where women may not receive routine prenatal care or access diagnostic centres [15]. Furthermore, maternal stress, infection, drug exposure, or exposure to environmental aetiologies may be insufficiently documented or entirely ignored. Detailed maternal history, supplemented by adequate laboratory evaluation, is underutilized in most clinical situations.

Classification Systems and Their Shortcomings

The accurate classification of stillbirths is essential in defining their etiology, guiding prevention, and optimizing worldwide reporting. However, the phrase "unexplained stillbirth" is often employed when routine investigations like autopsy, placental histopathology, genetic testing, and maternal factor analysis fail to identify a clear etiology. The phrase may be a product of poor investigation rather than the absolute absence of causative factors, with up to 30% of stillbirths in high-resource settings remaining unexplained despite the presence of sophisticated diagnostic methods [16].Several classification systems have been proposed to improve the attribution of causes. However, these systems vary considerably in scope, depth, and appropriateness, particularly in comparing high- and low-resource settings. The most widely used systems include ReCoDe, PSANZ-PDC, and CODAC, each having its own strengths and limitations.

- **ReCoDe (Relevant Condition at Death):** Proposed by Gardosi et al. in 2005, the ReCoDe system is focused on the main clinical conditions in cases of fetal demise, specifically on fetal, placenta, and umbilical cord defects [10, 17]. The

basic aim of this method is to exclude imprecise terms such as "unexplained" and, rather, to find overtly recognizable pathologies.

Benefits:

- More specific than standard ICD-10 categories.
- Minimizes the number of "unexplained" cases on a daily basis by recognizing conditions such as intrauterine growth restriction (IUGR) or placental insufficiency.

Limitations:

- May not appreciate maternal and extrinsic causes (e.g., preeclampsia, trauma).
- Insufficient integration of multifactorial or socio-environmental aetiologies.

Recent application of ReCoDe in a Pakistani study significantly improved stillbirth classification and established causes in 72.2% cases [17].

❖ **PSANZ-PDC (Perinatal Society of Australia and New Zealand - Perinatal Death Classification):** This system is distinguished by its hierarchical structure and multi-factorial system, which includes fetal, maternal, obstetric, and external factors [18]. It is used as the national standard in Australia and New Zealand.

Benefits:

- Comprehensive and covers a wider range of contributory conditions.
- Enables thorough mortality analysis and national surveillance.

Limitations:

- A sophisticated framework necessitating extensive training.
- Challenging to apply in low-resource environments.

While the PSANZ-PDC is extensive, very high rates of unexplained stillbirths can still occur unless the full autopsy and placental examination are available [18].

❖ **CODAC (Causes of Death and Associated Conditions)**

CODAC is a hierarchical classification system originally developed for research and for international comparative purposes. It categorizes stillbirths by both primary condition and associated factors [19].

Benefits:

- Allows for nuanced understanding of multifactorial etiology.
- Effective in high-data quality research environments.

Limitations

- Limited use in clinical practice.
- Needs trained coders and organized records.

A 2025 Tunisian study using CODAC detected primary causes in 85% of instances, demonstrating its worth in formal research settings [20].

Enduring Issues

Despite all these systems, a large number of stillbirths still go unexplained, as:

- Variations in definitions and procedures across countries and institutions.
- Refusal or non-utilization of fetal autopsy and placental histopathology is most frequently caused by cultural, religious, or systemic obstacles [21, 22].
- Limited use of molecular diagnostics, e.g., gene panels or whole-exome sequencing, in clinical practice [23].
- Inadequate maternal history or occult comorbidities like thrombophilia, autoimmune illness, or inadequately controlled diabetes.

To address these difficulties, it is important to make use of standardized classification tools globally accepted, besides providing training, diagnostic assistance, and guidelines for interdisciplinary researches.

Key contributors who are frequently under recognized

Although most stillbirths are "unexplained," complete investigations typically uncover neglected pathological or clinical factors. Such cases are frequently neglected due to inadequate diagnostic tests, the absence of interdisciplinary collaboration, or systemic constraints on postmortem investigations [24].

❖ **Placental Pathology:** Placenta is a critical organ for fetal well-being and has been routinely called the "diary of the pregnancy." The most overlooked organ in the analysis of stillbirth, it is the organ routinely investigated in the vast majority of unexplained stillbirths.

- Common placental abnormalities include:
- Placental necrosis and separations
- Chorionic villitis and villitis of indeterminate etiology (VUE)
- Delayed villous maturation
- Fetal vascular thrombosis and malperfusion

Studies have indicated that placental lesions are identifiable in approximately 65–85% of unexplained stillbirths in special pathological investigation [25, 26]. But since no protocol is available for investigation and since perinatal pathologists are scarce in most centres, results are unreliable and usually not reported.

Most pathologic placental lesions go undiagnosed due to the fact that there are not many histopathologic resources available in low- or high-resource settings [27].

❖ **Fetal Growth Restriction (FGR)**

Fetal Growth Restriction (FGR) is a significant but underdiagnosed reason for stillbirth. It is characterized by the inability of the foetus to achieve its genetically programmed growth potential, usually as a result of placental insufficiency.

Some studies have shown that an important proportion of "unexplained" stillbirths have FGR retrospectively, i.e., they revealed evidence of it, for instance, low percentile birthweights, abnormal Doppler, or growth asymmetry [28,29, 30]. This denotes lost antenatal opportunities to diagnose and provide intervention.

"Antenatal diagnostic failure to suspect FGR is common as a result of the stillbirth audits and is indicative of an avoidable cause. [31]

❖ **Infections**

Subclinical infections tend to be ignored, especially in low- and middle-income communities where access to comprehensive diagnostic examination is inadequate. They encompass:

- Cytomegalovirus (CMV)
- Toxoplasma gondii
- Syphilis
- Zika virus
- Parvovirus B19

Serologic testing in the mother and PCR or culture of fetal tissue on occasion are usually avoided unless infection is clinically suspected. However, infection has been detected in 10–20% of stillbirths initially classified as unexplained [32].

Evidently, not performing routine fetal and placental cultures probably underestimates the occurrence of infection-associated stillbirths [33].

Metabolic and Genetic Disorders

Chromosomal defects, genetic syndromes, and congenital metabolic errors may be the cause of unexplained fetal loss. Karyotyping and chromosomal microarray are helpful in day-to-day practice, but molecular autopsy with whole-exome sequencing (WES) is becoming a valuable tool.

A 2023 study proved that WES yielded a certain or possible diagnosis in 30–50% of fetal deaths that are unexplained [34]. However, these tests are not used due to expense, availability, and lack of awareness."WES in stillbirth may uncover new pathogenic variants, especially when routine cytogenetics is non-contributory." [34]

❖ **Maternal Comorbidities**

Multiple maternal conditions predispose to placental dysfunction and stillbirth. They are:

- Autoimmune conditions such as antiphospholipid syndrome (APS) and systemic lupus erythematosus (SLE)

- Unrecognized gestational diabetes mellitus or persistent hypertension
- Obesity
- Sleep apnoea
- Drug use (smoking, alcohol, drug use)

These may be overlooked due to inadequate antenatal care, inadequate maternal histories, or social stigma. A 2024 UK study revealed that 35% of unexplained stillbirths were attributed to at least one undiagnosed maternal health condition on reaudit [35].

Increased screening for maternal comorbidities can reduce the rate of unexplained stillbirths by enabling detection and treatment earlier[36].

❖ **Investigative Deficiencies**

Unexplained stillbirth is often a diagnosis of exclusion, and many so-called cases would be reclassified if systematic investigations were commonly performed. Nonetheless, there is wide variability between institutions and regions in the completeness and adequacy of stillbirth investigation.

❖ **Autopsy Practice and Acceptance:** Autopsy remains the gold standard to determine the cause of stillbirth, but acceptance rates are low—usually around 30–50%—due to cultural, religious, emotional, or systemic reasons [37, 38]. Even if accepted, quality and completeness of autopsies are variable. Minimally invasive tissue sampling (MITS) and postmortem MRI are increasingly acceptable substitutes for full autopsy in some settings [3].

❖ **Placental Examination:**Although of very significant importance in fetal growth, the placenta is too frequently not well enough examined or poorly enough described. A standard placental pathology report from an experienced perinatal pathologist is necessary, since research has demonstrated that placental pathology is diagnosed in as many as 65–85% of cases of unexplained stillbirths [39].

❖ **Infectious disease testing and genetic evaluation:** Regular screening for infectious causes (e.g., CMV, syphilis, toxoplasmosis) is done sporadically, especially in resource-constrained environments [40]. Genetic testing technologies, including chromosomal microarray or whole-exome sequencing, are rarely accessible outside of tertiary centers, even though they can diagnose about 30–50% of cases of unexplained fetal death [39].

Recommended Investigative Process: A comprehensive study of stillbirth should include: Thorough maternal history and appropriate laboratory investigations

- Extensive placental histopathology
- Fetal autopsy or minimally invasive options
- Cytogenetic, metabolic, and molecular studies as clinically indicated Psychosocial and Cultural Barriers to inquiry go beyond institutional or technological reasons; they are highly interrelated with psychosocial and cultural reasons.
- Refusal by parents for autopsy is common due to religious restrictions, emotional trauma, or mistrust of the health system [41].
- Stigma about stillbirth in most societies results in silence, shame, and underreporting.
- Counselling after the loss is lacking, which increases parental grieving, particularly when vague explanations like "cord accidents" or "nature's will" are given [42]. Poor bereavement care has also been linked with long-term psychological consequences, including depression, post-traumatic stress disorder (PTSD), and anxiety disorders among bereaved parents [43].

3. RESULTS

❖ **Placental Pathology:** Placental pathology was recognized in 30-40% of the reviewed studies as primary reasons for unexplained fetal death. Infarcts, abruptions, and chronic villitis were the most commonly reported conditions [44, 45]. Placental insufficiency was the most common reason in studies with broader pathological investigation, and chronic villitis was seen in 25% of the examined cases [46]. Although its significance, placental examination remained underappreciated in the majority of clinical practice, and placental samples were not always obtained or properly preserved, according to most of the studies [47].

❖ **Fetal Growth Restriction (FGR):** Fetal Growth Restriction (FGR) is a significant risk factor for stillbirth, as per an incidence rate reported in about 35% of reviewed studies. [48]. research validated the prevalent correlation between FGR and unexplained stillbirth, especially in instances of high-risk pregnancies. Interestingly, in the majority of stillbirths that met the criteria for being in the "unexplained" group, there was evidence of FGR markers in retrospective

studies [49]. Early detection of FGR would have possibly prevented a large majority of instances of stillbirth; however, the shortcomings in screening practices normally equated to missed opportunities for timely intervention.

- **Infections:** Infections, particularly cytomegalovirus (CMV), syphilis, and toxoplasmosis, were detected in 10-15% of unexplained stillbirths. While maternal serology and fetal tissue PCR testing could provide useful data, such testing was not consistently carried out in the majority of studies. For example, in a study by [50], it was found that 12% of cases had missed subclinical infections due to poor screening protocols. As highlighted in the majority of studies, the improvement of diagnostic tests for infections, especially in resource-poor settings, has the ability to decrease unexplained stillbirth numbers significantly [51].
- **Genetic and Metabolic Disorders:** Rare genetic syndromes and inborn errors of metabolism were found in 8-10% of stillbirths in the unexplained category [52], it was emphasized that chromosomal abnormalities were identified in 6% of unexplained stillbirths by molecular autopsies. But the use of genetic testing in the clinic has been limited, and results in the majority of studies have shown that it is often underused, mainly due to the cost of the procedure and limitations in accessing sequencing technology [53].
- **Maternal Comorbidities:** The occurrence of maternal medical conditions, such as undiagnosed hypertension, diabetes, autoimmune disorders, and obesity, has been recognized as a causative factor in 15-25% of stillbirths without an identifiable cause. For example, [54] confirmed that maternal hypertension was associated with high rates of stillbirth in 18% of the cases analyzed. Additionally, autoimmune disorders such as antiphospholipid syndrome and undiagnosed diabetes were recognized as major causes of fetal loss [55]. Ineffective screening for such medical conditions during prenatal visits was most frequently cited as a discouragement to early detection and preventive measures.

Future Research and Research Gaps: A number of avenues of research are promising in explaining unexplained stillbirths:

- Standardization of classification systems across nations is imperative to allow for uniform data collection and comparability.
- Omics technologies (transcriptomics, proteomics, and metabolomics) may uncover new biomarkers of fetal distress and placental insufficiency [11].
- Machine learning and artificial intelligence algorithms are increasingly being applied to assess stillbirth risk based on large maternal and fetal datasets [12].
- Affordable molecular autopsy techniques need to be developed for use in resource-poor settings.
- Longitudinal cohort studies must investigate multi-factorial variables such as maternal sleep, environmental exposure, and stress.

Recommendations

In order to reduce the global burden of unexplained stillbirths, an integrated approach is required:

- Establish national-level guidelines for standard stillbirth investigation.
- Educate obstetricians, midwives, and pathologists in placental and fetal assessment.
- Expand availability of genetic and molecular testing in an affordable manner.
- Encourage the use of culturally acceptable autopsy alternatives such as MITS.
- Offer comprehensive psychosocial care and bereavement counselling to grieving families.

4. DISCUSSION

Unexplained stillbirth remains a major challenge for clinicians and families alike. Despite significant advances in perinatal care, a large percentage of stillbirth remains unexplained, and families remain with unresolved grief. The fundamental investigative shortcomings, such as low rates of autopsy take-up, suboptimal use of placental pathology, and less than optimal full genetic and metabolic investigation, are at the core of this problem. A meta-analysis identified that up to 70% of unexplained stillbirth is potentially due to opportunities for investigation that are being missed, such as less than optimal placental inspection and resistance to autopsy [53]. In addition, most maternal comorbidities and infections that may cause potentially stillbirths remain undetected because of inappropriate screening protocols, specifically in resource-poor settings [45].

Cultural and psychosocial elements worsen these diagnostic limitations. Refusal of autopsy by parents due to emotional trauma or religious reasons is a common reason for underreporting causative features. Stillbirth is a forbidden and unspoken topic in the majority of cultures, further restricting support to bereaved families and detection of underlying causes [3]. Psychosocial counselling is not commonly provided, and parents are made to undergo intense grief without appropriate counselling or follow-up,[39] submit that the absence of adequate explanations for stillbirths leads to long-term psychological

distress among parents, and therefore, there is a necessity to provide enhanced bereavement care [4].

The advancement of science into enigmatic stillbirth will depend on the intersection of omics technologies such as transcriptomics and proteomics with artificial intelligence (AI) that can possibly facilitate greater comprehension of the attendant biological processes underlying. Through prediction modelling and detection of new biomarkers, there is a potential to increase insight into the sophisticated interactions between environmental, genetic, and maternal factors that lead to stillbirth. As an example, recent evidence indicates that blending placental pathology with AI-enabled imaging modalities can dramatically increase diagnostic accuracy [5]. Obstacles, however, persist for such cutting-edge technologies to reach and become affordable in low-income settings.

The findings highlight the multifactorial etiology of unexplained stillbirths. Although previously blamed on the absence of pathological findings, contemporary diagnostic methods reveal that the majority of 'unexplained' stillbirths are the result of underdiagnosed or subtle abnormalities. Genome and transcriptome studies are revealing rare fetal syndromes and maternal-fetal immune interactions. Furthermore, a standardized classification system, for instance, ReCoDe, can reduce misclassification. Small sample sizes, regional bias, and partial postmortem examination are methodological limitations of most studies. Standard genetic investigation and histological placental analysis, and maternal antibody profiling, can reduce the number of truly unexplained stillbirths.

In addition, the psychological implications for bereaved parents should be included in the evaluations and ensuing care of stillbirths. Future studies should embrace interdisciplinary approaches that include pathology, genetics, immunology, and maternal-fetal medicine.

5. CONCLUSION

Unexplained stillbirths present not only a challenge in the medical and scientific communities but also a deep human tragedy. All too often, the term "unexplained" refers to inadequacies in current diagnostic methods, variability in investigations, and systemic neglect. With advances in diagnostic techniques, improved training, culturally sensitive practice, and a commitment to supporting bereaved families, a significant proportion of these tragic losses can be better understood—and perhaps prevented. A multidisciplinary strategy that includes standardization of classification systems, improved investigative practice, and the offer of better psychosocial support to families is essential in an effort to reduce the incidence of unexplained stillbirth and improve outcomes for mothers and their infants.

List of Abbreviations

Abbreviation	**Full Form**
CMA	Chromosomal Microarray
CNV	Copy Number Variant
CODAC	Cause of Death and Associated Conditions
FGR	Fetal Growth Restriction
HIC	High-Income Country
ICD-10	International Classification of Diseases, 10th Revision
ICD-PM	International Classification of Diseases - Perinatal Mortality
LMIC	Low- and Middle-Income Country
MVM	Maternal Vascular Malperfusion
NGS	Next-Generation Sequencing
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
ReCoDe	Relevant Condition at Death
SLE	Systemic Lupus Erythematosus
VUE	Villitis of Unknown Etiology
WES	Whole-Exome Sequencing

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