A Scoping Review On Maternal Mortality Review Committees Efforts To Improve Black Maternal Health

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A Scoping Review on Maternal Mortality Review Committees 
 Efforts to Improve Black Maternal Health

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Class of 2023

A thesis submitted in partial fulfillment of the requirements for the degree of  
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Secondary Advisor: Trace Kershaw, PhD
Abstract

Background: The United States has the highest rate of maternal mortality of all developed nations which is largely due to vast racial and ethnic disparities in maternal health outcomes.¹ To address the high rates of maternal mortality many states have implemented Maternal Mortality Review Committees (MMRCs) to identify the causes of pregnancy-related deaths and generate recommendations to reduce the number of maternal deaths. However, MMRCs have failed to adequately address the role that racism has in producing high rates of maternal mortality for Black women.

Methods: This thesis employed a modified scoping review approach to chart the existing literature on MMRCs’ work and their efforts to improve Black maternal health. This thesis utilized the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews to guide article identification and data extraction and synthesis. Studies were qualitatively analyzed using an intersectional framework and key themes were identified and documented.

Results: The search identified 28 articles published between 2004 and 2022. One quarter (25%) of the articles explicitly mentioned racism as having a contributory role in the deaths of Black mothers. The papers largely covered the topics of 1) the key components of a functioning MMRC and/or how to (re)establish an MMRC, 2) how to improve existing MMRCs’ functions and work, and 3) reviewing the recommendations established by MMRCs.

Conclusions: Based on the existing literature, there is a major gap in MMRCs' work in addressing and explicitly stating racism's role in producing high rates of maternal mortality of Black mothers. MMRCs must take the necessary steps to tackle racism in maternal health by improving data collection, increasing collaborations with private organizations and advocacy groups, and better disseminating their findings and recommendations.

Keywords: maternal mortality; Maternal Mortality Review Committee; racism; scoping review; Social and Behavioral Sciences
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To my family, thank you for believing in me even when I didn’t believe in myself. To my mother, Dori Larsuel, you have always been my number one cheerleader. Your strength and resilience inspire me and I am forever indebted to you for showing me what it means to be a strong, loving, and compassionate Black woman. To my aunt, Cheryl Branum, thank you for so graciously stepping into the role of a second parent after the passing of my father. You have filled my life with joy, laughter, and love and I am endlessly grateful for your support. To my sister, Chelsea Larsuel, thank you for encouraging me to be just better every day. You have been my built-in best friend since day one and I am so grateful to always have you at my side.
Dedication

This thesis is dedicated to Shalon Irving, Chanience Wallace, Kira Johnson, and the countless other Black mothers who have died while bringing life into this world – I am sorry the system failed you. Your lives mattered and for as long as it is necessary, I will continue to advocate for change and safer peripartum care for Black mothers.
Acronyms

AIAN: American Indian and Alaska Native
CDC: Centers for Disease Control and Prevention
FIMR: Fetal and Infant Mortality Review
MMRCs: Maternal Mortality Review Committees
MMRIA: Mortality Review Information Application
MMR: Maternal Mortality Ratio
NVSS: National Vital Statistics System
PMMR: Pregnancy-related Mortality Ratio
PMSS: Pregnancy Mortality Surveillance System
PRISMA-ScR: Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews
ROOTT: Restoring Our Own Through Transformation
SDOH: Social (and Structural) Determinants of Health
SES: Socioeconomic status
WHO: World Health Organization
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Introduction

Maternal death is a tragic and deeply impactful occurrence that affects not only individual families, but also entire communities. And yet, every year 700 to 900 new and expectant mothers die in the United States. Even more shockingly, almost 67% of these deaths are preventable. That is a tragedy that must urgently be addressed. Aside from the personal impact of maternal loss, maternal mortality is also a key indicator of population health and the United States continues to fail miserably in comparison to peer nations. This is especially surprising given that the United States spends more on healthcare than peer nations and still has worse outcomes. Significant racial and ethnic disparities fuel this issue. Black women have exceedingly high rates of maternal mortality and morbidity, which is increasingly being linked to racism as it operates as a social and structural determinant of health.

According to the Centers for Disease Control and Prevention (CDC), racism is a fundamental cause of health inequities, disparities, and disease. Recently, research has emphasized the role that racism plays as a structural and social determinant of the health of Black mothers and their infants. Not only does racism indirectly impact Black mothers’ health by upholding social and economic adversity and political marginalization, but it also directly affects their health by reducing access to care and creating physiological responses to chronic stress. Therefore, in order to accurately begin to address the high rates of maternal mortality in the Black community, there must be a foundational recognition that racism, which permeates the very structure of society, is the root cause of health inequities rather than race simply being a risk factor.

In response to high rates of maternal mortality, an increasing number of U.S. States have implemented maternal mortality review committees (MMRCs) to identify the factors that contribute to maternal deaths. In doing so, MMRCs aim to develop guidelines and work alongside
stakeholders to address maternal mortality through legislation and policy. Although MMRCs have had some success, maternal mortality remains high in the United States and it has become progressively clearer that MMRCs or larger systems and structures must address racism within their work.

An important consideration to note is that not all people who can become pregnant identify as cis-gender women. Several other identities, including transgender men and non-binary individuals, have pregnancy-abled bodies. However, because of the limitations of the existing data, this paper will utilize the terms “women” and “mother” to ensure an accurate representation of the data that has been collected. The issues identified within this work likely also act upon trans and non-binary individuals, who are also subject to added intersecting stigmas due to being gender minorities. All pregnancy-abled bodies are valid and there is a critical need for more research on the experiences of trans and non-binary birthing people.10

This scoping review aims to understand the range and depth of the existing literature on maternal mortality review committees' work with a particular focus on if and how they are addressing racism. After charting the literature, this review will identify findings and key themes of the literature, discuss the gaps in research and practice, and examine the implications for future research and practice.

**Background**

**Definitions**

When discussing maternal health and mortality, it is important to utilize proper terminology (Panel 1). Maternal deaths are defined by the World Health Organization (WHO) as “the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its
management but not from accidental or incidental causes.” In comparison to maternal deaths, pregnancy-related deaths include all deaths during pregnancy and up to 42 days postpartum irrespective of the cause of death. Likewise, maternal mortality, pregnancy-related mortality, and pregnancy-associated mortality all refer to related but distinct concepts. Pregnancy-associated mortality which refers to the death of a woman during pregnancy or up to one year postpartum from any cause can be conceptualized as the bucket which holds pregnancy-related and maternal mortality (Appendix B). Pregnancy-related mortality and maternal mortality are subcomponents of pregnancy-associated mortality. Maternal mortality refers to the death of a woman during pregnancy or up to 42 days postpartum from causes directly related to or exacerbated by pregnancy. While maternal mortality only covers deaths up to 42 days postpartum, pregnancy-related mortality incorporates deaths up to one year postpartum. This paper will frequently use the term “maternal mortality” to refer to both maternal mortality and pregnancy-related mortality.

<table>
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<th>Panel 1: Definitions related to maternal and pregnancy-related mortality</th>
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<td><strong>Maternal death</strong></td>
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*Adapted from Alkema et al. 2015*
Maternal health and mortality

According to the World Health Organization (WHO), maternal health refers to the health of women during the critical time periods of pregnancy, childbirth, and the postnatal period. Maternal health encompasses physical, mental, emotional, and social health. Strong maternal health is characterized by the absence of maternal morbidity and mortality. Maternal morbidity describes any short- or long-term health problems that result from pregnancy or childbirth while maternal mortality refers to the death of a woman from pregnancy or childbirth complications. Maternal morbidity, and specifically severe maternal morbidity, which is defined as life-threatening complications, is an important component of the conversation surrounding maternal health, particularly because for every maternal death there are 50-100 women that experience maternal morbidity. However, although maternal morbidity must also be addressed, the focus of this thesis will be on maternal mortality.

Across the world, high rates of maternal mortality have long been recognized as a major public health concern. Maternal mortality, along with infant mortality, is a critical indicator of population health. Despite being discussed at the 1987 Safe Motherhood Conference, the 1994 International Conference on Population and Development, the 1995 Fourth World Congress on Women, and the 1997 Safe Motherhood Technical Consultation worldwide maternal mortality rates remain unacceptably high. There have been major improvements in maternal mortality, with maternal deaths declining by 47% between 1990 and 2015. Similarly, in the same time frame the global maternal mortality ratio declined by 43.9%. Despite these improvements, an estimated 295,000 women died during and following childbirth in 2017. The high rates of global maternal mortality are largely driven by deaths in developing nations, with approximately 99% of global maternal deaths occurring in developing nations. However, among high-income nations
the United States is uniquely situated as an outlier of peer nations due to its high rates of maternal mortality.\textsuperscript{1}

The United States has the highest rate of maternal mortality of all developed nations, despite spending more than any other country on hospital-based maternity care.\textsuperscript{1,6} In 2018 in the United States the maternal mortality ratio (MMR) was 17.4 deaths per 100,000 live births, which equates to roughly 660 maternal deaths.\textsuperscript{1,11} This was double the MMR in France, which had the next highest MMR of comparable high-income nations.\textsuperscript{1} In the same year, of the 35 member countries of the Organisation for Economics Co-operation and Development with available data, the United States ranked 33\textsuperscript{rd} for maternal mortality above only Mexico and Colombia.\textsuperscript{19} In fact, for several years maternal mortality has been on the rise in the United States.\textsuperscript{20} Though this increase is in part due to better case ascertainment it also reflects a true increase in maternal deaths.\textsuperscript{20} Moreover, the high rates of maternal mortality that continue to be observed in the United States are truly unfortunate given that according to the CDC four out of every five pregnancy-related deaths are preventable.\textsuperscript{21}

There are also stark racial and ethnic disparities related to maternal mortality (Figure 1). Black and American Indian and Alaska Native (AIAN) women have much higher rates of pregnancy-related deaths, which include maternal deaths up to a year postpartum, compared to Hispanic and non-Hispanic white women.\textsuperscript{22} Pregnancy-related mortality rates are twice as high for AIAN than for non-Hispanic white women (referred to hereafter as white women).\textsuperscript{22} In 2016-2018, the pregnancy-related mortality ratio (PMMR) for white women was 13.7 deaths per 100,000 live births while it was 26.5 deaths per 100,000 live births for AIAN women.\textsuperscript{23} The statistics are even more devastating for non-Hispanic Black women (referred to hereafter as Black women). Pregnancy-related mortality rates are three times higher for Black women than for white women.
and Black women are three to four times more likely to die from a pregnancy-related causes than white women.\textsuperscript{2,11,22,24} Likewise, from 2016-2018 the PMMR for Black women was 41.4 deaths per 100,000 live births.\textsuperscript{23} Unfortunately, rather than seeing improvements in these numbers, deaths amongst Black mothers have continued to climb. In 2020, while the overall MMR was 23.8 deaths per 100,000 live births, for Black women it was 55.3 deaths per 100,000 live births or 2.9 times the rate for white women.\textsuperscript{25} In fact, for the past 100 years the Black-white gap in maternal mortality has increased.\textsuperscript{11} In 1915, the MMR for Black women was 1.8 times that of white women and by the 1940s this number was 2.5 times higher.\textsuperscript{11} In 2018, the Black-white gap remained at 1940s levels and has since climbed to 2.9 in 2020.\textsuperscript{11,25} This widening gap is largely due to substantial improvements in maternal health outcomes for white women but not for Black women.\textsuperscript{26}

Figure 1:
Pregnancy-Related Mortality (per 100,000 live births) by Race/Ethnicity 2016-2018

Reproduced from Hill et al. 2022
Regrettably, factors that are often protective such as higher educational attainment and/or socioeconomic status (SES) do little to shelter Black women from higher rates of death. The PMMR for Black women who have a college education or higher is 5.2 times the PMMR for white women with the same educational attainment.\textsuperscript{22} Most surprisingly though, is that the PMMR for Black women with a college education or higher is 1.6 times as high as the PMMR for white women with less than a high school diploma.\textsuperscript{22} In other words, Black women who have attended college and/or graduate education are still more likely to die due to pregnancy and/or childbirth than are white women who have not completed high school. Evidently, the United States is not only suffering from a maternal mortality epidemic but also a healthy equity crisis. Though it is important to recognize all racial and ethnic disparities in maternal health, for the purpose of this thesis, I will focus on Black maternal health.

A discussion of maternal mortality would be incomplete without an overview of the primary drivers of maternal and pregnancy-related deaths. First, it is important to note the timing of pregnancy-related deaths. When looking at pregnancy-related deaths in the United States almost half of these deaths (48%) occur either during pregnancy or at the time of delivery.\textsuperscript{11} More specifically, 31% of the deaths occur during pregnancy and 17% at the time of delivery.\textsuperscript{11} When looking at a larger time frame, 36% of deaths occur at delivery or in the week after.\textsuperscript{3} The remaining 36% of pregnancy-related deaths occur between one week and one year postpartum.\textsuperscript{3} In the United States, the primary causes of pregnancy-related deaths are postpartum hemorrhage; infections and sepsis; cardiovascular events including arterial and venous embolism, stroke, pre-eclampsia and eclampsia, cardiomyopathy, and heart disease; adverse reactions to anesthesia; amniotic fluid embolism; and non-cardiovascular conditions, such as diabetes mellitus and breathing issues.\textsuperscript{27} Within these primary causes of maternal death and injury, Black women have poorer outcomes
than white women (Figure 2). For pre-eclampsia, eclampsia, placental abruption, placenta previa, and postpartum hemorrhage, Black women had a case-fatality rate that was 2.7 to 3.3 times the rate of white women, depending on the specific complication. Similarly, Black women had PMMRs for these same conditions that ranged from 2.5 to 3.9 times the PMMR of white women.

At the same time, it is important to note that the differences are not a result of a higher prevalence of the conditions in Black women relative to white women. This same nationally-representative study found that the prevalence of these conditions in Black women was not significantly statistically different than the prevalence in white women.

Racism and social and structural determinants of health

Increasingly, social determinants of health (SDOH) have been explored as a mechanism by which racial and ethnic disparities in maternal health are created. Social determinants of health,
which are defined by the United States Department of Health and Human Services as “the conditions in the environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks,” play a central role in contributing to health disparities and inequities.\textsuperscript{31,32} SDOH are frequently grouped into five domains, which include economic stability, education access and quality, health care access and quality, neighborhood and built environment, and social and community context.\textsuperscript{31} Similarly, structural determinants of health are the root cause of health disparities and inequities as they form the basic foundation upon which SDOH are created.\textsuperscript{33} Structural determinants of health include the governing process, cultural norms, and economic and social policies.\textsuperscript{5,33,34} Together, these structures and systems create the groundwork that gives rise to and defines the distribution of SDOH.\textsuperscript{5} Although race is widely recognized as a social determinant of health, rarely does research study how its derivative – racism – acts as both a social and structural determinant of health.\textsuperscript{35–37}

In their 2015 systematic review and meta-analysis of racism’s role as a determinant of health, Paradies et al. defined racism as “organized systems within societies that cause avoidable and unfair inequalities in power, resources, capacities, and opportunities across racial or ethnic groups.”\textsuperscript{38} Racism includes both blatant discriminatory beliefs and practices and more subtle and insidious societal structures.\textsuperscript{32,38} Racism occurs at multiple levels, including the personal or internalized, interpersonal, institutional, systemic, and structural levels.\textsuperscript{38,39} More recently, evidence has accumulated that demonstrates racism’s ability to impact health via several pathways including adverse cognitive and emotional processes and reduced participation in health-promoting behaviors among others.\textsuperscript{38} Together, these pathways can lead to the “weathering” of the body and result in poor health outcomes.\textsuperscript{8} However, although there is a growing body of literature
on racism’s role in producing poorer mental and physical health in communities of color, there is little research on how racism specifically impacts maternal health.\textsuperscript{38} Though the literature on racism’s influence on maternal health is sparse, some researchers have begun to explore and explain the historical roots of poor maternal health for Black women. In particular, the Restoring Our Own Through Transformation (ROOTT) theoretical framework establishes the web of causation between historical and contemporary SDOH and maternal health (Figure 3).\textsuperscript{5,40} This framework illustrates how SDOH such as education, housing, safety, and income are rooted in historical, systemic, structural, and political forces created by the legacy of slavery and structural racism.\textsuperscript{5,40}

**Figure 3: ROOTT Theoretical Framework\textsuperscript{40}**

**Web of Causation**

*Structural and Social Determinants: Impact on Health*

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*Figure 2. This figure portrays the theoretical framework developed by Roach\textsuperscript{40} that identifies structural and social determinants of maternal and infant mortality in the United States. Structural determinants are those depicted in black boxes and connected by dashed lines, which in turn shape the distribution of social determinants, which are depicted in pink circles and connected by solid lines.\textsuperscript{4} (Reproduced from Roach 2016)*
Maternal Mortality Review Committees

In response to the high levels of maternal mortality in the United States, many states established Maternal Mortality Review Committees. Although some states had established MMRCs as early as the 1930s, by 1980 many of the established MMRCs were essentially defunct.\textsuperscript{41,42} While in 1968 there were 44 states and the District of Columbia with MMRCs, a 1988 survey found that only 27 states still had active MMRCs.\textsuperscript{42} This decline in active MMRCs is largely attributed to their success, as maternal deaths declined after their implementation.\textsuperscript{41,42} However, as maternal mortality has come back into focus as a primary concern in the United States, MMRCs have seen a resurgence.\textsuperscript{41} As of 2022, 49 states, 2 cities, and the District of Columbia have established either formal MMRCs and/or legal requirements to review pregnancy-related deaths.\textsuperscript{41} However, even with the revival of MMRCs, maternal deaths remain high.

Modern MMRCs are interdisciplinary teams composed of health officials, epidemiologists, obstetric, gynecological, and maternal-fetal health specialists, mental and behavioral health providers, forensic pathologists, hospital association leaders, patient advocacy groups, and community-based organization representatives.\textsuperscript{43,44} MMRCs convene at the state or local level and are tasked with comprehensively reviewing pregnancy-associated deaths to adjudicate whether they were pregnancy-related deaths.\textsuperscript{43,44} MMRCs utilize several data sources to better understand the causes and factors that influence maternal deaths.\textsuperscript{45} MMRCs initiate their work by identifying all pregnancy-associated deaths, or in states with high numbers of deaths and/or a lack of resources a portion of them, that have occurred in the last year.\textsuperscript{41} MMRCs then comprehensively collect and review data on each death to determine whether the death was pregnancy-related.\textsuperscript{41,44} A more thorough analysis is then conducted on pregnancy-related deaths to determine the physiological cause of death and the underlying patient-, provider-, facility-, system-, and community-level
factors that contributed to the death. Many, but not all, MMRCs also determine whether the death was likely preventable. MMRCs then utilize this data to establish recommendations to inform the implementation of various interventions. Ultimately, the overarching goal of MMRCs is to identify factors that contributed to maternal deaths and address these factors to reduce the number of preventable maternal deaths.

Intersectionality

Throughout this thesis, an intersectional lens will be utilized to view and critique the work of the MMRCs. Intersectionality, which is rooted in Black feminist theory, is a framework that guides methodological considerations, research, and policy paradigm. Intersectionality posits that people’s multiple intersecting identities are not simply additive but that they intertwine to produce unique and overlapping systems of discrimination and oppression. This framework operates to guide the understanding of the “experiences of multiply-marginalized individuals.” Intersectionality is a useful framework for examining the simultaneous impact of interconnected socially-constructed identities, such as race, gender, and class. Although definitions of intersectionality are fluid and continue to evolve and change, fundamentally there are three key tenets of intersectionality: 1) the assumption that all individuals have multiple convergent identities, 2) each identity is a confluence of power and oppression, and 3) identities are created by socio-cultural factors and therefore are not immutable. Utilizing an intersectional framework is critical when analyzing initiatives to reduce Black maternal mortality, as the majority of policies fail to adequately address the cumulative impact of living in a gendered and racialized society.

This thesis aims to map the current literature on the work of maternal mortality review committees, with a specific focus on the work that is being done to address racism’s role in producing high rates of maternal mortality in the Black community. In particular, this thesis hopes
to add to the small body of literature centered around racism’s impact on maternal deaths and offer insights into future work that must be done to end this tragic epidemic.

Positionality Statement

The author is a Black, African-American cisgender heterosexual woman. She was born in Pasadena, California, and was raised by her widowed mother. As a woman who has never been pregnant or given birth to children, Shannon acknowledges that she lacks the lived experience of the community that is the focus of her research. However, she is deeply passionate about improving the health of Black mothers given that it is an issue that affects her, her loved ones, and others who share her identity.

Methods

Research design

The purpose of this modified qualitative scoping review study was to understand how Maternal Mortality Review Committees are addressing racism’s role in contributing to high rates of Black maternal mortality in the United States. The primary research question this paper aimed to answer is: What are MMRCs doing within their work to address racism and reduce the maternal mortality rate of Black women? I sought to map the current literature on Maternal Mortality Review Committee work with a focus on committees that have attempted to address racism to reduce Black maternal mortality. By conducting a scoping review, I aimed to 1) identify the breadth of the existing literature, 2) descriptively summarize the current literature, and 3) determine gaps in the existing literature and research.

Scoping reviews have become increasingly popular as a method of synthesizing research. As such, several frameworks have evolved to guide the practice and application of scoping
reviews. Scoping reviews are similar in nature to systematic reviews, though they are less extensive and aim to map the body of literature rather than summarize best practices. This thesis utilized the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (the PRISMA-ScR) framework developed by the JBI Scoping Review Methodology Group. The PRISMA-ScR framework is a rigorous and transparent structure for conducting scoping reviews and was built upon the work of previous frameworks including the Arksey & O’Malley and Levac frameworks. The review consisted of 9 phases as outlined in the PRISMA-ScR framework and included 1) defining and aligning the objective/s and question/s 2) developing and aligning the inclusion criteria with the objective/s and question/s 3) describing the planned approach to evidence searching, selection, data extraction, and presentation of the evidence 4) searching for evidence 5) selecting the evidence 6) extracting the evidence 7) analysis of the evidence 8) presentation of the results and 9) summarizing the evidence in relation to the purpose of the review and noting implications of the findings.

Information sources, search methods, and inclusion and exclusion criteria

An electronic literature search was constructed with the guidance of a public health librarian trained in medical and public health database searches. A total of four electronic databases available through the Harvey Cushing/John Hay Whitney Medical Library were accessed. Ovid MEDLINE, Scopus, PubMed, and Web of Science were searched using a systematic process (Figure 4). Using title, abstract, or author-specified keywords search the following search terms were utilized: 1) “maternal mortality review” OR “maternal mortality committee” OR “maternal mortality review committee” AND 2) “action” OR “success” OR “implementation” OR “policy”
OR “measure” OR “progress” OR “achieve” OR “achievement” OR “effect” OR “solution” OR “impact” OR “improve” OR “improvement.”

All search results were initially screened for a title and abstract. Any result without either a title or an abstract was not considered for this review. Only articles published in the English language were eligible for inclusion in this review due to limitations with translation capabilities. All potentially eligible citations were uploaded to Rayyan, a web-based systematic review software, which was utilized to screen for duplicate articles automatically and manually. After duplicate citations were resolved, the remaining citations’ titles and abstracts were screened for relevancy. All relevant citations were procured for a review of the full-text article and uploaded to Zotero, an open-source citation management software. Articles were eligible for inclusion if they broadly focused on the work of maternal mortality review committees in the United States at either the local or state level. There was no restriction placed on the publication date. Articles were excluded if they 1) did not evaluate the work of maternal mortality review committees, 2) were focused on maternal mortality review committees outside of the United States, 3) were solely descriptive epidemiology-based and/or case studies, and 4) were not in English.

Data extraction and analysis

A data extraction tool was created to document the following relevant information from every included study, report, or paper: title, author(s), state/region of focus, explicit mention(s) of racism, aim/goal of the study, legislation mentioned, recommendations made, and content for qualitative analysis. Key themes were also identified and documented. All papers were reviewed utilizing an intersectional framework.
Figure 4: PRISMA Flowchart of Study Selection

- Records identified through database searching (n = 298):
  - Ovid MEDLINE (n = 133)
  - Scopus (n = 21)
  - Pubmed (n = 80)
  - Web of Science (n = 64)

- Unique records screened (n = 172):
  - 126 records excluded as duplicates

- Full-texts articles assessed for eligibility (n = 37):
  - 135 records excluded: not relevant (n = 135)
  - 9 full-text articles excluded: unobtainable (n = 1)
    not relevant (n = 8)

- Included articles (n = 28)
Results

Search and selection of articles

The initial database searches conducted in October of 2022 yielded 298 potentially eligible papers. After the exclusion of duplicate articles, 172 unique articles remained. The abstracts of all 172 papers were screened using eligibility criteria and 135 were excluded. In total, 37 articles met all inclusion and exclusion criteria and were selected for inclusion in this paper. During data characterization of the full-text articles and the data extraction process, another 9 articles were excluded. In total, 28 articles were included in this scoping review. The majority of articles excluded prior to full-text review were struck because they were conducted outside of the United States.

General characteristics of included articles

A total of 28 articles were identified that had a broad focus on the work of maternal mortality review committees. The articles were published between 2004 to 2022 with approximately 60% (n = 17) being published since 2019. Of the 28 articles, 25.0% (n = 7) explicitly mentioned racism and an additional 10 articles (35.7%) mentioned racial and/or ethnic disparities in outcomes. A total of 9 articles (32.1%) mentioned either state or federal legislation that had been either introduced or enacted to combat high rates of maternal mortality. Of the 9 articles that mentioned legislation, 2 (22.2%) noted only state-level legislation, 5 (55.5%) noted only federal-level legislation, and 2 (22.2%) noted both state- and federal-level legislation. Of the 28 included articles, 9 (32.1%) focused on the work of MMRCs in one state, 4 (14.3%) focused on the work of MMRCs in 2 or more states, 3 (10.7%) had a national focus, and the remaining 12 articles (42.9%) did not specify a focus state and/or region. Three of the 28 articles (10.7%) analyzed centered on specific causes of death.
Findings and Key Themes

The included studies largely fell into one of three overarching categories: 1) the key components of an MMRC and/or how to (re)establish an MMRC, 2) how to improve existing MMRCs, and 3) reviews of the recommendations put forth by MMRCs. There was of course some overlap between categories within each individual paper, as well as some articles that did not fall under any specific category. The remaining papers that were not categorized into one of the three key themes covered topics such as comparing the review processes of state-level MMRCs to those of the regional perinatal centers, assessing specific contributory factors to maternal deaths, and comparing MMRC processes between states.64,67,75

Key components of (re)establishing maternal mortality review committees

Several of the included studies focused primarily on the core elements that are necessary to establish and/or re-establish a fully functioning MMRC.45,61,62,72–74,76,77 Within these articles, defining features of a fully functional MMRC included a multidisciplinary committee, an understanding of the core purpose of an MMRC, developing a rigorous and well-defined methodology for comprehensive case identification, establishing evidence-based recommendations and guidelines, taking action, and having strong legal protections. One key consideration that was frequently featured was the need to assess cases in a timely manner. As will be discussed in the next section, many MMRCs struggle to review cases within an appropriate time frame due to several barriers. In addition to these commonly recognized features, some articles also emphasized the need to work toward establishing strong partnerships with both public and private organizations.45,62,73,74 Many of the papers that were centered on the process of instituting MMRCs also heavily emphasized the need for the process to be iterative, as the ultimate
goal of an MMRC is continuous quality assessment and improvement.\textsuperscript{76,77} Lastly, almost all of these papers highlighted the regular issuing of formal reports of findings as a requirement for a strong MMRC.\textsuperscript{45,60,77}

**Improving maternal mortality review committees**

Another common theme amongst the included studies was considerations for improvements to existing MMRCs.\textsuperscript{9,57,58,65,68,78,79} Many of the studies focused on the establishment of MMRCs underscored several barriers to success and while some offered solutions, others did not. Obstacles noted in these papers included the inability to achieve and/or sustain review and prevention of pregnancy-related deaths, lack of funding and resources, difficulty accessing medical records and/or other data sources, the absence of standard data entry systems, measurement issues, paucity of legal protections, and limited networking with peer committees.\textsuperscript{45,62,74,76} Within the articles focused on improving existing MMRCs, two areas of improvement emerged.

The first area of improvement identified is related to issues in measurement. Historically, the CDC has managed two national data sources of maternal deaths, the National Vital Statistics System (NVSS) and the Pregnancy Mortality Surveillance System (PMSS). However, because these two systems rely on different sources for data about maternal deaths there have been inconsistencies in identifying maternal, pregnancy-associated, and pregnancy-related deaths.\textsuperscript{20,80} Additionally, these different sources of data reduced MMRCs’ abilities to compare findings across MMRCs operating in different regions. In order to address this, several papers stressed the need for standardized data collection and measurements.\textsuperscript{20,45,80} One solution that was proposed and has since been adopted as a means to address the desire for standardized measurements is the Maternal Mortality Review Information Application (MMRIA, or “Maria”).\textsuperscript{20,45} MMRIA is a standardized
data collection and management system developed by the CDC to support their essential review functions.44

The second area of improvement recognized related to broadening the type of data collected in order to gain a fuller understanding of the contributory factors of death and ultimately lead to enhanced recommendations. In particular, two studies emphasized that the role of the nursing care team should be documented within MMRC files and/or practitioners within the field should be members of MMRCs.68,78 This was identified as especially important given nurses, nurse practitioners, and midwives' roles in having extended interaction with patients and therefore often being the first to identify and respond to early warning signs.68,78 Given this, the nursing care team plays a crucial role in preventing maternal deaths therefore data must be collected on this role in order to instruct guideline formation.68,78 Another area that was spotlighted as needing better data collection related directly to ascertaining the role that SDOH play in contributing to maternal deaths.9,20,57,58,60,63,65,66,68 In particular four, articles mentioned the need to include measures of racism within maternal mortality review committee data collection processes.9,20,57,61,63 The four papers varied in terms of the level of racism mentioned and included structural, interpersonal, internal, and institutional racism.9,20,57,61 Five other articles note the importance that geographical place, sociospatial location, and community factors play in contributing to high rates of maternal death and therefore the necessity to collect measures of these factors during the maternal mortality review process.20,57,58,63,66 Finally, a handful of articles noted that is necessary that new measurement tools be developed that are capable of assessing the role of mental health and substance use disorder in contributing to pregnancy-related and pregnancy-associated deaths.20,58,65 Some of the methods identified to address SDOH during maternal mortality review include measurement tools for inclusion in MMRIA (specifically for racism/discrimination), home
interviews with the surviving spouse/partners and family, and the inclusion of midwives on the committee.9,60,68,79

Reviews of recommendations put forth by maternal mortality review committees

Many of the articles focused on various components of the recommendations that have previously been developed by MMRCs. It is important to note that almost every article included in this review contained at least a portion of the article dedicated to reviewing recommendations. The articles specifically categorized as “reviews of recommendations” simply had a heavier focus on this component than did the other articles. One such article that focused on the recommendations of MMRCs utilized the 4R Framework to code and thematically organize quality improvement opportunities identified by the MMRCs.69 The paper categorized recommendations into three of the four 4R Framework domains (Readiness, Recognition, and Response) and identified several themes of the recommendations.69 Some themes included facility preparation for care coordination, standardized protocols, missed or discounted signs or symptoms, and timing of treatment among several others.69 Similarly, Petersen et al. classified MMRC recommendations into several categories including community, health facility, patient-level, provider-level, and system-level factors.70 Ultimately, all three papers recognized that prevention of maternal mortality requires numerous recommendations and interventions that target all levels of care as well as non-medical factors.69–71

Discussion

This scoping review mapped the existing published literature on the work of maternal mortality review committees’ efforts to improve maternal health outcomes. Although the objective of this review was to identify work being conducted by MMRCs to address racism’s role in producing
high rates of maternal mortality in Black women, ultimately based on the literature this review found that there is a major gap in MMRCs addressing and explicitly stating racism’s role in maternal mortality. To the best of our knowledge, this scoping review represents an initial overview of the functions of MMRCs as they relate to efforts to tackle the United States’ long history of racism and its impacts on maternal health outcomes. This discussion examines the gaps in research and practice.

Although some works did identify racism as a contributing factor to maternal mortality, 21 of the 28 articles made no mention of racism and/or discrimination. Rather, more commonly the authors mentioned racial and/or ethnic disparities without distinguishing racism as the root cause of these disparities. It is vital that *racism* and not *race* is identified as the contributory factor to maternal mortality for several reasons. It is particularly important that this fact is recognized and acted upon within the work of MMRCs as these committees generate the body of evidence and recommendations that shape and instruct policy, resource allocation, guideline development, and the implementation of interventions and programs.\cite{9,63,75} Without recognizing and responding to racism, MMRCs are actively ignoring the upstream drivers of maternal deaths.\cite{53}

One potential reason that MMRCs may not address racism as a contributing factor to maternal deaths may result from the “over medicalizing” of maternal deaths.\cite{63} As Allan demonstrates, MMRCs often generate clinical guidelines but rarely create recommendations aimed at addressing SDOH or their upstream causes, such as racism.\cite{63} This is likely due to MMRCs’ “misperception of, discomfort with, or lack of experience, discussing the role community conditions play in maternal health” and further underscores the need to have committee members from various disciplinary backgrounds, including consumer advocacy groups.\cite{63,79} Consumer advocacy groups are frequent participants in Fetal and Infant Mortality Review (FIMR) and play an important role
in embracing the issue and pushing for policy and systems change. MMRCs could benefit from adopting some of these principles from FIMRs. Addressing racism’s role in maternal mortality in the Black community will also require MMRCs to establish stronger partnerships with social and political organizations as racism both within and outside of the medical institution impacts maternal health. Likewise, MMRCs could begin the arduous task of confronting racism’s influence on maternal health by implementing a health equity framework within their review process. A health equity framework is a multi-level framework that moves beyond identifying individual causes of maternal mortality and seeks to understand the proximal and distal causes of maternal mortality. By applying a health equity lens to their work and recommendations, MMRCs could address racism and other underlying causes of SDOH which contribute to maternal deaths outside of the clinical realm which is crucial as ending preventable maternal mortality cannot and will not be solved at just the clinical level.

Another insufficiency of the current work of MMRCs is the lack of intersectionality. Though many of the papers stated that MMRCs identify both medical and non-medical factors that contribute to maternal deaths, a review of the articles demonstrated that this work is siloed. More specifically, a number of the included papers referenced disparities related to race/ethnicity, SES, and educational attainment, however, almost all of them analyzed these components in isolation. In doing so, the work of MMRCs is limited in its ability to influence maternal deaths as studying these conditions in isolation negates the real-world lived experiences of individuals’ ongoing intersecting identities. In attempting to analyze these contributing factors independently of one another, MMRCs fail to recognize the unique influences of gendered racism and classism, which cannot be disaggregated or understood separately from each other. Because intersectionality recognizes the complexity of identity, social position, and inequality, it promotes a focus on the
structural and systemic drivers of health inequalities, such as racism.\textsuperscript{81,82} It is paramount that MMRCs recognize and center intersectionality within their work as the recommendations they generate may have differential impacts on individuals based on their unique intersecting identities. Ultimately, an intersectional lens pairs hand-in-hand with the use of a health equity framework as they both aim to contextualize mothers not just as individuals but as members of a larger societal community.

**Conclusion**

*Summary of findings*

This scoping review charted the literature on MMRCs’ work to reduce maternal mortality by addressing racism. I identified a severe paucity of work specific to addressing racism’s role in producing high rates of maternal mortality among Black women. Instead, the majority of work conducted by MMRCs focused on providing guidance and instructional protocols for the establishment or reestablishment of MMRCs, mechanisms to improve the flow of and/or enhance the surveillance and work of existing MMRCs, and evaluating recommendations generated by various MMRCs. The review highlighted how ignoring racism’s role in Black maternal mortality does a great disservice to millions of women and families across the United States. Racism underlies many, if not all, health inequalities and it must be appropriately addressed through the work of MMRCs.

This review also identified a severe lack of policy initiatives aimed at reducing Black maternal mortality by eliminating racism’s impact on maternal health. Of the 14 state- or federal-level bills named in the nine articles that made mention of legislation, only 3 bills explicitly mentioned racism, discrimination, and/or SDOH.\textsuperscript{9,20,60,62,63,66,68,74} Even more disheartening, only
one of these three bills has been passed and made into law. Clearly, more policy-level initiatives are needed to adequately address the adverse impact of racism on the health of Black mothers. In addition, it is vital that legislative and policy-based changes are based on robust data.

**Implications for future research and practice**

In general, more research on the pathways of how racism at all levels impacts maternal health outcomes is necessary. Though this research would not necessarily fall under the purview of MMRCs, as MMRCs do not typically conduct research, it would provide them with a more robust evidence base for establishing guidelines and recommendations. In particular, qualitative research designs could help to provide vital missing contextual knowledge about the role of community and SDOH in influencing maternal mortality. Additionally, there is a need for more quantitative research on the efficacy of MMRC guidelines and policies/procedures based upon them at reducing maternal mortality. Though there is strong evidence to support the use of care bundling, many other initiatives lack substantial data on their efficacy post-implementation.\(^{20,59}\)

Moreover, to effectively tackle racism’s role in the deaths of Black mothers MMRCs must collect better data. All MMRCs should utilize MMRIA and ensure that the newly established section related to racism is accurately completed for every maternal death.\(^9\) MMRCs must also ensure that they confront implicit bias that may be present within the committee itself or the review process. This can be accomplished in several ways such as by requiring implicit bias training for all committee members and moving the women’s race/ethnicity to the end of the case presentation as Mississippi has recently done.\(^{61}\)

MMRCs should also work to respond to racism by establishing and/or strengthening partnerships with private organizations, such as their state obstetrical and gynecological societies,
and advocacy groups like the Black Mamas Matter Alliance.\textsuperscript{83} By strengthening relationships with such organizations, MMRCs can provide critical data and guidance that enables these organizations to lobby and press for the enactment of policy measures that address racism in maternal such as the Black Maternal Health Momnibus Act of 2021. This model of MMRCs partnering with private institutions has been shown to be effective in Georgia where they successfully lobbied for the passage of Georgia Senate Bill 273 which established support and legal protections for the MMRC.\textsuperscript{74} Additionally, MMRCs should utilize partnerships with private organizations, particularly the American College of Obstetricians and Gynecologists to bolster support of and increase circulation of their recommendations.\textsuperscript{84} Furthermore, MMRCs should continue to establish recommendations that call for the implementation of care bundles that directly address racism in maternal health such as the Reduction of Peripartum Racial/Ethnic Disparities bundle created by the Alliance for Innovation on Maternal Health.\textsuperscript{85,86} Lastly, MMRCs should continue to think creatively about systems-level changes that can work to address racism outside of the clinical setting. To truly achieve health equity, MMRCs must find solutions to the structural and social determinants of health as outlined in \textbf{Figure 3}.

Additionally, MMRCs need to improve the dissemination of their formal reports. The majority of articles included in this review emphasized the importance of MMRCs regularly publishing formal reports of their findings and recommendations. However, in this review, I identified only seven articles published directly by state MMRCs. In order for MMRCs to be effective, they must ensure their reports are regularly published and shared widely.

\textit{Study limitations}

This review had several limitations. It is possible, and in fact highly likely, that relevant sources of information were not identified during the search process and therefore were not
included in this review. Although four databases were searched for review, several others were not utilized. Additionally, grey literature was not analyzed in this review, and citation, snowball, and/or web searching were not utilized. Because of this, it is likely that relevant sources were omitted. Moreover, the findings of this review may not be generalizable to all MMRCs as only 18 of the 50 U.S. States are represented within the identified articles. This may be a result of inadequate search terms or may reflect a true lack of publications from other states. However, although only 18 states were represented in this review, all major regions of the United States were represented by these states including the West (West Coast, Pacific Northwest, and Mountain West), the Midwest, the South (East South Central and South Atlantic), and the Northeast (New England). Lastly, because scoping reviews do not include a rating of the quality of evidence I am unable to grade the implications for practice and policy identified within this review.
Works Cited


## Appendix A: Included Studies

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Year of Publication</th>
<th>State(s)</th>
<th>Explicitly Mentions Racism</th>
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<td>Decisions Required for Operating a Maternal Mortality Review Committee: The California Experience</td>
<td>Elliot K. Main</td>
<td>2012</td>
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<td>Development of a Tool to Measure Nurse Clinical Judgement During Maternal Mortality Case Review</td>
<td>Marla J. Seacrist, Danielle Noelle</td>
<td>2016</td>
<td>N/A</td>
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<td>Early Lessons from Maternal Mortality Review Committees on Drug-related deaths – time for obstetrical providers to take the lead in addressing addiction</td>
<td>Marcela C. Smid, Charles W. Schauburger, Mishka Terplan, Tricia E. Wright</td>
<td>2020</td>
<td>N/A</td>
<td>No</td>
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<td>Eliminating Preventable Maternal Deaths in the US: Progress Made and Next Steps</td>
<td>Torri D. Metz</td>
<td>2018</td>
<td>N/A</td>
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<td>Enhancing Obstetric Safety Through Best Practices</td>
<td>Catherine Squire Epps, Sacha B. Han, Alison J. Haddock, A. Gretchen Butler, Christina M. Davidson, Lisa M. Hollier</td>
<td>2020</td>
<td>N/A</td>
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<td>Enhancing Reviews and Surveillance to Eliminate Maternal Mortality</td>
<td>Tegan Callahan, Julie Zaharatos, Amy St. Pierre, Peter T. Merkt, David Goodman</td>
<td>2021</td>
<td>N/A</td>
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<td>- Maternal Deaths Act of 2018</td>
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<td>Epidemiology of Maternal Morbidity and Mortality</td>
<td>Adi Hirshberg, Sindhu K. Srinivas</td>
<td>2017</td>
<td>N/A</td>
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<td>Examination of a death due to cardiomyopathy by</td>
<td>Cynthia S. Shellhaas, Julie Zaharatos, Linda</td>
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<td>a maternal mortality review committee</td>
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<td>FIMR and Other Mortality Reviews as Public Health Tools for Strengthening Maternal and Child Health Systems in Communities: Where Do We Need to Go Next?</td>
<td>Ellen Hutchins, Holly Grason, Arden Handler</td>
<td>2004</td>
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<td>Cynthia J. Berg</td>
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<td>Lessons Learned Serving on a Long-Standing Maternal Mortality Review Committee</td>
<td>Frank W. J. Anderson, Robert J. Sokol</td>
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<td>Maternal Mortality in the United States: Updates on Trends, Causes, &amp; Solutions</td>
<td>Ai-ris Y. Collier, Rose L. Molina</td>
<td>2019</td>
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<td>Maternal Mortality: Beyond Overmedicalized Solutions</td>
<td>Katie R. Allen</td>
<td>September 22 2019</td>
<td>N/A</td>
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<td>Maternal Care Access &amp; Reducing Emergencies Act (Maternal CARE) Act</td>
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<td>Maternal Transport: An opportunity to improve the system of-risk appropriate care</td>
<td>Carla L. DeSisto, Reena Oza-Frank, David Goodman, Elizabeth Conrey, Cynthia Shellhaas</td>
<td>February 5 2021</td>
<td>Ohio</td>
<td>No</td>
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<td>Partnering of Public, Academic, &amp; Private Entities to Reestablish Maternal Mortality Review in Georgia</td>
<td>Michael K. Lindsay, David Goodman, Seema Csukas, Pat Cota, Tammy L. Loucks, Jane E. Ellis</td>
<td>September 2017</td>
<td>Georgia</td>
<td>No</td>
<td>Maternal Mortality Bill Georgia Senate Bill 273</td>
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<td>Reducing Maternal Mortality and Severe Maternal Morbidity Through State-based Quality Improvement Initiatives</td>
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<td>June 2018</td>
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- Preventing Maternal Deaths Act of 2018
- Rural MOMs Act
- Access to Maternity Care Act of 2018
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<td>Translating Maternal Mortality Review Into Quality Improvement Opportunities in Response to Pregnancy-Related Deaths in California</td>
<td>Christine H. Morton, Lucy R. VanOtterloo, Marla J. Seacrist, Elliot K. Main</td>
<td>March 2019</td>
<td>California</td>
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Appendix B: What do we mean by maternal mortality?

What do we mean by maternal mortality?

- **Pregnancy-associated mortality**: Deaths during pregnancy and up to one year postpartum.
- **Pregnancy-related mortality**: Deaths during pregnancy and up to one year postpartum that are related to pregnancy.
- **Maternal mortality**: Deaths during pregnancy and up to 42 days postpartum that are related to pregnancy.

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