

Pregnancy-related death disparities in non-Hispanic Black women

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Abstract

While the rate of pregnancy-related death steadily increases in the United States, this tragic outcome is disproportionately devastating US-born non-Hispanic Black women at a rate that is three to four times that of their White and non-Black Hispanic counterparts. These disparities persist despite controlling for variables such as socioeconomic status, education levels, and geographical location. Pregnancy-related deaths in Black women are largely cardiovascular in etiology, and while these complications also occur in women of other ethnic backgrounds, they often are more severe and more deadly in Black women. This population often lacks adequate prenatal care likely because they face personal and structural barriers. Reversal of barriers during the prenatal period, the implementation of medical protocols during delivery, and the assurance of close follow-up during the postpartum year are vital in improving outcomes. This article will detail seven specific concerns within perinatal care and pregnancy-related death, and offer potential solutions to addressing them. Pregnancy-related death in Black women is not as an isolated event, but rather is one adverse outcome that exists on a broad spectrum of adverse outcomes. Now is the time to reckon with the reality that our nation's Black women are dying at a disproportionate rate compared to women of other ethnicities due to pregnancy-related complications and suffering lifelong consequences even if they escape this fatal outcome. This is a call to action to understand this deeply devastating, multi-factorial issue so we may strive to eliminate this highly preventable and tragic event altogether.

Keywords

African American health disparities, Black health disparities, healthcare inequalities, maternal health, obstetrics and gynecology, perinatal care, perinatal death disparities, pregnancy-related death, prenatal care, preventive care

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Introduction, maternal death

The number of pregnancy-related deaths (PRDs) in the United States steadily declined during the 20th century due to public health, technological, and medical advances (A PRD is defined as the death of a woman while pregnant or within 1 year of the end of a pregnancy—regardless of the outcome, duration, or site of the pregnancy—from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.¹); however, despite continued initiatives in these areas, there has been a reversal in these trends over the last few decades.² According to the CDC, roughly seven hundred women in the United States die each year from delivery or pregnancy-related complications. This number is likely an underestimation, as death certificates have often underreported or failed to capture a current or

recently pregnant state of a woman at the time of her death.³ Horon et al.³ examined death certificates, delivery and medical examiner records from 1993 to 2003 and found that 38% of maternal deaths were not reported. PRD is most often attributed to cardiovascular etiologies such as cardiomyopathy and cerebrovascular accidents, with other less-common etiologies including infections, hemorrhage, hypertensive disorders, and thrombotic

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pulmonary embolism.^{1,4} The CDC reported that from 2011 to 2015, roughly one-third of PRDs occurred during pregnancy, one-third during delivery or in the week that followed, and one-third in the year postpartum. Studies have found that 40% to 60% of PRDs occurring in the United States annually are considered preventable.^{1,5,6}

PRD in Black women

While PRD steadily increases in the United States, this tragic outcome is disproportionately impacting US-born non-Hispanic Black women, referred to in this paper as Black women, at a rate that is three to four times that of their White and non-Black Hispanic counterparts.^{1,2,4,5,7-9} Black women have higher pregnancy-related mortality ratios (PRMRs), defined as the number of PRDs per 100,000 live birth.¹ One study determined the PRMR of Black women as 40.2 deaths compared to 12.7 deaths for White women;⁷ another study found the PRMR for Black women as 42.0 compared to 12.3 for White women.⁶

While pregnancy at an advanced maternal age is associated with higher risks for PRD across ethnicities, Black women are at a higher risk for death when pregnant at this age compared to their White counterparts at the same age.^{1,4,7,9} Black women in their teen years experience maternal death at a rate that is 1.4 times higher than their White counterparts, while those ages 20–24 have a rate 2.8 times higher, and those in all other age ranges have a rate that is four times higher.⁷ One study found that Black women who gave birth at age 40 or older had a PRMR approaching 150 versus the PRMR of roughly 40 that was associated with women of other ethnicities in the same age group.⁹ Although the proportion of women giving birth at an advanced age is relatively low compared to younger age groups, it is imperative to note that the risk of poor outcomes grows at a more drastic pace for Black women.

The causes of PRD among Black women are largely cardiovascular in etiology, including cardiomyopathy, cardiovascular and coronary conditions, pre-eclampsia and eclampsia, as well as other etiologies such as hemorrhage and embolism.⁵ In addition, hypertension can occur during pregnancy in previously normotensive women in a condition called new-onset hypertension. Although Black women are diagnosed with new-onset hypertension at only a slightly higher rate than their White counterparts, they tend to be affected more severely and are three times more likely to experience fatal complications secondary to this including hemorrhage, seizures, and sometimes death.¹⁰

The disparities in PRD among Black women exist despite controlling for variables such as socioeconomic status,¹¹ education levels,^{1,7} and geographical location.¹² While some may argue that the lack of education can affect health-seeking behaviors, the PRMR for a Black woman with at least a college degree was 5.2 times that of their White counterparts.⁷ This multi-factorial issue of PRD

cannot be explained without considering social and medical challenges, which contribute to a higher rate of death in the prenatal, delivery, and postnatal periods for Black women.

Prenatal care

Overview

The prenatal period is a critical timeframe both for a developing fetus but also a mother, as many complications can arise during this period that lead to poor health outcomes. Women who lack prenatal care (PNC) in the first trimester have a five-fold increase in PRMR,¹ and therefore, screening and assessment for medical and psychosocial risk factors is vital for the health development of both the mother and baby. The American College of Obstetrics and Gynecologists (ACOG) recommends a comprehensive initial prenatal visit,¹³ which allows providers to understand a mother's overall health including her risk factors for myriad perinatal disorders such as cardiomyopathy, new-onset hypertension, or certain infections. If during the screening appointments, the mother is diagnosed or deemed at-risk for any, she can receive appropriate interventions to treat or prevent them. Management of many of these health issues is often straightforward, such as initiating an antibiotic for an infection or an antihypertensive medication for new-onset hypertension. Overall, PNC can serve as a critical step in promoting long-term health for the mother, potentially improving outcomes during the prenatal, delivery, and postpartum stages. However, stark racial disparities exist among pregnant women receiving PNC,^{1,14} as one study found that only 40% of Black women interviewed had received adequate care during this time.¹⁴

Barriers to care

Black women lack adequate PNC in part because they face a number of barriers that create challenges in accessing these services. Johnson et. al and York et al. each interviewed groups of Black women who had recently delivered an infant and pinpointed several "personal" and "structural" barriers that prevented these women from obtaining adequate PNC. Subjects reported personal barriers including substance abuse, psychosocial stressors, lack of family support, and housing problems as some of the most profound barriers to obtaining PNC.^{14,15} Many also noted structural barriers including lack of transportation, limited childcare for their children during appointments, or inability to locate or financially afford care.^{14,15} A more recent study from 2017 by Gadson et al. indicates that these disparities in PNC persist, as Black women are still less likely to access timely and affordable care and are more likely to face barriers such as unfavorable wait time and availability of appointments when compared to their

White counterparts.¹⁶ These authors report that in the year before birth, Black women were more likely than White women to experience emotional and financial stressors, partner-related stressors, and traumatic stressors.

Another study questioned providers caring for inner-city pregnant women and found that many of their patients fail to obtain care due to negative attitudes toward providers or the healthcare system in general. Patients may have had adverse experiences with rude or judgmental providers, or faced obstacles in obtaining care due to distance, inflexibility, or unavailability of appointments and services.¹⁷

Optimizing PNC by reversing barriers

As women who obtain proper PNC have better health outcomes, focus should be placed upon reversing existing barriers that prevent Black women from accessing these crucial services. Many women reported substance abuse as a barrier, and therefore communities and clinics should provide ample resources for women who are struggling with this affliction. This can include referrals for alcohol or drug rehabilitation centers, to Alcoholics or Narcotics Anonymous Programs, or to substance abuse counselors. Other “personal” barriers such as psychosocial stressors, housing difficulties, or family support struggles should be addressed through an interdisciplinary approach. By involving professionals such as social workers or psychologists, the uniquely diverse psychosocial needs of each woman can be more adequately met.

When it comes to structural barriers, providers and health systems should consider expanding clinic hours to include evenings and/or weekend availability to enable patients to find appointments that suit their schedule. To address the transportation barriers, it may be helpful to expand clinical locations or provide bus and taxi slips to limit distance and transportation obstacles.

Perhaps most crucially, providers should strive to reduce negative experiences and perspectives that many women have of the healthcare system as a whole. By re-examining their role in delivering care, providers can champion this change by enhancing listening and communication skills, serving as non-judgmental and accepting caretakers, and making women feel respected and valued. Another suggested way to improve patients’ attitudes and experiences with healthcare in this sector is by expanding the diversification of providers. Capers et al.¹⁸ suggest that the lack of ethnic diversity among medical providers is a “rate-limiting factor” in the efforts to reduce health disparities. They propose that many medical schools fail to matriculate cohorts whose diversity reflects that of the country and outlines several steps to encourage the diversification of medical students in hopes that this will promote cultural competency and patient experiences. Providers should aim to carefully examine their own

implicit biases and work toward a model of care that is empowering, trusting, and culturally sensitive.^{1,17}

Optimizing PNC to reduce adverse outcomes during delivery and postpartum

Enhancing access to PNC can improve outcomes for Black women not just during the prenatal period but also during delivery and postpartum. Conditions that can be potentially detected and managed during prenatal visits such as anemia, hypertension, and infection can increase likelihood for serious complications during delivery. If a Black woman is diagnosed or deemed high risk during her PNC, providers and hospitals can be better prepared and equipped to mitigate her risk of death by, for instance, encouraging delivery at a facility with specialized providers and equipment.¹

Le¹⁹ found that Black individuals of both sexes have higher rates of anemia than other ethnicities in general, and that Black women of reproductive age have rates of anemia that are four to seven times that of their White counterparts. Blood hemoglobin laboratories in pregnant women are crucial to monitor because low levels can increase the likelihood of hemorrhage, a prevalent risk factor of PRD. Because Black women of reproductive age have higher rates of anemia, careful attention should be placed on screening for and managing this condition during PNC in this group. Namely, Black women should be screened early on for the presence of anemia during prenatal visits, and managed appropriately with iron supplementation, dietary changes, or other appropriate interventions that deter potential risks for subsequent hemorrhage.

The recent SARS-CoV-2 pandemic represents one such infection that can occur during and complicate pregnancy, and which has shown to be disproportionately affecting Black women and those in ethnic minority groups. Knight et al. studied pregnant women who were admitted to a UK hospital with SARS-CoV-2 during March and April of 2020.²⁰ They found that 233 of the total 427 pregnant women admitted, or nearly half, were either Black or belonging to another ethnic minority group. These striking numbers could not simply be explained by a higher incidence of SARS-CoV-2 in metropolitan areas, as the results persisted even after exclusion of women from these areas. Furthermore, the authors note that these disparities exist in the United Kingdom, a country with free universal access to healthcare; thus, the health system which has been often blamed for these disparities elsewhere cannot be the only influencing variable. Knight et al. proposes that these disproportionate numbers could represent a greater risk of infection or severe disease in these vulnerable groups.

Roughly one-third of PRDs occur 1 week to 1 year following delivery,¹ but Black women experience this at a higher rate in the 43–365 days postpartum in comparison to other ethnicities.²¹ Deaths during this period for Black

women are most commonly attributed to cardiomyopathy. In a case series study of PRDs in California from 2002 to 2006, Hameed et al.²² found that while Black women accounted for only 5.5% of the California births in the study, they comprised nearly 40% of deaths related to cardiovascular disease (CVD). The authors discuss that while these disparities could be explained by the “increased baseline burden of traditional CVD risk factors” for Black women, they could also potentially be related to disparities in diagnostic or therapeutic care during pregnancy. This reinforces the need for detection and management of cardiovascular risk factors during the prenatal period and also the implementation of protocols throughout the entirety of the postpartum period. Patients should receive high-quality perinatal care throughout the year following delivery, namely a longer post-delivery hospital stay as needed, access to ample follow-up care and family planning services, and education on warning signs which warrant medical attention.^{1,23} Furthermore, medical providers including those outside of obstetrics should be sufficiently trained to recognize and manage the signs and symptoms of such complications.^{1,23} By formulating and practicing a standardized approach to preventing and managing these conditions, we can curb maternal death both during delivery and throughout the postpartum period.

Underreporting of data and proposed solutions

Data on PRD in Black women have at times been underreported.³ Horon et al. found that a significant number of deaths in Maryland from 1993 to 2003 were pregnancy related when they had been previously documented as unrelated. Inclusion of the true data almost doubled the PRMR, elevating from 13.8 per 100K births to 22.2 during the years 1993-2000. This new incorporation of data also revealed that cardiovascular disorders were more drastically implicated than previously believed. When the true numbers on maternal death are absent or skewed, this prevents researchers from adequately quantifying and understanding this problem and leads to a roadblock in identifying solutions.

MacDorman et al. also described failures in the reporting of PRD.²⁴ First, data on PRD is largely absent from public access data sets, and second, there persists a discrepancy in the coding of PRD from state to state causing a “significant disruption in trend analysis of maternal and late maternal mortality rate.” According to these authors, the U.S. has failed to report maternal mortality data since 2007 which they describe as an “international embarrassment.” They attribute this failure to the chronic underfunding of state and national vital statistics systems and suggest that this has caused the issue to receive a lesser degree of quality control and scrutiny.

Pregnancy check-box

The National Center for Health Statistics (NCHS) suggested implementation of a pregnancy check-box as a solution to this underreporting, and subsequently, 18 states have added this feature to death certificates.³ The number of reported PRDs increased three fold from 498 deaths to 1,527, elevating the PRMR from about 8.7 deaths per 100k to 21.8 per 100k in 2016.²⁵ Furthermore, PRDs for women aged 40–54 were underreported 20 times more than women aged 25 years and younger. These results suggest that women in advanced maternal age groups have been subject to underreporting of data at higher rates than younger ones. Given that Black women of advanced maternal age experience death at a disproportionately higher rate, this pregnancy check-box therefore represents a potential opportunity to more accurately quantify PRD in this population. With an enhanced capturing and understanding of this data, health organizations and lawmakers can then propose more effective solutions to diminishing these disparities.

Maternal mortality reviews

The United States generally lacks standardized mortality reviews compared with other developed nations. The United Kingdom, for instance, implemented a national system called the Confidential Enquiries into Maternal Deaths (CEMD) 60 years ago and has recently credited this program with narrowing the racial disparity gap in pregnancy outcomes. It has “significantly lowered the maternal mortality among black African women”, at a time when this group was simultaneously facing similar health challenges to their counterparts in the United States.⁶ The Netherlands also implements national surveillance monitoring of poor perinatal outcomes and PRDs; subsequently, they have enacted policies in response and have observed reductions in adverse outcomes such as eclampsia.²⁶

Opportunities of prevention are revealed through systematic maternal mortality reviews with the help of multiple systems at both the state and national level.^{1,3,8} Given the importance of obtaining this information, as evidenced by success in curbing maternal death in other countries, the United States has begun to implement similar systems on both national and state-based levels. The utilization of MMRCs has been renowned as the “gold standard” to better obtain and analyze these data.^{1,2,5,6,8} MMRCs utilize a common set of data elements to comprehensively evaluate individual, provider, institutional, or health system level factors implicated in maternal death.⁸ They perform a

comprehensive assessment of the underlying causes of each maternal death in order to characterize which deaths are potentially preventable and what interventions could be instituted to affect different outcomes in the future . . . [they

evaluate] not only the underlying causes of death, but [also] the cascade of events ultimately leading to the tragic event.⁵

MMRCs are poised to specifically tackle the issue of disparities in racial/ethnic maternal death⁵ by more accurately capturing the true data and proposing evidence-based recommendations for action. The Centers for Disease Control and Prevention (CDC) describes MMRCs as the “best opportunity for further identifying priority strategies that will reduce disparities in pregnancy-related mortality.” According to ACOG, MMRCs currently exist only in 28 US states, but the CDC is dedicating \$45 million over 5 years—\$9 million a year to 24 recipients representing 25 states to empower MMRCs.

State-level programs

Evaluating maternal death at the state level offers insight into the unique and varying barriers existing, so that communities can provide catered approaches instead of a “one size fits all” approach. Factors such as poor quality of care, limited access to and use of maternity services, and disadvantaged socioeconomic circumstances may be more or less prevalent in one area versus another, and so the goal should be empowering states to evaluate and make changes according to these state or community-specific demands.⁸ This targeted, state-based approach has already been shown to yield positive results, as evidenced by California’s implementation of the California Maternal Quality Care Collaborative (CMQCC).^{27,28} This state-level program implemented in 2006 sought to identify PRDs including causative factors and make appropriate recommendations for prevention. One of the program’s main goals was to implement these measures in order to specifically end pregnancy-related racial disparities in the state. California has produced promising results, reducing its MMR by 55% from 16.9 in 2006 to 7.3 in 2013, which is well below the continually rising national average.²⁸ After recognizing challenges in implementation of best practices among birthing facilities, the CMQCC established the California Partnership for Maternal Safety (CPMS), a state-wide collaborative set to carry out these safety bundles.²⁹ This group implemented a model based on mentorship and small teams that were intended to target quality improvement in a total of 126 California hospitals. With this model, they were able to retain the benefits of collaborative work while also meeting the needs of the diverse individual teams, enabling success in implementing the hemorrhage safety bundle across these California Hospitals.

National programs

There are also numerous national initiatives underway that seek to tackle maternal death both as a whole and in terms of the racial disparities existing within it. Over the last few

decades, the CDC has implemented the Pregnancy Mortality Surveillance System which requests that states submit copies of death certificates for women who perished during or within 1 year of pregnancy; this is important to gather epidemiological data associated with this and could help increase understanding specifically of maternal deaths of Black women.²⁷ The Alliance for Innovation on Maternal Health (AIM) is a national organization which engages national, state, and hospital efforts to improve maternal health outcomes by working through state and smaller community-based groups.³⁰ They focus on specified “safety bundles” described as “. . . a structured way of improving the processes of care and patient outcomes: a small, straightforward set of evidence-based practices—generally three to five—that, when performed collectively and reliably, have been proven to improve patient outcomes.” Examples of safety bundles include obstetric hemorrhage, severe hypertension in pregnancy, and cardiac conditions in obstetrical care. Given that these particular conditions remain among the leading causes of PRD for Black women, AIM’s implementation of these safety bundles could potentially reduce preventable death specifically in this population. Two other organizations, ACOG and the Society for Maternal-Fetal Medicine, together formulated the Maternal Safety Action Coalition which also implements maternal “safety bundles” in birthing facilities.²

Conclusion

Annual US deaths that result from pregnancy-related causes, across ethnicities and for Black women, statistically fall far below most other causes of death, causing some to view this as relatively “less important.” For every maternal death that occurs in the United States, there are greater than 100 cases of severe maternal morbidity, and Black women experience these morbid outcomes at a rate that is twice that of their white counterparts.³¹ However, it is imperative to consider Black women PRD not as an isolated event but rather as one adverse outcome existing among a myriad of adverse outcomes. Ultimately even if a Black woman escapes death during pregnancy and 1-year postpartum, she can still experience a multitude of consequences from pregnancy-related ailments leading to lengthy, often-lifelong health struggles. Namely, it has been demonstrated that disparities with vascular complications throughout pregnancy can mirror gaps in cardiovascular afflictions later in life.¹⁰ We as a nation should be fervently motivated to tackle this issue because these tragic events are largely preventable for all women and especially for Black women, as one study found deaths occurring among Black women were more commonly preventable compared those among White women.⁶ There is general consensus that guaranteeing access to quality PNC can stimulate these improvements for Black women.

Providers and policymakers are encouraged to take an upstream approach through creations of policies and interventions to do so,¹⁴ as reversal of these barriers can potentially prevent these complications altogether.

In addition, the United States should strive to more accurately quantify and understand the causes of PRD in Black women through a comprehensive examination at the community, state, and national level. Enhanced monitoring of and interventions enacted for PRD has demonstrated benefits in the state of California through the CMQCC program and in the United Kingdom through the CEMD program. Communities should seek to replicate such programs and develop novel ones with the goal of ensuring equal access to all pregnant women and new mothers. Another promising approach to analyzing and reducing PRD is through the so-called *4R Framework*; this concept was first introduced by Bingham et al.³² in 2011 and has since been widely adopted including through the aforementioned National Partnership for Maternal Safety's "safety bundles."²² Morton et al.³³ analyzed data from a state-wide maternal mortality review utilizing the 4R framework: *readiness*, *recognition*, and *response* (the fourth *r*, *reporting*, was excluded). The authors identified themes within each domain that possibly contributed to poor outcomes; for instance, in the *response* domain, three identified themes include coordination of care, timing of treatment, and follow-up care. They proposed quality improvement opportunities including implementing standardized approaches for complications, enhancing nursing leadership, and educating women on warning signs of complications or afflictions that warrant medical attention during the perinatal period. Organizations and medical groups should continue to explore utilization of this 4R Framework and bolster efforts in a coordinated, evidence-based, and multifaceted approach to PRD.

Now is the time to reckon with the reality that our nation's Black women are dying at disproportionate rates and suffering lifelong consequences even if they escape this grave outcome. By capturing the essence of this disparity and proposing innovative solutions, we can decrease PRD rates and improve the health outcomes of our nation's pregnant women and new mothers.

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