The Struggle to Reduce Maternal Mortality in the U.S.

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

The Struggle to Reduce Maternal Mortality in the U.S.

The maternal mortality rate (MMR) in the U.S., once on the decline, has been increasing since 2000 and is the highest amongst industrialized countries (Declercq & Zephyrin, 2020). In 2000, the MMR was 9.8 deaths per 100,000 births, but by 2020, MMR more than doubled to 23.9 (USAFacts, 2022). Two of three maternal mortalities (MM) are preventable, but decreasing MMR in the U.S. has been challenging, as there are many potential reasons for the increasing MMR and actual cause of death in MM widely varies (CDC, 2022).

Significant racial and ethnic disparities in the U.S. mean that White women are the least likely to die from maternal complications than any other women (Creanga, 2018). Black women are three times more likely to die from pregnancy-related causes than White women, with an MMR of 55.3 deaths compared to 19.1 per 100,000 births in 2020 (Hoyert, 2022). The U.S. Centers for Disease Control and Prevention (CDC) attributes this alarming difference to factors such as implicit bias, structural racism, and variation in healthcare quality (CDC, 2022).

Pregnant and postpartum women and the advocacies that represent them, healthcare professionals, and professional societies seek to reduce MM through initiatives to collect comprehensive MM data, eliminate disparities, invest in maternal health, enact policy reform, increase quality of maternal care, and educate patients and physicians.

Review of Research

History of Childbirth and Advocacy in the U.S.

For centuries in the U.S, childbirth was a social affair, managed by midwives and attended by female friends and family. Beginning in the late eighteenth century, male physicians slowly replaced the women that typically managed childbirth and stigmatized the midwifery field

in the process (Dye, 1980). Advances in pain medication, antiseptic and aseptic surgical practices, and the invention of forceps accelerated the transition to medicalized birth. By the beginning of the twentieth century, the medical profession consolidated its control of birth management. Hospitalized birth became standard in the U.S., but midwife-managed births remained the norm in rural areas, particularly for Black women in the South. While poor, rural women of color struggled to get access to medical assistance in childbirth; wealthier, middle-class White women revolted against the dehumanizing and disempowering medical practices found in hospitals and started a movement towards “natural”, unmedicated childbirth. Today, midwifery is being reintroduced and many dehumanizing stigmas of a natural birth are being normalized thanks to the obstetrical care revolution that began in the late twentieth century (Martucci, 2018).

The women’s health movement (WHM) emerged in the 1960s during the second wave of feminism to improve healthcare for all women. The movement allowed women to reclaim themselves from the ignorance of an overwhelmingly male medical profession by giving them knowledge about their bodies (Tuana, 2006). They fought for reproductive health, cancer screenings, and gender-based research while challenging misogyny in healthcare and the medicalization of childbirth. From the WHM came informational pamphlets, women’s health clinics, and self-help groups across communities (Pearson, 2023). The vast array of organizations from the WHM, such as the National Women's Health Network and the Native American Women's Health Education Resource Center, later became the basis for future aid in the MM crisis.

Causes of Maternal Death

Researchers have extensively studied causes of maternal death in hopes to clearly define the MM crisis. Historically, the top three causes of maternal death in the U.S. have been hemorrhage, hypertensive disease, and thrombosis. However by 2010, these causes shifted to cardiovascular disease, other non-cardiovascular diseases, infection/sepsis, and maternal depression. Several studies attribute this shift to an increased incidence of chronic heart disease, hypertensive disorders, obesity, and diabetes among pregnant women, but there is no clear consensus on the cause (Ozimek & Kilpatrick, 2018). While there are many causes of death in maternal mortality, Troiano and Witcher (2018) point out that the leading cause of death varies depending on race, ethnicity, and the timing of death during the pregnancy.

Causes of Maternal Mortality in the U.S.

The World Health Organization (WHO) attributes poor maternal health in the U.S. to inconsistent obstetric practices, an increase in pregnant women with chronic illnesses as technology advances, and a lack of reliable data (Nichols & Cohen, 2021). U.S. hospitals lack a standard approach to managing maternal emergencies, and complications are often identified too late (Agrawal, 2015). With 46% of U.S. counties without an obstetrician-gynecologist (Ob-Gyn) and significant disparities in health care insurance across racial and socioeconomic lines, many women have limited access to important health care (Ollove, 2016). While demand for Ob-Gyns is increasing, the number of Ob-Gyns in the U.S. is projected to decrease 7% by 2030, leaving many women without adequate access to care (Doheny, 2023). Uninsured women further struggle with access to necessary health care, leading to worse outcomes and increasing their risk of maternal mortality by three to four times (MoD, 2020). Medicaid covers roughly half of all

babies born in the U.S up to a year, but medicaid coverage for new mothers often extends to only 60 days postpartum, leaving many women vulnerable to coverage gaps (Nichols & Cohen, 2021).

Technology advances have allowed more women with chronic illnesses like obesity and heart disease to become pregnant. Chronic conditions increase the risk of adverse outcomes for women, as seen in the shift of maternal death causes to these illnesses by 2010 (Mostafavi, 2017). Mental health is often overlooked in the U.S., and mental health in mothers is associated with maternal outcomes and child behavior. Maternal depression is a leading cause of MM, but 75% of pregnant women and mothers with mental health conditions go untreated, a fact that the CDC attributes to the failure to screen for mental health (Nichols & Cohen, 2021; Griffen, 2021).

Improving MMR, as Villavicencio et al. (2020) concluded, is a multi-faceted issue that can be traced back to obstacles in MMR data collection. The failure of the U.S. government to systematically collect accurate MMR data impacts efforts to reduce it. On death certificates, the irregular addition of a question about pregnancy at the time of death confounds available data and can lead to the misclassification of maternal deaths. This misclassification contributes to discrepancies in maternal death trends and uninformative causes of death in many maternal mortality cases (Joseph et al., 2021). To explain MMR and develop evidence-based prevention efforts, researchers need better MMR data.

Improving MMR Data

Like WHO and Villavicenio et al., many advocates of maternal health agree that comprehensive and accurate MM data is needed. Maternal Mortality Review Committees (MMRCs) are multidisciplinary committees that establish “the risk factors, causes, and

preventable drivers of maternal deaths" to guide maternal healthcare improvements (Douthard et al., 2021). These committees were historically active until the late twentieth century after decades of MMR reduction, but have seen a resurgence since 2016 with the steadily increasing MMR. They are becoming increasingly popular across U.S. states to identify trends and make clinical and policy recommendations (Anderson & Sokol, 2020). For Black women in Texas, maternal mortality is getting worse. Nakeenya Wilson, a Black woman and a member of Texas's MMRC, shares from the MMRC report that Black women are "twice as likely as [their] mothers to experience these mortalities and morbidities," and identified obstetric hemorrhage as the leading cause of death in this demographic. Wilson hopes that research from these reports can offer permanent solutions and give Black women the resources they need for self-advocacy (Simon, 2023). Local MMRCs can influence state legislation and identify regional MMR trends, but the lack of a nationally collaborative MMRC diminishes their effect on decreasing the nationwide MMR, a CDC initiative currently in the works (Clark & Belfort, 2017).

The California Maternal Quality Care Collaborative (CMQCC) is an organization "committed to ending preventable morbidity, mortality and racial disparities in California maternal care" and has been a pioneer in reducing maternal mortality (CMQCC, 2022a). Its Maternal Data Center (MDC) uses patient data submitted by over 200 hospitals to generate evidence-based quality improvement toolkits that give physicians the means to improve maternal outcomes (CMQCC, 2022b). The implementation of these toolkits saves women's lives. When Cayti Kane delivered her baby boy in Pomona Valley California, she was diagnosed with a dangerous complication - a placenta accreta. Placenta accretas add a higher risk of hemorrhage and death and are associated with repeated cesarean sections (C-sections). Kane comments that there was "no way I would have put my life at risk" if she had known the increased risks of

repeated C-sections, but since the Pomona Valley hospital is a member of the CMQCC and adopted the hemorrhage toolkit, they were able to give her and her baby the lifesaving care they needed (Montagne, 2018). Since the MDC was created, MMR in California has dropped 55% (Raths, 2020). While California's overall MMR has decreased, racial disparities grew, resulting in an MMR for Black women six times higher than that of White women. Elliott Main, an Ob-Gyn at Stanford University and the medical director of the CMQCC comments that data collection and structured protocols are essential in reducing general MMR, but "you need more than that if you are really going to close the gaps" (Marill, 2022). Main, among others, has recognized the significance of accurate MMR data, but points out the importance of the ongoing effort to improve outcomes for women of color by eliminating disparities.

Addressing Disparities

Significant disparities among women in the U.S. influence maternal outcomes. The Black Mommas Matter Alliance (BMMA) strives to improve maternal outcomes for Black mothers by serving as a "national voice and coordinating entity for stakeholders advancing maternal health, rights, and justice" (BMMA, 2022). BMMA emphasizes supporting and strengthening the voices of Black women leaders who developed solutions to the maternal health crisis but lack the platform to display them. Indra Wood Lusero, founder and president of the Birth Rights Bar Association, recognizes BMMA's impact: "Black women, through [the BMMA], raised awareness about racial inequities with regard to maternal mortality" (Roy, 2023). Angela Aina, the co-founder and executive director of the BMMA, says this awareness "can then help Black moms have healthy, joyful, safe pregnancies and reproductive journeys." She explains that the BMMA assists black mothers by supporting policy change, cultivating research, advocating for

data collection, amplifying holistic maternity care, and shifting cultural understanding of what birth care can look like for Black mothers (Schneider, 2022).

Rural areas of the U.S. often lack proper maternal care, with 36% of U.S. counties existing in "maternity care deserts" without a hospital or provider that offers obstetric care (Gaffney, 2022). Women in these areas are at a higher risk for complications and are three times more likely to die than those who live closer to care (Wallace et al., 2021). The Rural Maternity and Obstetrics Management Strategies grant program allows health care providers to build networks of maternal care that cover gaps in rural areas. One grantee, the Rural OB Access and Maternal Services (ROAMS), is expanding access to care across rural regions of New Mexico by connecting pregnant women to the services they need and by expanding a network of physicians, clinics, and hospitals (Hostetter & Klein, 2021). Timothy Brenninger, a family medicine and obstetric physician, works in a clinic created by ROAMS. He remarks that ROAMS is an "incredible program that allows us to provide telehealth medicine and rural outreach" that saves patients hours of driving time. With take-home kits and at-home monitoring, physicians are able to "much more effectively take care of [patients]" to improve outcomes (ROAMS, 2022).

Native American women are nearly three times as likely than White women to die of childbirth, but are estimated to have the furthest drive to maternal care. Markita McBride, a Native American woman from the Yankton Sioux reservation, traveled 126 miles by car and helicopter in an emergency to deliver her baby. She remarks that "it was hell" (Hassanein, 2022). Channa Walz of Little Shell almost died from the lack of resources available on her reservation. Her experience led her to the Indigenous doula training workshop at the University of Montana, which she remarks "will lower the death rate" among Native American mothers. This workshop was hosted by Montana Obstetrics and Maternal Support (MOMS), who hope that these trainings

will improve access to maternal care across reservations and provide more comprehensive care before, during, and after childbirth (Mabie, 2022).

Investment in Maternal Health

Insufficient investment into maternal health research coincides with a long trend of underinvestment in women's health. The WHM pioneered investment into women's health research, and many organizations today are committed to it. March of Dimes (MoD) invests millions every year into ending preventable MMs, discovering the causes of preterm birth, and achieving birth equity for all mothers. They've made significant discoveries that save lives, like diagnostic markers that are early signs of preeclampsia and other adverse pregnancy outcomes. Fred and Emma Goltz became avid volunteers and donors of MoD after MoD research saved their son's life. They say that "March of Dimes is a very research driven organization and has ambitious goals for programs and advocacy for moms and babies." MoD recently announced the new Research Center for Advancing Maternal Health Equity. The MoD Chief Scientific Officer Dr. Emre Seli says that this center "will address poor health outcomes and longstanding racial disparities that make the U.S. among the most dangerous developed nations for childbirth" by working with other MoD centers as well as with experts from Historically Black Colleges and Universities, Tribal Colleges and Universities, and Hispanic-Serving Institutions (MoD, 2023). Among other organizations, MoD is making significant strides at ending preventable MM in the U.S.

Investments into increasing availability to health care is essential in reducing MM. Organizations that expand healthcare into rural areas, like ROAMS and MOMS, are already working towards equity in health care access, but insurance disparities and Ob-Gyn shortages

further strip access to care. Through the Department of Health Care Access and Information (HCAI), the state of California is funding health services to increase the number of reproductive health providers across the state. California's Governor Gavin Newsom says "increasing the number of qualified providers is paramount to expanding access to care," while HCIA Director Elizabeth Landsberg calls this funding "vital to California's efforts to provide equitable access to health care" (DiLuccia, 2023; Sutter Health, 2023). One program funded by these grants is Sutter Health's new Ob-Gyn residency program, which will fund 17 primary care residency programs and create 87 new Ob-Gyn residency positions. Sutter Health additionally tackles access to health care by including equity training, increasing health provider diversity, and placing graduates in medically underserved areas to "impact disparities we still see today," says Dr. Janine Bera, the Chief Medical Officer of WellSpace Health, Sutter Health's partner (Sutter Health, 2023).

Policy Reform Advocacy

Many organizations focus on policy reform to aid in the MM crisis. The American College of Obstetricians and Gynecologists (ACOG) is a medical professional organization that "strongly advocates for quality health care for women" by working with health care professionals, policymakers, and other organizations to develop clinical guidance to patient care (ACOG, 2022). One of their key initiatives is policy reform advocacy to increase access to health care across the U.S. Lisa Satterfield, senior director of Health Economics and Practice Management at ACOG, emphasizes that "ACOG has been the leading voice advocating for Congress and the administration to extend Medicaid coverage beyond the current 60 days after delivery to 1 year postpartum," a policy imperative to decreasing health care inequalities

(Nguyen, 2022). In Illinois, ACOG's advocacy paid off as the state extended its medicaid access to one year postpartum and urged other states to do the same (KFF, 2023). ACOG's other policy advocacy priorities to improve maternal health include women's health research, closing racial gaps in maternal outcomes, eliminating barriers to depression and substance abuse care, increasing rural access to obstetric care, and reducing pregnancy complications (ACOG, 2023).

ACOG President Iffath Hoskins understands that "we cannot underestimate the impact of mental health conditions during [pregnancy] and how harmful they can be if we don't act quickly" (ACOG, 2023 Jan 23). The Maternal Mental Health Leadership Alliance (MMHLA) is committed to this understanding. They strive to emphasize the importance of maternal mental health through letter writing campaigns, congressional briefings, summits, and support of legislation (Hinson, 2022). Since 2019, the MMHLA has been able to pass federal legislation and secure millions in federal funding for maternal mental health programs. One such law, the Bringing Postpartum Depression Out of the Shadows Act of 2015, provides funding for creating mental health screenings and educational programs that teach providers how to treat maternal mental health and was the first maternal mental health funding act in U.S. history (Griffen, 2021). Congresswoman Katherine Clark was the pioneer of the law, and states that the law is "taking active steps to break down the stigmas that have kept moms from getting the care they need and deserve" (Katherine Clark, 2016).

Increasing Quality of Maternal Care

The CDC attributes 21-51% of maternal deaths to provider actions, leading many maternal health organizations to focus on quality of care. ACOG works with other organizations to develop initiatives and programs that decrease MM, like the Alliance for Innovation on

Maternal Health (AIM), a program created in 2014 and funded by the U.S. Department of Health to "improve the quality and safety of maternal care" (Nichols & Cohen, 2021). Aim works with hospitals to adopt evidence-based patient safety "bundles" that detail how to respond to common conditions such as hypertension and hemorrhage. In 2015, states that adopted AIM bundles reduced MM anywhere from 8.3 to 22.1% (ACOG, 2018 Aug 1). AIM bundles save lives, like Jamie, a woman whose hemorrhaging after a c-section nearly killed her. After the joyous birth of their daughter, Jamie's husband recalled being terrified at the "bucket of blood" that was filling at his feet. The hospital's implementation of the 17 evidence-based recommendations in the AIM hemorrhage bundle gave physicians the proper tools to recognize the signs of obstetric hemorrhaging and respond with life saving care (CPSWHC, 2018). While Jamie's story has a happy ending, many other women across the country aren't as lucky, but AGOC Vice President of Health Policy Barbara Levy is hopeful that the adoption of AIM bundles across the country "means that lives will be saved" (ACOG, 2018 Jan 2).

A popular AIM bundle involves reducing the quantity of C-sections by standardizing maternal and fetal monitoring, protocols for identifying emergencies, and responses. While C-sections can be necessary, the Society for Maternal-Fetal Medicine President Vincenzo Berghella remarks that they "may pose greater risk than vaginal delivery, especially risks related to future pregnancies" (ACOG, 2014). The bundle's implementation is reducing the amount of C-sections according to Dr. Elliot Main, whose team has seen a 4% reduction without compromising birth outcomes (MDEdge, 2020). A series of initiatives by the CMQCC to support vaginal birth includes utilizing their MDC, educating the public on the risks of C-sections, and disincentivizing hospitals for not reducing their C-section rates. These initiatives turned into a toolkit with evidence-based tools and resources that reduce the incidence of C-sections. Azucena

Andrade is a first time mother who delivered at a hospital that adopted this toolkit. After a two-day long labor, she remarks that the hospital "worked with me" to deliver her baby vaginally, when in the past, her nurse says "they would have been pressuring [her] for a C-section" (Ross, 2018). The toolkit reduces C-section frequency, which leads to better outcomes for mothers and babies.

Education Initiatives

Maternal health education initiatives for physicians and parents are important to ensure a healthy pregnancy and birth. Lamaze International advances safe, healthy birth through evidence-based education and advocacy to decrease unnecessary medical interventions and improve maternal outcomes. Elisabeth Bing, co-founder of Lamaze International and pioneer in making lamaze breathing techniques commonplace across the U.S., hopes that she has made "women aware that they have choices … and trust their body." Empowering women during pregnancy allows them to make informed decisions about their delivery and improves maternal and fetal outcomes (Barrow, 2015).

Among their many initiatives, ACOG's patient website, journal, publications, clinical consensuses, patient safety checklists, and evidence-based practice bulletins educate the public and provide resources for clinicians. Former ACOG president, Eva Chalas, knows that patient education is an "essential component to health maintenance" and will improve health outcomes. Their patient website "empowers [their] patients to be active in their health, while strengthening the physician-patient relationship," while physician resources like patient safety checklists promote the standardization of care to reduce medical errors. ACOG's educational resources

provide a personalized approach to healthcare and is important to filling in healthcare gaps and improving maternal outcomes (Bernstein, 2016; Chalas et al., 2020).

Conclusion

The MM crisis in the U.S is not easily solvable and is complicated by racial and socioeconomic disparities. Many are working to reduce MM through the development of initiatives that identify reasons women are dying in childbirth, expand healthcare access across the country, eliminate disparities, and empower women in childbirth. Their efforts are proving to save women's lives, but overall MMR in the U.S. is still not on the decline despite them. The standardization of maternal health policies; like data collection, emergency procedures, and mental health screening; across the country may be the key to improving maternal health outcomes and MMR, especially in hospitals. Identifying and eliminating the alarming disparities that persist in the U.S. will further improve outcomes and MMR. Despite the fruitful efforts of many to decrease maternal mortalities in the U.S., there is still much to be done to keep women from dying in childbirth.

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