Current Commentary

Maternal Mortality in the United States Compared With Ethiopia, Nepal, Brazil, and the United Kingdom

Contrasts in Reproductive Health Policies

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Maternal mortality is falling in most of the world's countries, but, for 20 years, the United States has seen no reduction. Over this period, a dozen countries in various stages of development, all spending much less than the United States on health, achieved their United Nations' Millennium Development Goal of 2015 (Millennium Development Goal 5: improve maternal health), with substantial reductions in maternal mortality rates. To consider whether interventions successful in reducing global maternal mortality rates could help the United States to lower its rate, the American College of Obstetricians and Gynecologists, at the 2018 International Federation of Gynecology and Obstetrics' Rio de Janeiro World Congress, convened a panel of the presidents and representatives from five national societies with wide maternal mortality rate ranges and health expenditures and whose national societies had focused on reducing maternal mortality for Millennium Development Goal 5. They identified expanded access to reproductive health care, particularly contraception and safe abortion, as key interventions that had proven effective in decreasing maternal mortality rates worldwide.

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Only a few kinds of interventions account for most of the reductions in maternal mortality rates over the past 20 years.[1] These are directed at the most important causes of maternal deaths worldwide. In order of potential to reduce maternal mortality (% reduction), they are:

1. Family timing, spacing, and contraception (30%)
2. Vacuum aspiration or medical abortion (13%)
3. Hemorrhage prevention and treatment (8–9%)
4. Infection prevention and treatment (6–8%)
5. Caesarean delivery when indicated (7%)
6. Prevention of eclampsia and treatment of preeclampsia (7%)

These interventions cost only 0.1% of the gross domestic product (GDP) of the countries that achieved their Millennium Development Goal 5 (improve maternal health), showing that the expense of reducing maternal mortality ought not be a limitation anywhere, particularly in the United States, which spends by far the most on health (18% of GDP).[1]

Panelists examined characteristics of maternal mortality in the United States, Ethiopia, Nepal, Brazil, and the United Kingdom, defined the relationships of various interventions to national maternal mortality rates, described their strategies, and discussed their likely utility for the United States. This commentary summarizes the panelists' presentations and discussions.

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This commentary summarizes a panel discussion at the International Federation of Gynecology and Obstetrics, Rio de Janeiro, October 19, 2018, and is dedicated to Prof. Mahmoud Fathalla, Past President of FIGO and champion of safe motherhood.

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CHARACTERISTICS OF MATERNAL MORTALITY IN THE UNITED STATES

Over the past three decades, maternal mortality rates in the United States have not decreased, in contrast with other countries with high health care expenditures, where maternal mortality rates have declined to levels as low as 4 per 100,000 live births. Among key characteristics of the U.S. maternal mortality rates are regional variations as great as those seen in countries where health expenditures are much lower than in the United States and extreme racial variation.[2,3] Although maternal mortality has failed to improve in all groups with the exception of Asian women, it is highest among black and non-Hispanic white women.[4] Explanations for regional and racial variation in maternal mortality rates are complex and debated. Change in reporting maternal deaths is one of these. A thorough examination of this statistically complex question was beyond the scope of their discussion, but panelists agreed that reporting changes (eg, inclusion of a "pregnant" checkbox on the death certificates of additional states and improved surveillance) account for a significant proportion of state-to-state variations in U.S. maternal mortality rates and make global comparisons inexact.[2,3,5–7]

Cardiovascular diseases and hemorrhage are leading contributors to maternal mortality worldwide, but the United States differs from most other countries in substance use disorder as the third most important contributor[8]; human immunodeficiency virus (HIV) and unsafe abortions are not frequent causes, as they are in Sub-Saharan Africa. There are racial and regional variations in the United States in specific causes of maternal mortality. For example, opioid overdose is a more common cause among non-Hispanic white women in eastern and Appalachian states than in other races and regions.[8]

A cause of maternal mortality unique to the United States among developed nations is unintended pregnancy. About 900 women die yearly in the United States from causes related directly or indirectly to pregnancy; about half of these pregnancies were not intended, a higher proportion than in other high-income countries. Allowing women to avoid unintended pregnancies through access to contraception and unintended deliveries through access to abortion can have a substantial effect on maternal mortality, as demonstrated in Ethiopia and Nepal. Before legalization in the United States, there were at least 200 maternal deaths yearly from illegal abortion; there are currently fewer than 10.[9] U.S. states with restrictions on access to contraception and safe abortion have seen the greatest increases in maternal mortality (Addante A, Eisenberg D, Leonard J, Hoofnagle M. The association of restricted abortion access and increasing rates of maternal mortality in the United States [abstract]. Contraception 2019;100:306.).

States later classified as restrictive did not have higher maternal mortality rates in 1995, but by 2009, after these states had restricted access to reproductive health services, rates diverged. By 2017, maternal mortality rates in restrictive states were nearly twice as high as those in states protecting reproductive rights. In these "protective" states, maternal mortality rates had decreased or remained stable for all races, whereas they had increased, particularly for black and Native American women, in states that had restricted abortion access. In states that neither restricted nor protected abortion access, changes in maternal mortality rates were intermediate (Addante A et al. Contraception 2019;100:306.). These associations do not reveal the causes of maternal mortality in states where it is high, but they support findings in many countries, such as Ethiopia and Nepal, that access to reproductive health services is a correlate of declining maternal mortality.[1]

MATERNAL MORTALITY IN ETHIOPIA

Data from Ethiopia, a nation of 100 million where maternal mortality rates fell from 871 per 100,000 live births in 2000 to 412 per 100,000 live births in 2016, illustrate the association of improved access to safe pregnancy termination with rapidly declining maternal mortality.[10] Educational and economic opportunities for women, social infrastructure, and medical care improved during the time of increased access to safe abortion but were not extensive enough to explain the substantial decrease in maternal mortality rates: maternal deaths attributable to abortion decreased from 31% to 2% from 2000 to 2013. During that period, the abortion law was liberalized; public health institutions were directed to provide abortion care; manual uterine aspiration and medical termination with mifepristone and misoprostol were introduced on a large scale, including in nursing- and physician-training programs; low- and mid-level health care workers were informed of changes in access and directed to inform women and make referrals; and contraception was offered to women after both spontaneous and elective abortions to help them avoid subsequent unintended pregnancies.[11]

MATERNAL MORTALITY IN NEPAL

Nepal is a landlocked country where rugged terrain and unstable politics create barriers to the equitable

distribution of health services for its 28 million people. Thirty years ago, Nepal reported one of the world's highest maternal mortality rates. As in Ethiopia, there was a high proportion of maternal death due to unsafe abortion: 15% in 1998.[12] From 1996 to 2016, maternal mortality rates fell from 539 to 259 deaths per 100,000 live births, following a parallel decrease in total fertility rate (TFR).

Nepal's progress in improved health for women accompanied legislative changes in 2002 to promote women's self-determination, including the rights to inherit property, divorce husbands, and control fertility. As in Ethiopia, a consequence of the new law was the Ministry of Health's implementation of a national program to reduce maternal mortality through training physicians and nurses to provide safe abortion and postabortion contraception.[13,14]

That safe, legal abortion accounted for a significant portion of the decrease was documented in a 10-year study by the Nepal Center for Reproductive Health, Environment and Population and the Bixby Center for Global Reproductive Health at the University of California, San Francisco. Investigators used the same approach that the Centers for Disease Control and Prevention employed to document the effect of changes in abortion laws in the United States after *Roe v Wade* in l973. Admissions to "sentinel hospitals," where most abortion complications are treated, were reviewed and demonstrated a decrease as maternal mortality rates declined.[15]

In addition to making abortion safer, the Ministry of Health made contraception more available, particularly in previously underserved rural areas; the prevalence of modern contraceptives rose from 35% to 43% in the decade from 2000 to 2010. This increase and greater abortion access were associated with a decrease in Nepal's total fertility rate from 4.6 births per woman in 1996 to 2.6 in 2016–the period of rapid decline in maternal mortality rates. The decrease in unintended pregnancies and births contributed to an accelerated decline in the maternal mortality rate in Nepal.

MATERNAL MORTALITY IN BRAZIL

From 1990 to 2015, Brazil's maternal mortality rate fell from 143 to 62 deaths per 100,000 live births. Maternal deaths directly caused by hypertension and hemorrhage in pregnancy decreased most. Deaths from puerperal sepsis and as a consequence of abortion also declined significantly.[16] That both of these conditions declined in tandem as a cause of maternal mortality despite no change in the legality of abortion is not surprising, because better access to medical care and efficacy of antibiotics enhanced treatment of both puerperal and postabortion infections, lowering death rates from both. Access to treatment of all complications of pregnancy and to prenatal and obstetric care expanded in 1988, when the new constitution mandated health care for all, not just those with employers. Indices of maternal and child health improved dramatically.[16] The decrease in Brazil's maternal mortality rate was associated with a decline in total fertility rate, because fewer and fewer women were exposed to the risk of death as a result of pregnancy as contraceptives became more available in the public sector under successive liberal governments.

MATERNAL MORTALITY IN THE UNITED KINGDOM

Twenty years ago, the United States and the United Kingdom had the same maternal mortality rate. Currently the United States has a rate about three times that of the United Kingdom.[17] Unlike Ethiopia, Nepal, and Brazil, the United Kingdom and the United States are both fully developed economies with high levels of education and sophisticated, though very different, systems of medical care: the United Kingdom has a single-payer National Health Service, whereas the United States has a complex employer-based private system supplemented by government support for the poor (Medicaid) and the elderly (Medicare). Compared with most developed nations, the United States and the United Kingdom both have relatively high rates of unintended pregnancies (about 50% in the United States and 45% in the United Kingdom) and the same total fertility rate of 1.7 births per woman. Despite these similarities, the maternal mortality rate in the United Kingdom has steadily declined over the past 20 years, whereas in the United States it has not.

Differences in the two countries help explain their contrasting experiences with maternal mortality rates. The United Kingdom's National Health Service provides comprehensive health care to everyone throughout the country, owns and operates nearly all U.K. hospitals, and pays for contraception and abortion for everyone while spending only 10% of GDP on all health, compared with 18% in the United States. Consequently, regional differences in health outcomes, including the maternal mortality rate, are much less prominent than in the United States, where state policies with regard to reproductive health care vary widely, particularly for the uninsured.[18]

The United States and the United Kingdom share a higher maternal mortality rate among women from black ethnic backgrounds. In the United States, the maternal mortality ratio for black women is 3.3 times

higher than for white women. In the United Kingdom, the maternal mortality ratio by the same comparison is five times higher. More work needs to be undertaken in both countries to understand the underlying causes for this disparity and to identify interventions.[19]

U.S. MATERNAL MORTALITY IS AN AMERICAN PUBLIC HEALTH CRISIS

Maternal mortality has finally been recognized as an important health issue in the United States as unexpected complications and deaths in childbirth received wide media attention and explanations were sought.[20,21] Most Americans assume that the United States has the world's best health care and that it is steadily improving. The 20-year stagnation of a key health index such as the maternal mortality rate did not receive much public attention until it was associated with bad obstetric outcomes for notable individuals such as Serena Williams. The fact that other countries spending a small fraction of what the United States spends on health were able to dramatically reduce their maternal mortality rates over the same period was even less remarked, except through the United Nations' Millennium Development Goals.

The American College of Obstetricians and Gynecologists called attention to the United States' maternal mortality rate exceptionalism through global collaborations at the past two International Federation of Gynecology and Obstetrics meetings–Vancouver 2015 and Rio de Janeiro 2018. In the interval, U.S. maternal mortality did not improve, and legislative restrictions on abortion and reproductive health care increased (Addante A et al. Contraception 2019;100:306.).[19] The successes in reducing the maternal mortality rate of the four other nations participating in the 2018 International Federation of Gynecology and Obstetrics panel reported here show that restricting access to contraception by limiting, for example, Title X funding and to abortion by enacting state laws that close clinics and restrict abortion access are inconsistent with efforts to improve maternal health. The Global Health Policy Summit's Maternal Health Working Group analyzed factors that explained maternal mortality rate decreases in the nations that achieved their 2015 Millennium Development Goal 5 for maternal mortality rate reduction. The seven factors accounting for national successes cost a mere 0.1% of those nations' GDPs.[1] The most cost-effective interventions were, first, access to contraception, as reported here by Brazil, Ethiopia, Nepal, and the United Kingdom, and, second, access to safe abortion, as shown by Ethiopia, Nepal, and the United Kingdom.

Whereas these governments expanded reproductive health services such as family planning to improve women's health, in the United States, federal and many state governments have done the opposite through restrictive legislation and decreased funding. Meanwhile, hundreds of pregnant American women die unnecessarily each year. Evidence-based health policies, as well as good reproductive health care, will be needed to save them.

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