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Dr. Godfrey Mbaruku: A tribute and review of the life of a maternal health crusader in Tanzania

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Karen Yeates[1], Sidonie Chard[2], Alexa Eberle[3], Alexandra Lucchese[4], Melinda Chelva[5], Zacharia Mtema[6], Prisca Dominic Marandu[7], Graeme Smith[8], Erica Erwin[9], Anna Nswilla[10], Robert Philemon Tillya[11]*

Department of Medicine, Queen's University, Kingston, Ontario, Canada[1]; Department of Public Health Sciences, Queen's University, Kingston, Ontario, Canada[2]; Center for Clinical Epidemiology, Lady Davis Institute, McGill University, Montreal, QC, CANADA[3]; Queen's University, Kingston, Ontario, Canada[4]; Department of Medicine, Queen's University Kingston, Ontario, Canada[5]; Ifakara Health Institute, Tanzania[6]; B.A.C.D, Pamoja Tunaweza Women's Centre Kilimanjaro, Moshi, Tanzania[7]; Department of Obstetrics and Gynecology Queen's University[8]; BORN Ontario/Obstetrics & Maternal Newborn Investigations Ottawa, Ontario, Canada[9]; Ministry of Health, Department of Policy & Planning, Tanzania[10]; Department of Health Systems, Impact Evaluation and Policy, Ifakara Health Institute, Tanzania[11]

***For Correspondence:** Email: *yeatesk@queensu.ca*

Abstract

Dr. Godfrey Mbaruku, an obstetrician-gynecologist and one of Tanzania's most dedicated maternal health researchers, passed away in September 2018. His professional career spanned over four decades, with the last decade of his life dedicated to maternal health research, advocacy and policy in Africa. We undertook a review of the key global milestones in maternal health policy, funding and research that took place during Dr. Mbaruku's career until his untimely death in 2018. We then reflect on the progress of the maternal health agenda from 2018 to 2021 as lower middle income countries (LMICs) continue to strive to reach the sustainable development goals (SDGs) in the midst of a global pandemic. Dr. Godfrey Mbaruku's commitment to improving maternal health in Tanzania through his advocacy and research contributions over his professional life will forever serve as foundational pillars for the ongoing global effort to reduce maternal mortality. *(Afr J Reprod Health 2021; 25[3s]:22-29).*

Keywords: Maternal and child health, sexual and reproductive health and rights, obstetrics and gynecology, Africa

Résumé

Le Dr Godfrey Mbaruku, obstétricien-gynécologue et l'un des chercheurs en santé maternelle les plus dévoués de Tanzanie, est décédé en septembre 2018. Sa carrière professionnelle a duré plus de quatre décennies, la dernière décennie de sa vie étant consacrée à la recherche, au plaidoyer et aux politiques en santé maternelle en Afrique. Nous avons entrepris un examen des principales étapes mondiales de la politique, du financement et de la recherche en matière de santé maternelle qui ont eu lieu au cours de la carrière du Dr Mbaruku jusqu'à sa mort prématurée en 2018. Nous réfléchissons ensuite aux progrès du programme de santé maternelle de 2018 à 2021 en tant que milieu inférieur. Les pays à revenu intermédiaire (PRFI) continuent de s'efforcer d'atteindre les objectifs de développement durable (ODD) au milieu d'une pandémie mondiale. L'engagement du Dr Godfrey Mbaruku à améliorer la santé maternelle en Tanzanie grâce à ses contributions de plaidoyer et de recherche au cours de sa vie professionnelle servira à jamais de piliers fondamentaux pour l'effort mondial en cours pour réduire la mortalité maternelle. *(Afr J Reprod Health 2021; 25[3s]:22-29).*

Mots-clés: Santé maternelle et infantile, Santé et droits sexuels et reproductifs, Obstétrique et gynécologie, Afrique

Introduction

Dr. Godfrey Mbaruku, an obstetrician-gynecologist and one of Tanzania's most dedicated maternal health researchers, passed away in September 2018. He was a mentor to many nurses, physicians and researchers. His professional career spanned over four decades, with the last decade of his life dedicated to maternal health research, advocacy and policy in Africa. At the time of his death, Dr. Godfrey Mbaruku was the Deputy Director of Ifakara Health Institute and the Principal Investigator of a research project funded by Innovating for Maternal and Child Health

(IMCHA), a research initiative of the International Development Research Centre of Canada (IDRC), Canadian Institutes for Health Research (CIHR) and Global Affairs Canada (GAC). This project focused on improving the diagnosis and management of pre-eclampsia and eclampsia to reduce maternal mortality and neonatal death. With Dr. Godfrey Mbaruku's passing, the world lost an incredible person who had spent his career caring for women, setting research priorities, and undertaking ground-breaking research to save women's lives in Tanzania and across the continent of Africa. His career was marked by decades of important global achievements in reducing maternal morbidity and mortality. Thus, we undertook a review of the key global milestones in maternal health policy, funding and research that took place during Dr. Mbaruku's career until his untimely death in 2018. We then reflected on the progress of the maternal health agenda from 2018 to 2021 as lower and middle-income countries (LMICs) continue to strive to reach the sustainable development goals (SDGs) in the midst of a global pandemic.

The Life of Dr. Godfrey Mbaruku- A crusader for improving maternal health in Tanzania

Dr. Godfrey Mbaruku was born in 1954 in the Tanga region of Tanzania. He always expressed an interest in science and had a strong understanding of the challenges and situation of maternal and child health even during his early years, as his mother was a midwife in Tanzania. While studying medicine in Dar es Salaam, Tanzania, Dr. Mbaruku trained in a remote hospital in Southern Tanzania, where many of his patients were pregnant women with various medical comorbidities. Through this experience, he realized that there was 'much work to be done' in the field of maternal health; thus, he decided to continue his training as a specialist in obstetrics and gynecology. His decision to train as an obstetrician-gynecologist was the stepping stone to an impressive and impactful career in maternal health. In 1988, Dr. Mbaruku was sent to Kigoma, in the west of Tanzania, where he became the only obstetrician for a population of 1.2 million people living in this remote region. At the time, obstetrical care was rarely the focus of policymakers and researchers across the globe. It was during his professional placement in Kigoma that he launched a long and productive research career that focused on health system interventions and improvements to reduce maternal morbidity and mortality. Over the span of three decades, Dr. Mbaruku paved the way to improve maternal health in terms of policy, research, and funding across Africa.

1985-2000: An era of maternal health progress

In 1985, a provocative paper written by Dr. Allan Rosenfield and Dr. Deborah Maine titled "Maternal health - a neglected tragedy: Where is the M in MCH [Maternal and Child Health]?" was published in the Lancet[1]. The authors of this paper concluded that while there was a global emphasis on newborn and child health, the health of the mother was often neglected[1]. At the time of its publication, the World Health Organization (WHO) estimated the annual global maternal mortality rate to be 500,000 deaths/year[2]. The authors proposed that the obstetrical community should undertake a review of the grave situation and work with government health departments and donor agency officials to come up with a plan to prioritize maternal care, to reduce maternal morbidity and mortality, and to encourage the use of contraception[1].

In 1987, the Safe Motherhood Initiative (SMI) was founded at the International Safe Motherhood Conference in Nairobi. Additionally, the Preventing Maternal Mortality program, which is now known as the Averting Maternal Death and Disability program, was established at Columbia University. The year after the founding of the SMI, Dr. Mbaruku was assigned to the Kigoma region of Tanzania where he began his research on preventable factors that lead to maternal mortality[3]. With these factors minimized, he was able to demonstrate an 80 percent reduction in maternal mortality over the following seven years[3]. He found that focusing on low-cost intervention programs centered on availability and locally-available solutions were key factors in improving the staggeringly high number of maternal deaths in this region[3].

In 1988, Dr. Mahmoud Fathalla, who was an obstetrician-gynecologist at the WHO, created a video titled "Why Did Mrs. X Die?", which displayed the five most common direct obstetric causes of maternal mortality for the first time: postpartum hemorrhage, sepsis, eclampsia and pre-eclampsia, obstructed labor, and unsafe abortion[4].

Dr. Anna Nswilla (left), Dr. Karen Yeates (centre) and Dr. Godfrey Mbaruku (right) attending the Inception meeting of funded Implementation Research teams of the Innovating for Maternal and Child Health Funding Program in Nairobi, Kenya. February 23-25, 2015

In 1994, another seminal article titled "Too Far to Walk: Maternal Mortality in Context" was published by Sereen Thaddeus and Dr. Deborah Maine[5]. This paper highlighted the three principal reasons as to why health-seeking behaviour is delayed among resource-poor women: the delay in the decision to seek care, the delayed arrival at a health facility, and the delay in the provision of adequate care[5]. This research was critical as it provided maternal health policy makers with badly needed evidence for developing global programs to address the challenges experienced by women 'in the field'[5]. Following the publishing of this paper, two global UN conferences (the 1994 International Conference on Population and Development and the Fourth International Conference on Women in 1995) solidified the importance of prioritizing maternal health in global health and development[6,7]. These two conferences emphasized that access to quality maternal and reproductive healthcare are basic human rights[6,7].

Millennium Development Goals (2000 – 2015)

In the year 2000, world leaders assembled at the United Nations (UN) Headquarters in New York City. They developed and agreed upon eight goals that would help decrease extreme poverty, hunger, and disease. They hoped that the eight goals, known as the Millennium Development Goals (MDGs), would be accomplished by 2015.

In 2005, The Lancet along with leading academics and UN agencies, launched *Countdown 2015*, which tracks coverage levels of health interventions that reduce maternal, newborn, and child mortality[8]. It encouraged governments and partners to be accountable, determine knowledge gaps, and suggest action plans to reach MDG 4 (Reduce Child Mortality) and MDG 5 (Improve Maternal Health)[8]. The fifth MDG was set with the goal of reducing the global maternal mortality ratio by three quarters from 1990 to 2015[8]. Although this was an ambitious goal, and likely unattainable to countries with very high mortality rates, setting this goal was important and valuable, as it challenged donors and policymakers to place a greater emphasis on maternal health on a global scale[8].

Dr. Mbaruku conducted instrumental work to understand factors that contribute to the high maternal mortality rate in low resource settings[3]. Early in his career, he was determined to reduce the number of deaths in the Regional Hospital in Kigoma, Tanzania[3]. He compared the maternal mortality ratio pre- (1984-1986) and post- (1987-1991) implementation of an intervention aimed at optimizing professional responsibilities and increased management of resources[3]. Overall, with the introduction of the intervention, there were significant improvements to the well-being and health of women[3]. Specifically, the maternal mortality ratio in the hospital fell from 933 to 186 per 100 000 live births, over the 7-year period[3]. Ultimately, Dr. Mbaruku's work served as a foundation for the development of policies and strategies to prioritize the well-being of pregnant women in Tanzania and elsewhere.

In 2010, Dr. Mbaruku was interviewed and profiled in The Lancet in an article entitled "Godfrey Mbaruku 'an early hero of maternal health"[9]. In this profile piece, Dr. Mbaruku reflected on his early posting to be the only maternal health physician in

the Kigoma region and he is quoted as saying, "At the beginning, I saw this posting as a punishment"[9]. The article also described the situation that Dr. Mbaruku found at the hospital in Kigoma when he arrived as being quite desperate, with very low morale of the health providers and poor conditions of the hospital[9]. Dr. Mbaruku set about improving the day-to-day provision of obstetrical care and obstetrical emergencies. The article stated that between 1988 and 1992, under Dr. Mbaruku's leadership, maternal deaths in the hospital fell by three-quarters and that 'if replicated nationwide, it would ensure Tanzania met Millennium Development Goal 5'[9]. When asked further about progress towards MDG 5 in Tanzania, the article also quoted him as saying "Nets for malaria, prevention of anemia, improved nutrition, and education are all factors helping maternal mortality progress" and "To do this, we would have to get down to a maternal mortality ratio of around 150 [from near 600], and I can't see that happening unless something very unusual happens"[9]. When asked about what needs to change, the article cites him as referring to a reduction in maternal mortality as 'a jigsaw puzzle' that the article describes as 'a continuum of multiple interventions' including efforts to improve women's empowerment- "Women must have a voice. They have to fight for their rights, they are dying because people look down upon them. Girls must be educated as well as boys"[9].

In 2012, it was estimated that there had been 287,000 maternal deaths in 2010. This is a marked decline of 47% from 1990[10]. Figures released in 2011 demonstrated a further decline to 273,465 maternal deaths[10]. These reductions were largely accredited to policy changes and increased quality of services[10]. In 2013, as the MDGs were approaching their 2015 deadline, the second Global Maternal Health Conference was held in Arusha, Tanzania. Here, a *Manifesto for maternal health post-2015* was created and later published in The Lancet[12].

Overall, although not every goal was achieved, global progress was made, with an estimated 21 – 29.7 million lives saved, and 471 million fewer people living in extreme poverty[11]. Importantly, there were some notable weaknesses with the MDGs, including their focus on outcomes, rather than the actual process to achieve those outcomes[11].

Sustainable Development Goals (2015 – 2030)

The Sustainable Development Goals (SDGs) were developed and adopted by all UN Member States in 2015 at the end of the MDG era[12]. They are part of a 15-year plan, and built upon the MDGs, adding emphasis on building economic growth and addressing a range of social determinants, including social protection, education, health, and job opportunities[12]. They also strive to protect the environment and tackle climate change[12,13]. There are 17 total SDGs, which focus on people (SDGs 1-6), the planet (SDGs 13-15), prosperity (SDGs 7-12), peace (SDG 16), and partnerships (SDG 17)[12,13].

The first SDG, titled "No Poverty", highlights the global commitment to mobilize resources to reduce poverty globally[13]. In low resource countries, limited autonomy (decisions may be made by the family), lack of education about the importance of health care, lack of transportation, and lack of financial resources, are significant barriers to women accessing healthcare[14,15]. In 2016, Dr. Mbaruku and colleagues published a paper that discusses many of the common barriers that slow progress in maternal health in low and middle income countries[16]. Interestingly, the findings suggest that across many countries and clinical areas, limitations in finances and human resources serve as significant impediments in advancing maternal health[16]. Additionally, Dr. Mbaruku effectively identified that in low resource settings, an increase in distance and lack of transportation contribute to high levels of "direct obstetric mortality"[17,18]. Overall, Dr. Mbaruku's efforts highlight the relationship between poverty and maternal health; notably, increasing levels of poverty may easily slow advancements in the field of maternal health.

The third SDG, titled "Good Health and Well-being", which is to ensure healthy lives and promote well-being for all at all ages, emphasized the global commitment to improve maternal health and decrease maternal mortality[13]. SDG 3 comprises 13 sub-targets, target 3.1 being to, by 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births, with no country having a

maternal mortality rate of more than twice the global average[13]. Ultimately, between 2000 and 2017, the MMR decreased by about 38% worldwide[19]. Despite this improvement, worldwide maternal mortality is still unacceptably high and there is much progress to be made, especially in developing regions[19]. However, the maternal mortality ratio (MMR, number of maternal deaths per 100,000 live births) in developing regions is still 14 times higher than in developed regions, and 94% of all maternal deaths occur in low or middle-income regions, most notably sub-Saharan Africa (64%)[20-22]. Sub-Saharan Africa is also estimated to have the highest maternal mortality ratio in the world, with 533 deaths per 100,000 births[23]. Most maternal deaths have preventable causes, which further stresses the necessity for maternal and child health to remain priorities for SDGs beyond 2015[24].

The fourth SDG, titled "Quality Education", consists of 10 sub-targets[13]. The targets that are most related to maternal health and decreasing maternal mortality are targets 4.1, 4.3 and 4.4. Education is a key factor that contributes to evading poverty and reducing inequality[13]. Dr. Mbaruku dedicated a lot of his time towards training future healthcare professionals in the field of gynecology and obstetrics, as he highly valued education. Alongside a very diligent team, between 2009-2010, he developed a curriculum catered towards educating non-physician clinicians on comprehensive emergency obstetric care in remote and rural areas in Tanzania[25]. Across 11 health centres in rural districts in Tanzania, 43 care providers were trained to perform "major obstetric surgeries, manual removal of placenta, and evacuation of incomplete and septic abortions"[25]. Interestingly, this training resulted in an "increase in institutional deliveries, a decrease in the stillbirth rate, and a reduction in obstetric referrals"[25]. Through his dedication, Dr. Mbaruku has defined how the introduction of education can accelerate progress in maternal health. A positive correlation between female education and maternal health is well documented[26-29]. A study conducted by Abigail Weitzman conceptualizes education as a key determinant of maternal health (and implicitly maternal mortality)[30]. Overall, this includes increasing cognitive skills, providing more economic opportunities, increasing autonomy, and encouraging the uptake of healthcare services[30]. Furthermore, if a woman is educated, this is likely to increase her autonomy in the home, and therefore improve her health-seeking behaviour during the perinatal period[31]. With the ability to make more decisions, spending money on their own healthcare and obtaining antenatal care may be prioritized[31].

The fifth SDG, titled "Gender Equality", focuses on ending all forms of discrimination against women and girls globally (5.1) in the form of legal rights, political representation, elimination of harmful practices, restructuring work and family dynamics, equal rights to resources and ownership, and universal access to sexual and reproductive health and reproductive rights[13]. Dr. Mbaruku worked to emphasize the need for women to be better represented in highly trained cadres, and indicated that this is essential and critical, in order to enhance some gender specific roles and needs[32]. With the help of colleagues, 815 health workers across 88 facilities in Tanzania were surveyed[32]. The results of the survey revealed the dramatic skew in gender in Tanzania's health cadres[32]. Specifically, the number of women who were clinical officers or medical officers was extremely low compared to men[32]. Evidently, through Dr. Mbaruku's findings, it is clear that more action needs to be taken to empower women and provide them with the same opportunities as men.

The tenth SDG, titled "Reduced Inequality ", has a focus on reducing inequalities within and among countries[13]. In regions like sub-Saharan Africa, gender and income inequalities are very apparent and shape their per capita income growth which is estimated could be increased by 0.9 percentage points if major inequalities were addressed[33]. Through several of his studies, Dr. Mbaruku has demonstrated the lack of autonomy for women[34]. In 2011, he conducted focus group discussions with women and men across rural districts in Tanzania[34]. Overall, it was determined that the choice women make regarding delivery location (hospital, primary care clinic, or at home) is largely influenced by their husbands[34]. He also went on to unravel the "broader" issue of disrespectful maternity care[35]. Notably, he identified that women were more likely to be treated with disrespect if their visit to the hospital was for sickness, as opposed to a

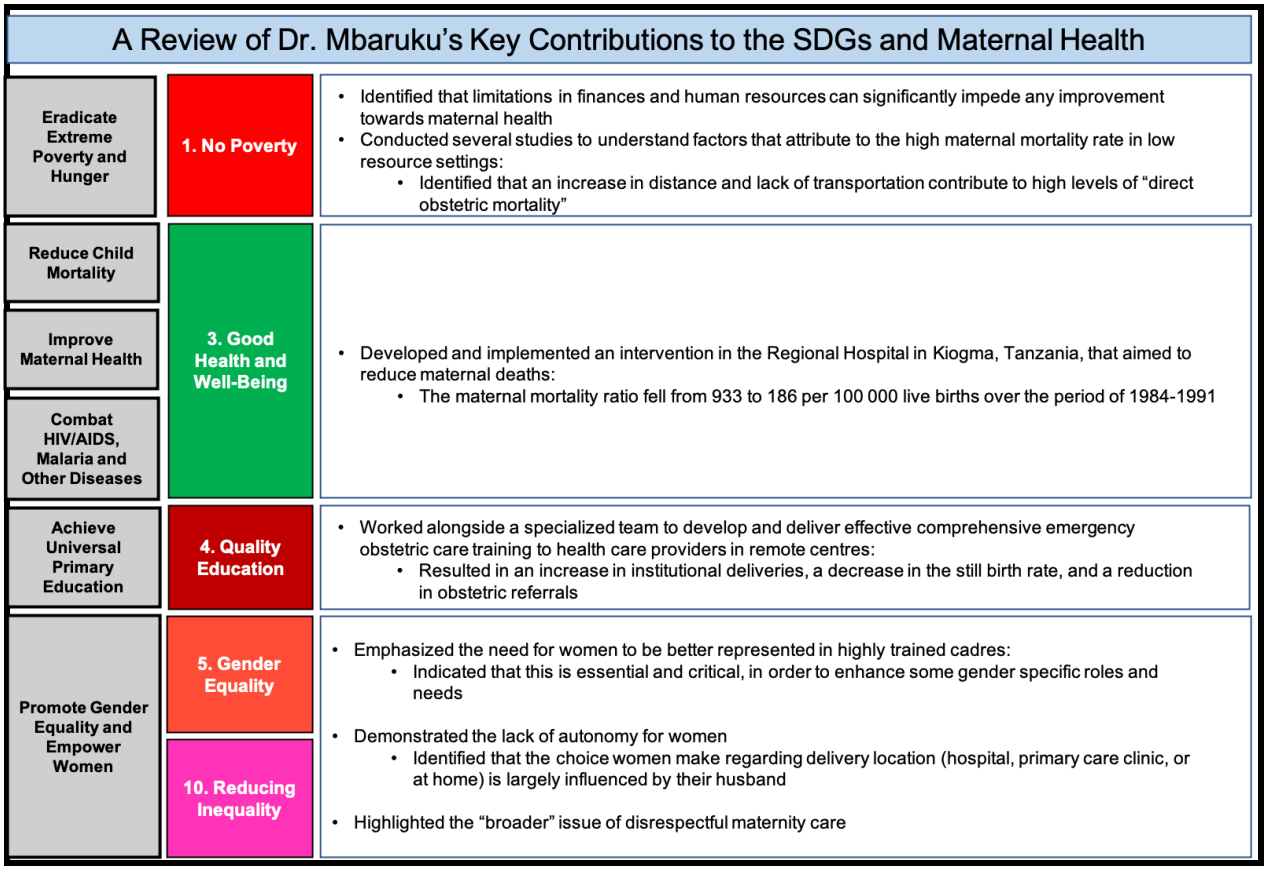

Figure 1: Key achievements of Dr. Mbaruku in the field of maternal health

routine check-up[36]. Ultimately, Dr. Mbaruku's findings suggest that diminishing gender inequality is very critical in order to improve maternal health.

Interventions working towards equitable maternal and child healthcare services are essential for ameliorating the current statistics in impoverished countries, like those in the sub-Saharan region[37]. However, in order for these interventions to be effective, reparations of the inequalities plaguing socioeconomic, environmental, and governmental factors in these regions must also be met[38]. You cannot fix one without the other, and these additional conditions play a role in the reduction of inequalities and subsequent reduction in MMR[38].

Ultimately, from 1985 to today, the field of maternal health has evolved enormously and is now an established field of study and practice. Leaders in the field have succeeded in convincing the world that maternal mortality is a rectifiable issue and that no woman should needlessly die during pregnancy or childbirth. Funding has increased and research is flourishing, which has contributed to the declining maternal mortality rate. At the 2013 UN General Assembly, the UN Secretary, General Ban-ki Moon, said, "A new post-2015 era demands a new vision and a responsive framework. Sustainable development -- enabled by the integration of economic growth, social justice and environmental stewardship -- must become our global guiding principle and operational standard. This is a universal agenda that requires profound economic transformations and a new global partnership"[39].

Unfortunately, research has shown that health disparities have increased and inequalities have deepened since the COVID-19 pandemic hit, with poor and vulnerable communities affected the most drastically. There are additional setbacks that disproportionately affect the health of women and their ability to earn an income, which are subject to precarious working conditions and lower pay, especially in Africa[40].

Thankfully, Dr. Godfrey Mbaruku has left a lasting legacy that will benefit maternal health well beyond the COVID-19 pandemic. When he gave a keynote address at the annual Tanzanian meeting of the IMCHA researchers and stakeholders in Dar es Salaam in May 2018, just a few months before his death, he said, "The world has learned a lot from the MDGs and as a result has set strategies to achieve universal health coverage. Maternal mortality can be reduced. It has been a long and hard road but there is a ray of light in the proverbial long tunnel. Most interventions are not rocket science. However, we must learn from the experiences in the last two decades". He expressed that it is imperative that we set realistic targets, ensure adequate and consistent funding streams, enhance accountability and political will at all levels, engage all stakeholders including the community and other government sectors, learn from evidence-based interventions, measure effective implementation, continue to seek innovative solutions through research, and have an intricate and efficient connection between maternal health and global development goals.

Sadly, Dr. Mbaruku passed away on September 2nd, 2018. His legacy through his work and his dedication towards improving maternal health, will always be remembered. Without a doubt, Godfrey Mbaruku's commitment to improving maternal health in Tanzania through his advocacy and research contributions over his professional life will forever serve as foundational pillars for the ongoing global effort to reduce maternal mortality.

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