

Advancing mother-child health globally: One researcher's efforts

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Grace Chan and colleagues on a field visit to Angolela Tera, Ethiopia. Credit: Beza Hunegnaw

Globally, five million children die annually before the age of 5. Forty percent of these deaths are in the first month, and many are preventable.

Grace Chan, associate professor of pediatrics at Harvard Medical School and an alumna of the School, finds these numbers unacceptable.

The statistics contrast starkly with U.S. medicine, including at Boston Children's Hospital, where Chan works as an attending physician in the Division of Medical Critical Care.

For the past 20 years, she has been asking how we can improve infants' chance at life when resources are limited.

The question has taken Chan around the world, most recently to Ethiopia.

Growing solutions in East Africa

Ethiopia accounts for a large share of the world's early childhood mortality. Mothers and babies receive little health care support outside the hospital. Many mothers give birth at home, with minimal prenatal and postnatal care. In rural areas, homes often lack electricity and running water.

Seeking to improve maternal-child health, Chan partnered with Ethiopia's Ministry of Health, local leaders, and clinicians at St. Paul's Hospital Millennium Medical College, Ethiopia's largest tertiary care hospital.

She co-founded HaSET ("happiness" in Amharic), a research program with field sites encompassing 16 villages.

Her team visits families' homes every three months, gathering information and enrolling pregnant women in studies.

"Through partnerships, we grow solutions from the ground up and

address concerns raised by the community," said Chan. "Our work is only possible with great collaborators."

Chan hopes their research, published in more than 40 articles, will help distribute resources more equitably and lead to sustainable, scalable interventions. Their work has already influenced policies at Ethiopia's Ministry of Health and the World Health Organization.

Finding risks, developing interventions

The team set out to understand the risks babies and their mothers face. In low- and middle-income countries, those risks are high.

Chan's team found high rates of pre-term birth, low birth weight, stillbirth, or death during the newborn period, as well as substantial rates of sepsis, a life-threatening bloodstream infection.

The team then looked for risk factors and possible ways to address them.

For example, they found that encouraging effective "kangaroo mother care"—early breastfeeding and skin-to-skin contact between mother and baby—increases survival in low-birth-weight infants.

Chan has since led successful efforts to scale up kangaroo mother care, taking into account the local context. That meant understanding the barriers mothers face. "It's hard to do skin-to-skin when moms are out doing field work," explained Chan.

"There is also stigma around low-birth-weight [babies](#)," she added.

"Mothers may be reluctant to show the baby to others, and fathers need to be on board."

Maternal-child health: Lessons across cultures

At Boston Children's, Chan cares for children with severe, acute illness in the Intermediate Care Program. She takes some lessons back to Ethiopia, such as protocols for tracking [drug-resistant infections](#) and choosing antibiotics based on the data.

"Antimicrobial resistance is a growing global crisis further exacerbated by climate change," Chan said. "In newborns with sepsis at St. Paul's Hospital and hospitals in other low- and middle-income countries, we found 90% rates of resistance to first-line antibiotics."

Ethiopia also has much to teach about efficiency, resiliency, and functioning with limited resources. This knowledge helped ground Chan during the "triple-demic" of COVID-19, influenza, and RSV, when Boston Children's was inundated with critically ill children.

There are also valuable lessons about empowering families to help with care when hospital staff are overwhelmed.

"No matter where you are, a mom will do anything they can for their child," said Chan. "That love is the same everywhere."

Provided by Harvard Medical School

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