

2021 ANNUAL REPORT

Maya Health Alliance

Wuqu' Kawoq





Admin Intern Brooke B

I decided to support Wuqu' Kawoq | Maya Health Alliance because I believe that high quality healthcare is a universal right, and I saw that they are doing significant work to reach that goal in one of the areas that need it most. I was also impressed by the focus that they put in understanding the culture and language of these communities to connect with them for an even more meaningful impact.

- Kelly Hong, Donor, Bellevue, Washington, The Flour Project

FROM OUR EXECUTIVE DIRECTOR

Dear Friends,

Despite the persistent challenges of Covid in Guatemala, where vaccination rates are among the lowest in Latin America, our 15th year was in many respects remarkably positive.

We continued to provide quality care in all of our program areas, demonstrating both our resilience and our critical role in communities' health and well-being, particularly when the public health system is overwhelmed by crises like the Covid pandemic. In our Mobile Maternal Health program, for example, we hired cars to replace the ambulances that were diverted for Covid patients, and our navigators accompanied mothers to hospitals when their families could not. The end result was another year of zero deaths among the mothers served by our program!

We partnered with researchers from the University of California San Francisco (UCSF) and Stanford's Digital Medic to study the effectiveness of delivering Covid vaccine information in Mayan languages via social media. This powerful collaboration brought together experts from many different disciplines to quickly understand and address a significant problem in Guatemala - vaccine hesitancy among indigenous populations. It also underscored the importance of our work building the capacity of local health workers to deliver care in Mayan languages.

We expanded the focus of our Family-Centered Nutrition program to include even more emphasis on fostering brain development in early childhood. This included a study using sensors to follow babies' movements, and another in which mothers use a smartphone application to track and encourage their children's progress toward developmental milestones. The end goal is brighter futures for hundreds of young children and their families.

Our Center for Indigenous Health Research continued to advance knowledge on several critical fronts, including stunting and nutrition, obstetric care, diabetes treatments, and chronic kidney disease in young agricultural workers. Researchers published more than a dozen studies in these and other areas throughout the year.

We are so proud of these many achievements during such a challenging time. Thank you to our spectacular staff and our wonderful community of supporters for another truly amazing year!



Anne Kraemer

Maya Health Alliance | Wuqu' Kawoq
2021 Annual Report



OUR WORK

We transform the health of communities in Guatemala by creating high quality solutions to close critical gaps in care. Community health care providers work collaboratively with patients in Mayan languages and communities to develop practical, sustainable approaches to break down barriers to health and wellbeing.

We are a global leader in research and treatment models for chronic diseases, including child malnutrition, diabetes, heart disease, and cancer.

Mission

Building equity and transforming health in rural Guatemala.

Vision

Everyone has access to high-quality care, no matter where they were born or what language they speak.

SUSTAINABILITY GOALS

Working in rural Guatemala with historically marginalized populations, Maya Health Alliance | Wuqu' Kawoq is at the forefront of the Sustainable Development Challenge.

Since we began in 2007, we have strived to create a self-sustaining, holistic approach to healthcare that recognizes the many layers of human well-being.

The United Nations' Sustainable Development Goals are a natural fit with our philosophy and we have used them to refine our vision of healthcare in Guatemala.

Currently, we are taking meaningful steps to fulfill many of the 17 goals:



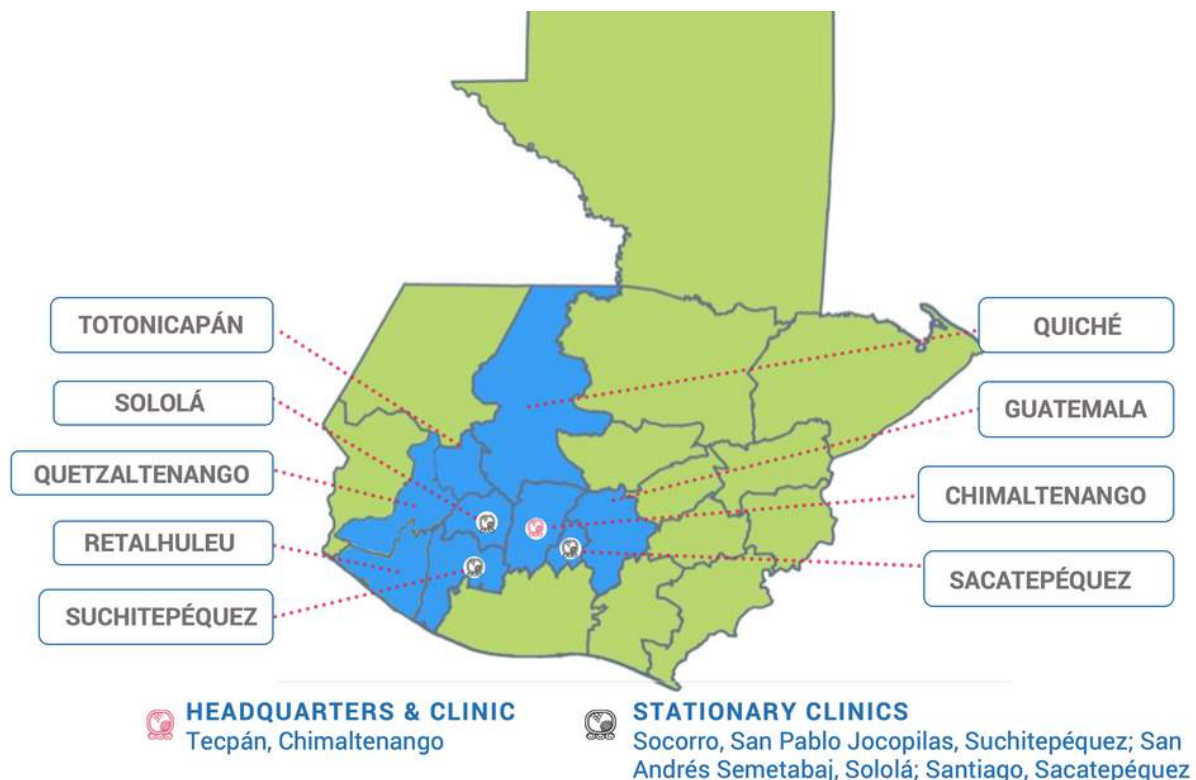
WHERE WE WORK

Guatemala is home to some of the poorest communities in the Western Hemisphere. Its population has one of the greatest income gaps in the world. The public health system is vastly under resourced. Most health care is delivered in Spanish despite the fact that half of the population speaks a Mayan language. These barriers, along with longstanding discrimination, prevent many indigenous people in rural areas from accessing basic health services.

Health outcomes reflect these gaps:

- As many as 80% of children in rural communities suffer from malnutrition.
- Guatemala's overall maternal mortality rate is 88/100,000, but rates among indigenous women are twice as high.
- The rate of type 2 diabetes and pre-diabetes among indigenous people is 25% - more than double the national rate.

We're working in nine states in Guatemala to change these realities.



2021 IMPACT

Guatemala continued to struggle with Covid throughout 2021. Low vaccination rates and limited options to isolate kept rates high and schools closed. Although we had to suspend some in-person community workshops, we were able to continue to provide quality care to all of our patients. We even started some new initiatives, including an education campaign around Covid vaccine safety. Overall, our healthcare services were largely uninterrupted and our research program remained robust.

HEALTH SERVICES PROVIDED IN 2021

10,530 patients **34,734** visits

Including:



NUTRITION

855 patients
12,642 visits



PRIMARY CARE

603 patients
1,068 visits



WOMEN'S HEALTH

4,740 patients
9,869 visits



DIABETES

131 patients
1,583 visits



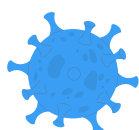
MATERNAL HEALTH

869 patients
2,861 visits



COMPLEX CARE

126 patients
341 visits



COVID VACCINE COMMUNICATIONS

50+ video, radio, and social media messages in
8 languages (Ixil, Kaqchikel, Kiche, Mam, Tzutujil, Q'eqchi, Qanjobal, and Spanish)
2 million + daily viewers & listeners



Staff participating in our *Junamilal* (Equity) campaign for Guatemala's 200th Independence Day (above) and supporting vaccine confidence (below).





OUR TEAM

94% Guatemalan
84% Indigenous Maya
90% Women

We are a diverse team of physicians, nurses, anthropologists, linguists, teachers, nutritionists, engineers, public health practitioners, lawyers, designers, accountants, entrepreneurs, and community health workers. We are united by our dedication to improving health and well-being in Guatemala.

BOARD OF DIRECTORS

We have two boards, one based in the US and one in Guatemala. Each board serves different legal and organizational functions. The US board focuses principally on fundraising, financial management, and strategic direction, and the Guatemalan board focuses on program implementation and strategy. We are so grateful to our dedicated board members and the time and resources they contribute! One of our goals in the coming years is to increase opportunities for collaboration between boards.

ANNE KRAEMER

Executive Director

Anthropologist
Antigua, Guatemala



PETER ROHLOFF

Medical Director

Physician
Antigua, Guatemala
Boston, MA



KARA ANDRADE

US Board Member

PhD Candidate
American University
North Carolina



JUAN COJ

Guatemala Board Secretary

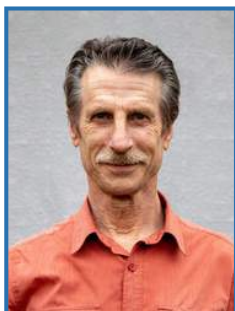
Agriculture Worker
Tecpán, Chimaltenango



CHRIS DAVIES

US Board Member

Property Manager
San Francisco, CA



MARK DOERR

US Board Member

Attorney
New York, NY



BRENT HENDERSON

US Board President

Associate Professor
Gainesville, FL



PATRICK JENNINGS

US Board Secretary

Health Care
Consultant
San Francisco, CA



CLAIRE MELVIN

US Board Member

Attorney
New York, NY



TOM MELVIN

US Board Treasurer

Financial Analyst
New York, NY



FELIPA MUS

Guatemala Board Member

Health Committee
Volunteer
Santa Lucía Utatlán,
Sololá



RUSSELL ROHLOFF

US Financial Controller

Engineer
Bethel, VT



HEIDY ROQUEL

Guatemala Board Treasurer

Community Volunteer
Tecpán,
Chimaltenango



ANTONIO SIMAJ

Guatemala Board Secretary

Retired Firefighter,
Community Volunteer
Nahualá, Sololá



The work that they do is creative, cutting edge, very innovative, and I always find that it's relevant and useful to the groups that they work with. It's also life-saving work. And they do it with a lot of dedication and humility.

- US Board Member Kara Andrade

REFLECTIONS ON TURNING 15

This year we celebrate 15 years of bringing high quality healthcare to rural, indigenous communities throughout Guatemala. We were founded on January 1, 2007. On the traditional Mayan calendar this day is called, “Wuqu’ Kawoq” (pronounced Wuh-Koo-Kah-Wok), and represents medicine and healthcare providers. We chose this as our name to reflect our commitment to partner with indigenous communities and health workers to eliminate barriers to quality care, including language, culture, cost, distance, and discrimination.

In our first 15 years, we have experienced the transformative power of hiring, training, and empowering local health workers to provide care in their own communities and languages. We've seen how much we can learn by truly listening to our patients and by consistently collecting data to measure our effectiveness.



This community-led, data-informed approach is working. In the communities where our programs operate, rates of child malnutrition and deaths from childbirth have dropped. More people are able to manage their chronic conditions like diabetes, heart disease, and epilepsy. Cervical cancer is being detected earlier and treated more effectively. More women have access to family planning information and resources. In our 15 years, we are proud to have served more than 100,000 patients and provided quality care in 215,000+ clinic visits.



The secret to our sustainability, growth, and success all these years has been partnering with local communities and supporting the health professionals who are from those communities to deliver services and build systems that lead to better health and well-being for everyone.

– Brent Henderson, US Board Chair

15 WAYS WE DELIVER

1

CENTERING LANGUAGE & CULTURE: This is part of our DNA: We exist to provide quality health care that reflects and respects our patients' languages and cultures. This allows our patients to feel heard, understood, and informed when dealing with health concerns.

2

ELEVATING INDIGENOUS WISDOM: We are guided by and support Maya health workers who infuse knowledge from the different cultures and communities we serve so that we can develop practical, relevant solutions to health problems.

3

BUILDING LOCAL CAPACITY: We recruit, train, and support local community health workers. We invest with extensive, ongoing training. We encourage team members to contribute their voices, take on new challenges, and grow.

4

LISTENING DEEPLY: We listen — not just to the most vocal and articulate leaders but even more so to the community members who are in the best position to see the most pressing problems and most feasible solutions.

5

CONSIDERING THE WHOLE PATIENT: We don't treat patients by body part or disease. We look at all aspects of a patient's health, starting with preventive care and including environmental contributors, from work to family to violence and stress.

6

FOLLOWING UP: We walk with our patients, ensuring they receive follow-up care and information in a timely manner and have the medical, financial, and personal support they need to address their health concerns from start to finish.

7

EMPOWERING PATIENTS: We partner with patients and help them get the information, resources, and confidence they need to make lasting changes to achieve the best possible health for themselves and their families.

8

CREATING, USING & SHARING KNOWLEDGE: Our Center for Indigenous Health Research conducts groundbreaking investigations into issues of importance in the rural areas where we work, from maternal deaths to growing rates of kidney disease among agricultural workers.



9

STAYING FLEXIBLE: We're consistently gathering data to inform and improve our work. We practice what is known as implementation science; based on real-time data, we adapt our approaches to suit different contexts and communities and find new ways to leverage our strengths for better outcomes.

10

GETTING AT ROOT CAUSES: We work to illuminate and improve the systems and conditions that drive health disparities, starting with access to quality education, jobs, and healthcare.

11

CULTIVATING GENDER EQUITY: Empowering women is key for improving lives in families and communities. Our women-led team partners with mothers, midwives, nurses, and navigators to create better health and dismantle norms that sideline women.

12

TAKING CARE OF OUR PLANET: Climate change is creating crop-decimating hurricanes, droughts, and heat that threaten health and well-being in rural Guatemala. We are adopting policies and practices to spotlight and support planetary health.

13

PARTNERING WHENEVER POSSIBLE: We work with the Ministry of Health so we can complement rather than duplicate services, and we collaborate with a variety of organizations at local, regional, national, and international levels to share resources and maximize impact.

14

EMBRACING INNOVATION & SMART TECHNOLOGY: We innovate ways for our team to work effectively, including creating and using technologies that make sense in the communities and contexts in which we work.

15

GROWING SUSTAINABLY: We commit the time and resources necessary to cultivate lasting solutions to the priority problems that communities identify. We adapt as we go along to develop approaches that are practical and sustainable. We scale successful solutions by sharing best practices. We help build sustainable communities by bringing women, Maya people, and other marginalized voices to the table.

**THESE APPROACHES HAVE GUIDED OUR WORK IN OUR FIRST 15 YEARS.
READ ON TO SEE WHAT THIS LOOKS LIKE IN ACTION.**



ACHIEVING HER DREAM

Lily Ajú grew up in Patzún, a Kaqchikel Maya town, surrounded by family in a modest cluster of homes. As a girl, she dreamed of making a difference in her community. For indigenous girls in Guatemala, following your passion, pushing through the cultural and societal barriers to access the necessary education and opportunities, can be a long, rugged road. But Lily realized her dream at Wuqu' Kawoq. She began in 2015 as an interpreter for Kaqchikel-speaking patients, then became a research assistant, then a coordinator, and now manager of the thriving Family-Centered Nutrition program.

At first, Lily was daunted by the responsibility of guiding mothers in their children's care and leading a team. Her drive to learn, along with many training opportunities, helped build her skills and confidence. "I've learned how to take hemoglobin samples," she says, "and how to advise a mother to improve her child's malnutrition, and even very practical things like how to prepare healthy recipes." She also calls on her knowledge at home, helping her mother, who has diabetes, choose healthy foods. She takes joy in earning the trust of Maya patients who have lost confidence in the public health system, and in seeing their children grow strong. She says the hardest thing about her job is that there's never enough time in the day!

- 1 LANGUAGE & CULTURE
- 2 INDIGENOUS WISDOM
- 3 CAPACITY BUILDING
- 11 GENDER EQUITY





TAKING CHARGE OF HER HEALTH

At the time of her fourth pregnancy at age 31, Doña María, a field worker from a village outside the city of Tecpán, was living in fear of her husband. Several years earlier, out of safety concerns, she placed her first child from a previous relationship in the care of relatives.

Because María had a caesarean delivery with her last child just over a year earlier, workers at the local health post advised her to seek medical care to address potential risks. She was reluctant to do so, fearing that it would provoke her husband, who did not like her to leave home. That was when she connected with Wuqu' Kawoq. Working with her midwife, our care navigators reached out repeatedly until Doña María's husband agreed to allow her to receive our calls. With the help of our team, she was able to see a doctor and schedule a caesarean delivery.

Unfortunately, Maria went into labor well before her scheduled delivery. Thanks to her earlier experiences, she understood that it was important to get help regardless of how her husband might respond. But this time, when her doctor suggested that she be admitted for treatment of an infection, her husband said he supported the treatment and agreed to care for the children at home while she was gone.



With tears of relief, she agreed to stay for the treatment. Three weeks later, Doña María returned to the hospital to give birth by caesarean delivery to a 6-pound 4-ounce boy. Today, she is enormously grateful for her healthy new son and for the support and care she now receives from her husband. She credits her work with our team for teaching her the value of her own life.

- 5 HOLISTIC CARE
- 6 FOLLOW UP
- 7 PATIENT EMPOWERMENT
- 10 ROOT CAUSES
- 11 GENDER EQUITY

M-HEALTH: FIVE YEARS STRONG

In the first five years of our innovative Maternal Mobile Health program, only one maternal death has been recorded in the more than 4,000 births attended by participating midwives. The program launched in 2017 as a pilot funded by the US National Institutes of Health in the district of Tecpán, which had one of the highest maternal mortality rates in the region (around 200–250 per 100,000 births).

Our "M-Health" program, developed in collaboration with a team from Emory University, connects Maya mothers with hospital care when they need it by eliminating barriers such as discrimination, language, cost, and distance. Most indigenous women give birth at home with traditional midwives to avoid these barriers. To support this choice and improve outcomes, we equip midwives with a checklist-based smartphone application and low-cost tools to detect high-risk problems. When problems arise, the app immediately alerts our medical staff. When mothers require hospital care, our Maya care navigators help arrange transportation and logistics and provide translation and other supports during hospital stays. In the coming years, we aim to expand this innovative, life-saving program to additional regions.

- 1 LANGUAGE & CULTURE
- 2 INDIGENOUS WISDOM
- 3 CAPACITY BUILDING
- 8 RESEARCH & KNOWLEDGE SHARING
- 9 FLEXIBILITY
- 10 ROOT CAUSES
- 13 COLLABORATION
- 14 INNOVATION



UNDERSTANDING HER WORLD

Almost all of our care is delivered by community health workers who speak our patients' languages and understand their cultures. For us, that's the way it always has been and will be. But our patients also benefit from ongoing care from a team of trusted partners from the University of Cincinnati. Following are some impressions from a visit by Emily Furnish, a resident physician.

It was our first day at the clinic in Chichimuch, and I could already tell that we would be very busy. Since there were no more private rooms available for interviews, I decided to start conducting patient visits on our bus. The first woman I saw came to the clinic to discuss stomach pain. Upon first glance at the intake sheet, I figured that the visit would be fairly straightforward.

As the interview progressed, something seemed off; even though I don't speak fluent Spanish, I could tell from her body language and tone that there was more on her mind. I finally said, "This pain seems especially troublesome to you. What do you think brought all of this on?" When I dug deeper, she revealed that the stomach pain started after her husband left home six weeks ago. I asked her, "When is he coming home?" to which she responded

that he was possibly gone forever; he had picked up and left without telling her, leaving her with seven kids to care for. I then asked if she had support at home, assuming she would at least have her mother, or a friend in her village, to lean on for help and emotional support. Sadly, she replied that she was truly alone, with no friends or family nearby. Her mom lived hours away by foot in a neighboring village, but she felt ashamed that her husband had left and did not want to worry her mother, so she had kept his departure to herself.

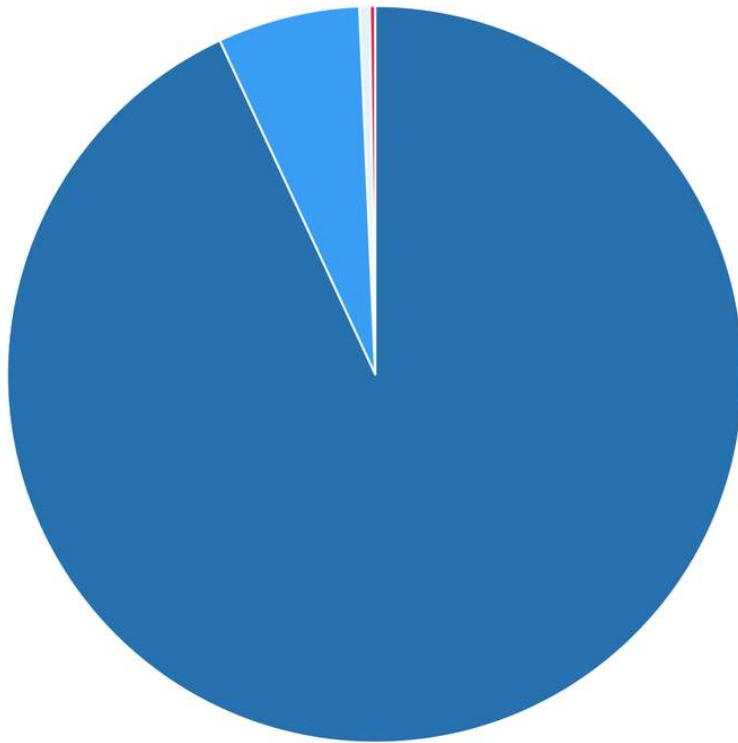


The Cincinnati team outside the Miller Clinic.

Despite all of the complex medical pathologies I have seen in residency thus far, this was a time in which I truly felt like I was unqualified to provide competent care. Who was I, a total stranger, to give this woman any advice? I felt out of my depth, unprepared to handle the emotional gravity of what this patient had shared. I sat, the sun coming in through the window of the bus and hitting my back, listening to her and wishing that there was more that I could do.

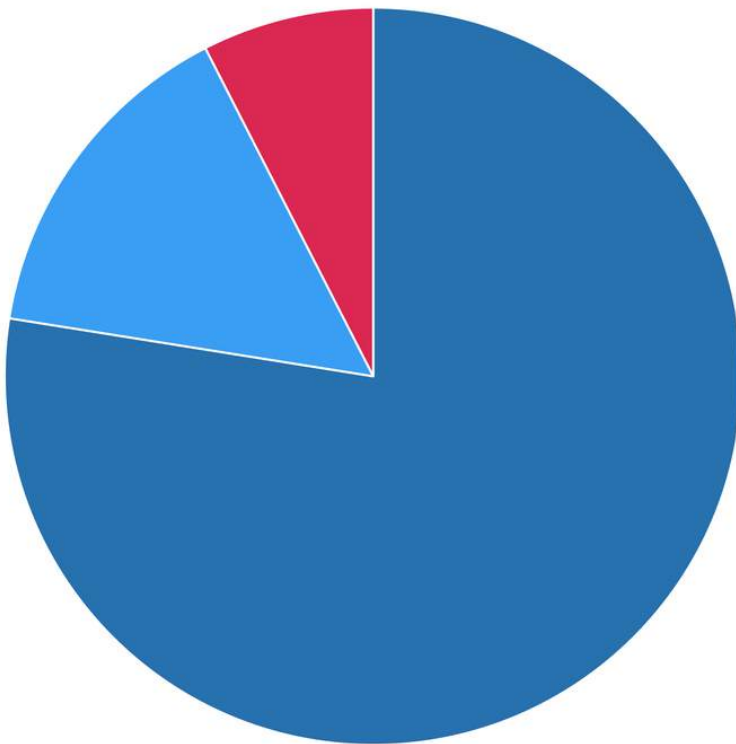
That truly was the theme of the trip: despite all of the prep work, supplies, and collaboration built up over the years with these communities, we still wish we could do more for our patients. I told her that we would be following up with her frequently, both via TeleHealth and at the next in-person trip. "Please know that you are not alone, and that we will be your support system even when things are hard."

2021 FINANCIALS



2021 REVENUE (\$1.529M)

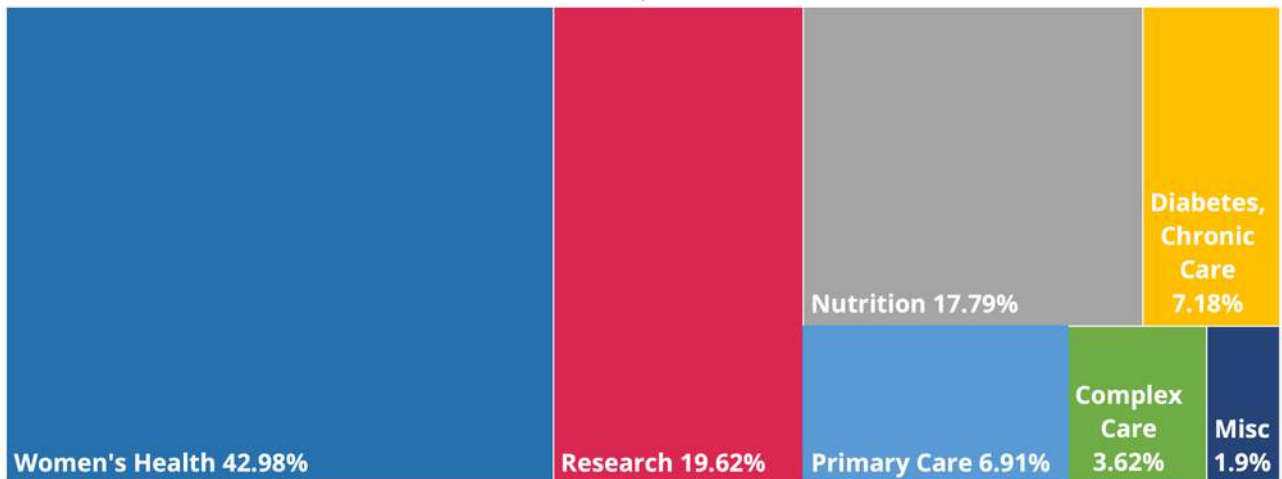
- Contributions (93.06%)
- Contracts & Grants (6.25%)
- Other (0.45%)
- Investments (0.24%)



2021 EXPENSES (\$1.399M)

- Programs (77.51%)
- Admin & General (14.96%)
- Fundraising (7.53%)

PROGRAMS (\$1.084M)





2021 PUBLICATIONS

The Center for Indigenous Health Research, founded by Maya Health Alliance | Wuqu' Kawoq, is a leader in global health research. Below are some of the publications our research team produced in 2021.

Tschida S, Flood D, Guarchaj M, Milian J, Aguilar A, Fort MP, Guetterman T, Montano CM, Miller A, Morales L, Rohloff P. Implementation of a Diabetes Self-Management Education and Support Intervention in Rural Guatemala: A Mixed-Methods Evaluation Using the RE-AIM Framework. *Prev Chronic Dis*. 2021 Dec 9;18:E100. doi: 10.5888/pcd18.210259. PMID: 34882536; PMCID: PMC8673946.

Tschida S, Cordon A, Asturias G, Mazariegos M, Kroker-Lobos MF, Jackson B, Rohloff P, Flood D. Projecting the Impact of Nutrition Policy to Improve Child Stunting: A Case Study in Guatemala Using the Lives Saved Tool. *Glob Health Sci Pract*. 2021 Dec 21;9(4):752-764. doi: 10.9745/GHSP-D-20-00585. PMID: 34933973; PMCID: PMC8691882.

Flood D, Seiglie JA, Dunn M, et al. The state of diabetes treatment coverage in 55 low-income and middle-income countries: a cross-sectional study of nationally representative, individual-level data in 680 102 adults. *Lancet Healthy Longev*. 2021 Jun;2(6):e340-e351. doi: 10.1016/s2666-7568(21)00089-1. Epub 2021 May 21. PMID: 35211689; PMCID: PMC8865379.

Raut A, Mustafayev R, Srinivasan R, Chary A, Ertem I, Grazioso MDP, Gupta S, Krishnamurthy V, Lu C, Maliye C, Miller AC, Wagenaar BH, Rohloff P. Hybrid type 1 effectiveness/implementation trial of the international Guide for Monitoring Child Development: protocol for a cluster-randomised controlled trial. *BMJ Paediatr Open*. 2021 Sep 15;5(1):e001254. doi: 10.1136/bmjpo-2021-001254. PMID: 34604546; PMCID: PMC8444252.

Wallace TC, Rohloff P, Jimenez EY, Proaño GV, Montenegro-Bethancourt G, McCabe GP, Steiber A. Academy of Nutrition and Dietetics Nutrition Research Network: The Saqmolo' Project Rationale and Study Protocol for a Randomized Controlled Trial Examining the Influence of Daily Complementary Feeding of Eggs on Infant Development and Growth in Guatemala. *J Acad Nutr Diet*. 2021 May 4:S2212-2672(21)00226-4. doi: 10.1016/j.jand.2021.03.015. Epub ahead of print. PMID: 33962902.

Kulkarni SS, Katebi N, Valderrama CE, Rohloff P, Clifford GD. CNN-Based LCD Transcription of Blood Pressure From a Mobile Phone Camera. *Front Artif Intell*. 2021 May 21;4:543176. doi: 10.3389/frai.2021.543176. PMID: 34095816; PMCID: PMC8177819.

Austad K, Juarez M, Shryer H, Hibberd PL, Drainoni ML, Rohloff P, Chary A. Improving the experience of facility-based delivery for vulnerable women through obstetric care navigation: a qualitative evaluation. *BMC Pregnancy Childbirth*. 2021 Jun 11;21(1):425. doi: 10.1186/s12884-021-03842-1. PMID: 34116648; PMCID: PMC8193958

Miller AC, Tuiz E, Shaw L, Flood D, Garcia P, Dhaenens E, Thomson DR, Barnoya J, Montano CM, Rohloff P. Population Estimates of GFR and Risk Factors for CKD in Guatemala. *Kidney Int Rep.* 2021 Jan 1;6(3):796-805. doi: 10.1016/j.ekir.2020.12.015. PMID: 33732994; PMCID: PMC7938058.

Rosales MR, Rohloff P, Vanderbilt DL, Tripathi T, Valentini NC, Dusing S, Smith BA. Collecting Infant Environmental and Experiential Data Using Smartphone Surveys. *Pediatr Phys Ther.* 2021 Jan 01; 33(1):47-49.

Juarez M, Dionicio C, Sacuj N, Lopez W, Miller AC, Rohloff P. Community-Based Interventions to Reduce Child Stunting in Rural Guatemala: A Quality Improvement Model. *International Journal of Environmental Research and Public Health.* 2021; 18(2):773.

Rohloff, P. On the frontlines of chronic paediatric undernutrition in Guatemala. *EBioMedicine.* Volume 64, 103223, February 1, 2021.

Chacón, V., Liu, Q., Park, Y., Rohloff, P. and Barnoya, J. (2021), Diet quality, school attendance, and body weight status in adolescent girls in rural Guatemala. *Ann. N.Y. Acad. Sci.* <https://nyaspubs.onlinelibrary.wiley.com/doi/10.1111/nyas.14558>

Guzmán-Abril A, Alajajian S, Rohloff P, Proaño GV, Brewer J, Jimenez EY. Academy of Nutrition and Dietetics Nutrition Research Network: A Home Garden Intervention Improves Child Length-for-Age Z-Score and Household-Level Crop Count and Nutritional Functional Diversity in Rural Guatemala. *J Acad Nutr Diet.* 2021 May 18:S2212-2672(21)00230-6. doi: 10.1016/j.jand.2021.04.002. Epub ahead of print. PMID: 34020932.

Juarez, M., Austad, K. and Rohloff, P., 2021. Out-of-Pocket Costs for Facility-Based Obstetrical Care in Rural Guatemala. *Annals of Global Health*, 87(1), p.75. DOI: <http://doi.org/10.5334/aogh.3223>

Perry MF, Coyote EI, Austad K, Rohloff P, Why women choose to seek facility-level obstetrical care in rural Guatemala: A qualitative study. *Midwifery*, Volume 103, 2021, 103097, ISSN 0266-6138, <https://doi.org/10.1016/j.midw.2021.103097>

Everything that Wuqu' Kawoq does is very intentional – there is a purpose and reasoning behind every decision and implementation and I think for that reason, they are ever evolving and improving.

– Brooke Burgfechtel, Health Administration intern

