

*CHAMAS FOR CHANGE: A GENDER-
RESPONSIVE AND MICROFINANCE-
BASED APPROACH TO EMPOWERING
WOMEN AND BUILDING RESILIENCE TO
HEALTH EMERGENCIES IN KENYA*

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1.1 Title -

Chamas For Change: A Gender-Responsive And Microfinance-Based Approach To Empowering Women And Building Resilience To Health Emergencies in Kenya

1.2 Abstract -

Background: Worldwide, women face the challenges of pregnancy, early childhood, and parenthood with minimal supports. Poor and rural Kenyan women have more barriers to accessing care, are more likely to receive lower-quality care, are disproportionately constrained by the demands of providing for their families, and are more vulnerable to recurrent shocks like droughts, floods, strikes, and pandemics. The investigators created Chamas for Change, a group-based, community health volunteer (CHV)-led program that engages women during pregnancy and the first 1000 days of their child's life, to address these stressors. The strategy promotes maternal, newborn, and child health (MNCH) by addressing gender and social inequalities and providing health education, peer support, and financial capital.

Problem: The COVID-19 pandemic significantly disrupted women's work and MNCH services globally, due to reallocation of health care resources, fears of COVID-19, transportation restrictions, and lockdowns.

Research question and objective: Leveraging the pre-pandemic RCT evaluation of the program, the investigators propose to examine whether participation in Chamas, a program that aims to reduce gender and social inequities, intersected with other factors to mitigate the effects of the COVID-19 pandemic on women's and children's health and economic well-being.

Methodology The investigators will use a participatory study design and a mixed-methods strategy using quantitative and qualitative studies, leveraging cohorts from our RCT completed in Trans-Nzoia County. While the quantitative dataset will provide information on the impact of COVID on health service utilization and economic status, the investigators will draw on a qualitative approach to put these findings in context and specifically explore gender dynamics as social processes.

Potential impact: The investigators will use findings to guide the scale-up of the Chama program and ensure it not only improves the health and well-being of women, but simultaneously strengthens equitable recovery, gender-transformative policies and local preparedness to future health emergencies.

298 words

1.5 Types of Research -

Type #1: Epidemiological studies

Type #2: Population health research

Type #3: Intervention and Implementation research

1.6 Research Duration - How many months will your research project last? (Enter a numeric value of up to 24)

24 months

FULL PROPOSAL

2.1 Brief problem statement, including rationale for selection of research site(s).

Preventable maternal, newborn and child mortality and morbidity remain significant public health issues in many countries, including Kenya. Maternal mortality remains a leading cause of death among women of reproductive age globally, estimated to be 211 per 100,000 live births [1]. Sub-Saharan Africa bears an even higher burden, with a maternal mortality ratio of 533 per 100,000 live births [1]. In 2020, 1 in 13 children in sub-Saharan Africa died before their fifth birthday—15 times higher than the risk for children born in high-income countries [2]. These figures are not evenly distributed [1,2]. Poorer women and women living in rural areas have greater barriers to accessing care, are more likely to receive lower quality care, are disproportionately constrained by the demands of providing for their families and are more vulnerable to the effects of recurrent shocks such as droughts, floods, strikes and now, pandemics.

To address these inequities, our team launched Chama cha MamaToto (Chamas) in 2012 with the Government of Kenya [3,4] (Figure 1). The Chamas program is a group-based, community health volunteer (CHV)-led, peer-support and microfinance program that engages women in pregnancy and the first 1000 days of their child's life. Translated from Kiswahili as 'groups', Chamas are composed of 15-20 women, 2 elders, and 2 government-supported CHVs. Members attend 60–90 min sessions twice monthly. Each session focuses on health, social, and financial topics that have been developed locally and engages group learning through visual and participatory tools. The Year 1 health program focuses on prenatal and perinatal health (e.g., what to expect in prenatal care, benefits of facility delivery, tackling postpartum challenges, exclusive breastfeeding for 6 months, and completing infant immunizations). Years 2 and 3 focus on family planning, parenting skills to foster positive relationships with their children, and strategies to reduce harsh child punishment and alleviate parental stress. Women can decide to join Chamas at any year. Throughout all 3 years, women can engage in a microfinance component that enables them to sustainably finance health practices, enroll in health insurance, start businesses, or meet other family needs. Participation in the group's table-banking is optional so as not to deter women without financial means from joining Chamas.

Chamas aims to recruit the most disadvantaged women in rural and peri-urban communities who face complex and intersecting challenges. The investigators hypothesize that fostering a strong, community-based network through Chamas provides women with the peer support, knowledge, and financial capital that increases their ability to (1) access maternal, newborn, and child health (MNCH) services, (2) improve their socio-economic position, and (3) sustain long-term transformative change (Figure 1).

To test this theory of change, the investigators have carried out successive evaluations leveraging support from county governments and Grand Challenges Canada. The investigators found significant improvements in MNCH outcomes among Chama participants in both our prospective cohort study (2012-2013; n=337) [3] and cluster randomized controlled trial (RCT) (2017-2019; n=1,550) [4]. Chama participants were more likely to engage in behaviours

associated with improved MNCH outcomes compared to controls [4, 5]. These practices include facility delivery (84.4% vs. 50.4%, $p < 0.001$), attending at least 4 antenatal care (ANC) visits (64.0% vs. 37.4%, $p < 0.001$), receiving a postnatal care visit <48hrs postpartum (82.0% vs. 47.0%, $p < 0.001$), exclusively breastfeeding to 6 months (82.0% vs. 47.0%, $p < 0.001$), and fully immunizing their child at 12 months (91.9% vs. 85.2%, $p = 0.41$) [4]. Children of Chama participants had significantly lower rates of at-risk development scores compared to controls [6]. Chama participation also provides much needed social and financial support to CHVs through community recognition, opportunities for skill-building, and contributions from their Chamas. Through ongoing support for Chama implementation from local counties, USAID (see *Letter of Support*) and philanthropic organizations, nearly 300 Chamas have been established with 7,000 women and their children, in 4 counties in western Kenya.

Through stakeholder engagement, the investigators have also implemented Chama cha Babatoto, 'father groups', to facilitate male inclusion and education to shift decision-making authority. In 2019-20, the investigators engaged adolescents to co-design an adapted Chama program to meet their unique needs and are currently completing the first-year implementation with 211 participants in three counties.

The COVID-19 pandemic significantly disrupted women's work and MNCH services globally, due to reallocation of health care resources, fears of COVID-19, transportation restrictions, and lockdowns. A 2022 systematic review from the Gender & COVID Project highlighted the gendered impacts of the pandemic on women's paid and unpaid work in Kenya [7]. Nationwide, two in three adults who lost all their income in 2020 were women. Government responses to economic impacts largely targeted the formal sector, leaving behind women in the informal economy who depend on daily wages. Further, women experienced a disproportionate increase in unpaid care/domestic work, as well as increased gender-based violence and deteriorated mental health. Very little attention has been paid to the effects of the pandemic on CHVs in Kenya, 70% of whom are female globally, despite CHVs facing many of the same economic and gender inequities as those they serve [8].

In our prior studies on the impact of healthcare disruptions on MNCH services, focusing on the impacts of health worker strikes, the investigators found that women who delivered during a strike were 17% less likely to attend at least 4 ANC visits and 16% less likely to deliver in a health facility [9]. Further, women experienced significant economic impacts [10]. These impacts were disproportionately felt by the poor, due to sudden out-of-pocket health expenses to access services in the private sector [10]. To manage, women reported selling assets, fundraising, and taking loans [10].

Based on this work and the similar disruptions caused by COVID-19, the investigators hypothesize that the peer support, knowledge, and access to financial capital provided through Chamas may have helped mitigate the negative impacts of the pandemic on women's and children's health and economic wellbeing, and that communities participating in Chamas may have greater capacity to manage the shocks of health emergencies.

2.2 Overall and specific objectives of the project

Our overall objective is to use a participatory design approach to understand how participation in Chamas, a program that aims to improve MNCH and reduce gender and social inequities, intersected with other factors to mitigate the effects of the COVID-19 pandemic on women's and children's health and economic well-being.

The investigators anticipate using the findings to guide the scale-up of the Chama program and ensure it not only improves the health and well-being of women, but simultaneously strengthens equitable recovery, gender-transformative policies, and local preparedness to future health emergencies, as outlined by the Women RISE objectives.

To carry this out, the investigators will:

1. Establish a platform for participatory and collaborative decision-making on the design and implementation of the proposed evaluation.
2. Evaluate the effect of Chama participation on mitigating the effects of the pandemic on social and gender equity using a mixed-methods approach.
3. Use an equity-centered design process and narrative approach to share research findings.

Increasingly, it is argued that research fails to adopt an equity lens in global health, especially when the methods of data collection and extraction are solely determined by the researchers. To address this, the investigators propose to integrate participatory action-based methods throughout this proposal.

Further, as gender is not the only factor that influences a person's experience of COVID-19 and government responses, the investigators will use an intersectional feminist perspective to consider the complex interactions between structures of power and the interconnected aspects of individual and group identity such as age, occupation, marital status, poverty level, education, health insurance, chama participation, household size, community unit. The investigators will aim to capture gender dimensions by disaggregating outcomes of interest by sex and explore the intersecting axes of power and economic status by disaggregating data by age, poverty level, and other identified factors.

2.3 Methodology

Study Timeline: See Figure 2.

Study Design: The investigators will use a mixed-methods strategy using quantitative and qualitative approaches, leveraging cohorts from our RCT completed in Trans-Nzoia County (2017-2019). The investigators have selected a mixed-methods approach based on our experience that it provides a pragmatic approach to exploring complex social processes. The investigators have drawn on best practices from intersectionality-informed mixed methods research to guide this proposal [11].

Study Site: This study will be carried out in Trans-Nzoia County, where the investigators have longstanding partnership in HIV and MNCH care, including Chama implementation (see *Memorandum of Understanding in Policy Documents*). Trans-Nzoia has a population of 990,341 with 489,107 women and 129,558 children under-five [12]. During the RCT, women were recruited from public health facilities linked to any of the 77 community units (CUs) in 4 sub-counties (Saboti, Kiminini, Cherangany, and Kwanza). These sub-counties primarily subsist on agriculture and livestock farming, with increasing numbers of agricultural and small businesses. Kitale (in Saboti sub-county) is urban, Kiminini is peri-urban, and Cherangany and Kwanza are rural.

Health outcomes in Trans-Nzoia vary between sub-counties but are poor overall. Only 56% of children are fully immunized at age 1, and 58% of women deliver in facilities. The infant mortality rate is 58 per 1,000 livebirths compared to a national average of 39 per 1,000 [13]. Only 29% of women use family planning compared to a national average of 58% [13].

Study Population:

- (1) Women from the RCT who participated in Chamas throughout the pandemic (n=142).
- (2) Women who left Chamas after Mar 12, 2020, the day the first case of COVID-19 was detected in Kenya (n=600).
- (3) Women whose communities were randomized to not implement Chamas during the RCT (n=728).
- (4) CHVs in communities who either did or did not have Chamas operating during the pandemic.
- (5) County health officials.
- (6) Fathers participating in Chama cha Babatoto.
- (7) Adolescent girls currently participating in Chamas adapted for adolescents (15 to 24 years of age; enrolment after Jan 2022).

In our RCT, the majority of study participants had not completed any secondary education, were primarily engaged in unpaid care/domestic work or part of the informal economy [4] and had a median Kenya Poverty Probability Index (PPI) of 57 (IQR 40, 69) (unpublished data), indicating a high likelihood they are in the bottom 40th percentile of wealth [14]. As well, 10% of our study population had no formal education and a median PPI of 33, indicating a high likelihood that they survive on less than 1.90\$/day and are in the bottom 20th percentile of wealth. This suggests that the Chama intervention does include disadvantaged groups and that our study approach will be inclusive of women who are marginalized in many aspects of life.

Aim 1: Establish a platform for participatory and collaborative decision-making on study design and knowledge translation of the proposed evaluation.

To ensure that lived experience and equity are central to the process of evidence generation and knowledge translation, the investigators will create a collaborative platform in Trans-Nzoia that facilitates participatory decision-making. This platform for collaboration and learning will ensure that the knowledge generated is used to enhance decision-making that redresses power imbalances. To achieve this, the investigators will create a local Advisory Group. Our Advisory

Group will include pregnant women, mothers, and fathers, CHVs who facilitate Chamas, educators, community elders, small business owners, healthcare providers from local facilities, and regional leadership (including Decision-Maker co-PI, Dr S Masibo). Our budget includes financial remuneration to members to honor their time commitment and ensure there is representation from the community by its most vulnerable members. As people with lived experience, the investigators view members of the Advisory Group as ‘experts by experience’ and are committed to equitable practices to ensure their participation is not tokenistic. Our engagement will begin with co-creating terms of reference.

In Aim #1, the Advisory Group will focus on adapting the COVID-19 and Gender Matrix to the local context. The Matrix is a tool developed by an international, multidisciplinary group of researchers to document how gender and other inequities impact and are impacted by local responses to the pandemic (see *Diagrams and Tables*) [15]. The Matrix explores the intersection of gender analysis domains (e.g., access to resources, labor/roles, norms/beliefs, power, and institutions/laws) and COVID-19 domains (e.g., vulnerability to disease, exposure, response to illness/treatment, health systems, societal and economic impacts), with different analytical questions at each intersection. Members of the COVID-19 and Gender Matrix Working Group, including team member A Mũrage, have previously used this Matrix to guide a systematic review and author a report on the gendered impacts of COVID-19 in Kenya, including policies and practices implemented in Kenya in response to the pandemic [7]. To align with our intersectional feminist perspective, the investigators will further adapt the matrix to explore how different factors (e.g., age, occupation, rurality, income, level of education, chama participation) interacted to impact the participants’ experiences during the pandemic.

The investigators will first conduct workshops with the advisory group to determine the domains and questions in the COVID-19 and Gender Matrix that will be explored. The focus will be on ensuring research questions are appropriate and relevant to addressing how changes in employment and care responsibilities influenced reproductive decisions or access to health services during COVID-19 within the local context and can inform local solutions and policies for building resilience in the face of recurrent crises. During these workshops, the advisory group will formulate thematic areas of needs, outline the journey of a pregnant woman and the economic, social, and health impacts of the pandemic, and conceptualize potential barriers and innovations that arose during the pandemic. This will inform the final domains and questions included in the final Matrix. This tool will be used in Aim #2 to characterize the shocks and stresses of the pandemic among our study participants, and identify approaches used by community members to either successfully or unsuccessfully mitigate, adapt to, recover from, and ultimately reduce their risks to the economic, social, gender, and health inequities that were amplified during the pandemic. This tool will also have broader applicability for further research by academics, practitioners, policymakers, and other stakeholders within Kenya. The investigators will publish a manuscript on the adaptation process and make the adapted tool publicly and freely available to others to use in further investigations on the gendered impacts of the COVID-19 pandemic.

Aim 2: Evaluate the effect of Chamas participation on mitigating the effects of the pandemic on social and gender equity using a mixed-methods approach.

Our recently completed RCT [4] uniquely positions our team to provide fine-grained empirical data about women's experiences of the pandemic as the investigators have a robust research infrastructure and strong linkages with the communities that participated in the trial. Following the completion of the RCT, the investigators planned to scale-up the program throughout Trans-Nzoia. This scale-up was put on hold due to the pandemic. As a result, there are now multiple groups of women in communities that are well positioned to share to what extent participating in Chamas helped mitigate the effects of the pandemic and related restrictions. Further, the investigators have the ability to compare this to the experiences of those women in the community units where Chamas have not yet been implemented.

Quantitative Data Collection and Analysis: The investigators will quantify the impacts of the pandemic on economic status and health service utilization among women in Trans-Nzoia, focusing on the first 3 study cohorts described above: (1) women who participated in Chamas throughout the pandemic (n=142), (2) women who left Chamas during the pandemic (n=600), (3) women whose communities were randomized to not receive the Chamas intervention (n=748). Our primary outcome will be the change in the mean 2015 Kenya PPI score pre- and post-pandemic for the study participants. The PPI is calculated using a validated set of 10 simple, easy-to-answer questions and estimates the likelihood the participant is living below the national poverty line, or other internationally recognized poverty lines [14]. Each response is given a value, and the total value of all the answers is the participant's PPI score. The PPI "look-up table" for Kenya will then be used to convert the PPI score to a likelihood of the respondent's household being below a poverty line. The investigators will also compare the PPI at the post-pandemic period between three cohorts. The investigators have chosen this as our primary outcome because, from an equity perspective, poor MNCH outcomes are disproportionate across socioeconomic strata. Access to care is generally correlated with economic accessibility and women of lower socioeconomic status often encounter greater barriers to accessing high quality care [14, 16]. The investigators have also chosen this variable as it is meaningful to the county government.

For women enrolled in our RCT (pre-pandemic), the baseline mean PPI score was 57 (SD = 21) for all women. Assuming a 0.5 correlation between pre- and post-pandemic PPI measures, the investigators require a total of 444 participants to detect a 5% (2.8 points) change in PPI scores at a significance level of 5% with 80% power. Based on our total recruitment in the RCT (n = 1,550), this should be highly achievable. Using the same standard deviation above, the investigators would need a minimum of 108 participants per cohort to detect an 8-point difference in post-pandemic PPI between the three cohorts. This sample size is highly feasible given the number of women currently within each cohort.

Our secondary outcomes include indicators relevant to MNCH and COVID-19: enrollment in the national health insurance scheme, number of ANC visits attended, facility delivery, maternal death, newborn death, infant death, exclusive breastfeeding, number of children fully immunized

at age 1, attitude towards harsh punishment of children, level of parental stress, COVID-19 infection, COVID-19 vaccination, and effects of COVID restrictions. These data were collected in December 2021 with 1,400 Chama participants across Western Kenya, including 626 from Trans-Nzoia, using an abbreviated version of the validated survey tool from our RCT. Here, the investigators will carry out this survey across the three previously described cohorts of women in early 2023 to understand the effects of Chama participation more fully on these outcomes and quantify the effects of differing levels of PPI and other identity factors on Chama participation and these outcomes.

To obtain the post-pandemic data for women who participated in Chamas, the program's Data Analyst will generate a list of eligible women organized by community unit. CHVs responsible for each unit will locate, obtain consent, and enroll women. Field officers in Trans-Nzoia will oversee 8 local college-level practicum students to work with CHVs in collecting survey data, with each student responsible for a single sub-county. Integrating mentorship of local students in project implementation has been foundational to our engagement in Trans-Nzoia and replicates the data collection model the investigators used successfully for our RCT.

First, the investigators will summarize descriptive data for the PPI and MNCH characteristics pre- and post-pandemic, as well as by each of the three cohorts specified above. To assess the overall change in PPI post-pandemic the investigators will use a linear mixed effects model adjusted for relevant baseline covariates to estimate the mean difference in PPI from pre to post. Second, the investigators will assess the relationship between sociodemographic variables (e.g., PPI, education, age) and health outcomes (e.g., health insurance status, ANC visits). The investigators will do this both overall by time period as well as disaggregated by cohort by including interactions between sociodemographic variables and cohort group. Results will be presented as cohort specific estimates (e.g., odds ratios for binary outcomes) as well as predicted probabilities of health outcomes by group. All models will account for clustering of data by sub-county using random effects and, when available, the investigators will adjust for relevant sub-county-level indicators. Exploratory analysis will include correlation between outcomes (by group) and reported COVID-19 cases.

When comparing each of the three cohorts the investigators will consider several approaches to adjust for possible confounding, as those who remain in Chamas may differ from those who did not. Confounders will be identified based on expert input and previous literature and adjusted for using doubly robust methods for causal inference, such as combining inverse probability weighting and standard regression, or via targeted maximum likelihood estimation [17, 18]. Sensitivity analyses for unmeasured confounding will be conducted and the investigators may consider further sensitivity analyses to assess impact of possible selection biases depending on the level of follow-up achieved from the original cohort(s) [18].

Qualitative Data Collection and Analysis: While the quantitative dataset will provide information on the impact of COVID on health service utilization and economic status, the investigators will draw on a qualitative approach to put these findings in context and specifically explore gender dynamics as social processes. The investigators will conduct focus group discussions (FGDs)

and key informant interviews (KIIs) to further explore the experiences of the study cohort during the pandemic, and identify strategies used by participants to mitigate the negative impacts of the pandemic and its associated restrictions. The investigators recognize the distinct power hierarchy that exists in partner communities, particularly in relation to gender, age, and position within health systems. The investigators will therefore conduct focus groups separately with adolescents (15-24 years of age), pregnant women/mothers over 24 years of age (both those who did and did not participate in Chamas), men/fathers (both those who did and did not facilitate Chamas), female and male CHVs (both those who did and did not facilitate Chamas), and county officials, for a total of 8 FGDs. Each group will include 8-10 participants (total sample size of 64-80 individuals) and will last 1-2 hours. The investigators will also conduct KIIs (n=10) with particularly vulnerable populations (e.g., pregnant adolescents) and CHVs. The research team has the cultural competence and experience of engaging as FGD leads and interviewers in this setting. As described above, CHVs will help locate, recruit, and enroll participants, drawing from the RCT and existing Chamas. Guided by the findings from the quantitative survey, the investigators will purposely recruit participants at the lowest and highest quartile of PPI to explore how economic status might affect experiences during the pandemic.

Focus groups will begin with building trust among participants, ensuring open communication and reducing the likelihood that responses will be impacted by social desirability bias. Interview guides will be developed using the Gender and COVID-19 Matrix and focus on the domains and research questions selected by the local Advisory Group in Aim #1. The investigators will incorporate questions that explore power imbalances related to factors other than gender, and how these factors impacted the response to the pandemic. FGDs and KIIs will be led by a member of the *Chamas* evaluation team who is experienced in facilitating FGDs and knowledgeable about the *Chamas* model and is of the same sex as the participants to allow for greater comfort among participants. FGDs will be conducted in Kiswahili, audio-recorded, and transcribed for analysis. Transcripts will be translated to English and analyzed using thematic analysis [19]. Preliminary open coding will be conducted by line-by-line reviews of the transcripts to elucidate meanings, processes, and analytical categories. Primary themes will be identified and refined through an iterative process of review, reflection, and re-review of the transcripts. Constant comparison will be used to evaluate how additional data fit with preliminary themes and categories. Once preliminary themes are refined and a category selected to drive a part or the whole theory, axial coding will be conducted to re-analyze the transcripts and re-assemble the data (including developing new codes) around a “core” phenomenon. All analysis will be conducted using Nvivo 12 (QSR International, Melbourne, Australia).

Using a mixed-methods strategy, the investigators will bring the two datasets from the quantitative and qualitative approach in conversation with one another to produce a comprehensive and integrated analysis.

Aim 3: Use an equity-centered design process and narrative approach to share research findings.

To ensure the findings of the project are locally meaningful, the investigators will draw on expertise in equity-entered design (ECD) to create a storybook that creates dialogue and exchange on key findings and provides a resource for families to use in reading to their children. ECD is an approach that aims to apply an equity lens to the process of human-centered design [20]. The selection of a storybook is informed by FGDs the investigators conducted in 2017 among Year 3 Chama participants, which focuses on parenting (unpublished). These FGDs highlighted the use of the locally created parenting workbook as a treasured resource in the home for reading. The investigators have also found from engagement with CHVs that the gift of a book is meaningful and an effective tool for group learning.

The investigators will engage with the research Advisory Group to co-create storybooks with small groups of community members and local students at Moi University interested in equity-centered design, journalism, and community health. Team member V Naanyu will draw on prior experience using ECD in the design of an intervention to support mental health of adolescent mothers in Kenya and Mozambique to lead this work [19]. The investigators will partner with the Health Design Lab at Emily Carr University of Art + Design (ECUAD) (*see Letter of Support*), who will provide mentorship and prior experience creating inclusive communities of exchange through the co-production of mini publications in long-term care homes [20]. This will provide reciprocal learning experiences between Moi University and ECUAD, and an opportunity to nurture a global community of practice dedicated to applying equity-centered design to gender-transformative research.

Initial workshops will focus on using transcripts and themes identified through Aim #2 to develop narratives centered around the experiences of study participants. Working with the design team from Moi University and ECUAD, community members will develop editorial layouts and design concepts to convey shared experiences. The design team will use these to develop initial drafts of the storybooks, and community members and the Advisory Group will review each iteration for visual appeal, accuracy, and efficacy in conveying key messages. The investigators will embed 8 practicum students within this process to build capacity in ECD and narrative-based approaches to knowledge exchange. The investigators will work with the county to distribute these storybooks. The final workshops will focus on evaluating the co-design process and impact of the storybooks, through semi-structured surveys with CHVs, storybook recipients, Advisory Board members and design team members to guide future work.

3.1 Expected results and anticipated outcomes

Immediate Outcome: An understanding of the health, economic, and social impacts of the pandemic among women in Trans-Nzoia County, and how gendered community-based and microfinance interventions such as Chamas can be used to build resilience and mitigate negative health and social impacts during health emergencies.

Assumptions: The investigators will engage traditional audiences like policymakers and researchers in all study activities and ensure that community members are able to learn from and share the research findings to harness their own resilience. The investigators will use a

quantitative survey and the Gender & COVID Matrix to provide intersectional and disaggregated data on the impacts of the pandemic and understand which components of Chamas were protective during the pandemic. This will inform how the investigators adapt Chamas to build resilience during future health emergencies. For instance, during the pandemic, *Chamas'* CHVs helped maintain essential MNCH services including continuing home visits while maintaining a safe physical distance to households for referrals for MNCH care, regular educational text messages and telephone contact for facilitating referrals and health education. By linking these activities with a COVID-19 response, the investigators leveraged the peer networks of CHVs and *Chamas'* women to ensure quality information regarding COVID-19 was disseminated in communities while minimizing the movement or grouping of people and mitigating the fear and stigma associated with seeking facility care. Further, the investigators will use the study findings to understand how and why women were differently impacted by the pandemic, so that the investigators can adapt the program to be more inclusive towards various groups and develop strategies to promote and encourage participation in Chamas among vulnerable individuals.

Intermediate Outcome: An adapted or strengthened Chamas for Change Program, including our pilot program for adolescents, that builds resilience by promoting adaptive change and mitigates the negative health and economic effects of the pandemic among pregnant women and mothers and their families during the pandemic and future health emergencies.

Assumptions: The investigators assume that the financial and peer support of Chamas was protective from the health service disruptions that occurred during the pandemic, and that inclusion in Chamas can continue to facilitate healthy behavior even during health emergencies. The proposed work will provide an opportunity to test this hypothesis. However, the prior research has shown that Chamas provides a safe space and supportive network within which women, regardless of their socioeconomic background, can learn about their reproductive health and right to high-quality and comprehensive care throughout pregnancy and afterwards [3,4]. Within this space they are empowered to demand it together. CHVs who lead Chamas are trained on how to provide quality and respectful care and education, which facilitates women's willingness to seek care.

Financial literacy and skills also contribute to an enabling environment. Access to funds can influence women's decision-making power and break negative cycles of poverty by providing means to access further education and business endeavors that can improve their economic status. This can increase their capacity to access MNCH services [15]. Through men's groups, the investigators will facilitate male inclusion and education to shift decision-making authority and start to break down traditional gender power structures. In addition, parents with more social support report reduced parental stress, which helps buffer children from negative parenting behaviors that can have a long-lasting impact on their development [21].

The storybooks the investigators create in Aim #3 will also directly benefit community members who take part in the co-design process, as they share and reflect upon their own experiences. Narrative storytelling can benefit the storyteller through sharing and helping (by feeling heard & releasing emotions) and re-visiting the story (by reflecting and learning) [20]. The storybooks will also help the families who receive them, as they revisit and reflect upon their own experiences

while reading the storybooks with their children. There is also evidence that storytelling can be used as a knowledge translation intervention for health-promoting behaviors, as stories help people picture themselves behaving differently, and in turn, reduce resistance to and inspire new health behaviors [22]. Thus, there is potential to share these storybooks with future Chama cohorts to educate community members on strategies that support resilience.

Impact: Contribute to improved social, health, and gender equity in Kenya by empowering women to access essential MNCH care services and create better conditions for themselves and their children during future health emergencies or other health disruptions. Beyond the funding period, the investigators will continue working with national and international partners to ensure the research findings can be used to inform practice and policy and improve women's health and well-being worldwide.

3.2 Description of integrated knowledge mobilization strategies including how knowledge users such as the Decision-Maker Co-Principal Investigator will be involved in the research development, execution and communication.

The research team has strong links with local communities in Trans-Nzoia and key stakeholders in government, academia, and the private sector. This has been achieved through the research teams prior work in the region, and leadership in the Academic Model Providing Access to Healthcare (AMPATH). AMPATH is a consortium of 14 universities and academic health centers led by Indiana University, which has partnered with Moi University, Moi Teaching and Referral Hospital, and the Kenyan Government to exchange knowledge, share resources, train medical professionals, and build sustainable health systems (Figure 3). The investigators will leverage these partnerships to support the proposed knowledge mobilization activities.

The Chamas for Change program was co-developed with a multidisciplinary study advisory committee that included key target audiences: (1) direct beneficiaries (e.g., pregnant women, mothers, fathers, CHVs), (2) health policy and decision-makers (e.g., local community leaders, representatives from the Kenya Ministry of Health (MoH)), and (3) researchers who support implementation and evaluation of evidence-based policies and practice. This committee guided the initial design and conception of the intervention and associated studies (e.g., prospective cohort study, RCT, adaptation to adolescents) that informed development and implementation of the program. This helped ensure the success of and generate buy-in for the research teams work in the region. The proposed work will follow the same approach.

The primary goal of the knowledge mobilization activities will be to raise awareness of evidence-based community-level strategies that can strengthen equitable recovery, build resilience, and mitigate the negative impacts of health emergencies. The investigators will work to create awareness of power inequities related to gender and other social identities and issues and inform changes in practice and policy that support inclusion of underrepresented groups. For instance, the foundation of the Chamas program are CHVs, who are mostly women from the rural communities that have limited formal education and receive limited financial compensation for this work. The investigators will leverage these partnerships and findings from the proposed

work to inform policies that empower and build resilience among CHVs, particularly during health emergencies. During the pandemic, CHVs experienced an increased burden of care due to their responsibilities within their own households and within their communities [6]. Through the FGDs, the investigators may be able to identify specific practices at the individual-, family-, community-, or health system-level that would reduce the burden of CHVs during this time. This will build on current practice of conducting quarterly trainings and frequent site visits with CHVs and Community Health Extension Workers (CHEWs) to ensure inclusive care, respectful communication, and attention to power and gender dynamics are being promoted and enacted.

Prior to initiating study activities, the investigators will invite CHVs, CHEWs, sub-county MoH representatives, country government officials, and community leaders to stakeholder meetings led by the Decision-Maker co-PI Dr Masibo and PI Dr Songok. At these meetings, they will explain the study's purpose and procedures to facilitate understanding of the study objectives among leadership at the county, sub-county, and community levels. Following these meetings, the investigators will ask community leaders for permission to begin enrolling participants. The investigators will co-design the interview guides and knowledge dissemination tools with the local Advisory Group (Aims #1 and #3), to ensure these tools and the data the investigators collect reflect the priorities of the community. The investigators will discuss the study's risks and benefits with all participants before enrolment, including demands on individual time due to FGD/KII or workshop participation.

Within Trans-Nzoia, the investigators will disseminate the study preliminary findings to the target audiences through in-person meetings after each study aim and at the end of the project. The investigators will leverage the Advisory Group and network of CHVs to share printed summaries of the preliminary findings to the community. Once Aim #3 is complete, the investigators will use these same networks to disseminate the storybook to families within the county. In collaboration with the county Department of Health, the investigators anticipate continuing regular radio appearances on Mitume Radio in Trans-Nzoia, Upendo Radio in Eldoret and Kass FM in Nairobi to disseminate findings of this project. In addition, the investigators will specifically engage with health decision- and policymakers within Trans-Nzoia County through Stakeholder Knowledge Exchange Meetings, where the investigators will discuss policy implications and identify potential changes in practice or policy informed by the research findings. Trans-Nzoia County has an active, young, and effective government that is committed to addressing the needs of young people and meeting the MNCH targets outlined in the Kenya Vision 2030, Kenya National Road Map, and Kenya National Guidelines for Quality Obstetrics and Perinatal Care. They are one of 4 counties that have partnered with Kenya Health Partnerships for Quality Services and Moi Teaching and Referral Hospital to implement the USAID AMPATH Uzima Program, which is an integrated service delivery program to improve MNCH (*see Letter of Support, including 24M KSh financial commitment to Chama-related activities over the next year*). This will facilitate use of findings in informing policy and planning at the local level and help generate buy-in for implementing Chamas in additional counties in Kenya.

Globally, the project's knowledge mobilization activities will be supported by Moi University/AMPATH, the University of British Columbia (UBC; Canadian Co-Applicant

Organization), Centre for International Child Health (CICH) at BC Children's Hospital, Women's Health Research Institute (WHRI), University of Toronto (UoT), and the Gender & COVID-19 Project/Simon Fraser University (SFU) (see *Letters of Support*). These activities will primarily focus on fostering learning and knowledge exchange between trainees, researchers, health professionals, and research support staff. Findings will be shared verbally through departmental ground rounds and webinars hosted by the Moi University School of Public Health, the Departments of Obstetrics & Gynecology at Moi University, UBC, and UoT, and at annual symposia hosted by CICH and WHRI.

The investigators will also reach a broad academic audience through AMPATH's monthly Works in Progress sessions, which highlight and disseminate information on ongoing and recently completed AMPATH studies. The sessions are open to all AMPATH Consortium faculty and staff. The Consortium includes 14 universities across 3 continents, now extending to universities in Mexico, Ghana, and Nepal. This will offer further opportunities for disseminating the research findings to academics and health workers in low-resource contexts and building on the networking and knowledge exchange that will occur during the Women RISE Health Policy and Research Organization (HPRO) meetings. The investigators anticipate at least 4 manuscripts from the proposed work (1 each for Aim #1 and #3, 2 manuscripts for Aim #2), which will be published as Open Access to support accessibility and dissemination among knowledge-users in LMICs. At least two manuscripts will have a first and senior author from Moi University, to support equity in professional development opportunities and partnerships.

The Gender and COVID-19 Project will also publish and promote the study's outputs through its website, social media, and a virtual webinar. Their knowledge mobilization team will ensure that content is disseminated and promoted in a way that will increase uptake by knowledge users and decision makers, such as through policy briefs. The Project's website gets around 8,000 views a month, and they have a strong social media presence with over 9,000 Twitter followers. They have become a 'go-to' for policy makers, researchers, practitioners, and the media on expertise on the gendered and intersectional effects of the pandemic. The investigators anticipate the HPRO may be able to provide additional support with identifying appropriate partners and strategies that will facilitate successful knowledge mobilization outside Kenya, to facilitate dissemination and future implementation of strategies that build resilience to health emergencies in resource-limited countries worldwide.

3.3 Team composition and expertise in the relevant themes of the Concept Note, including approach to supporting and retaining diverse team members throughout the project.

The research team is a multidisciplinary group with over a decade of experience developing excellence and leadership capacity in research, education and care in Kenya through AMPATH. PI Dr Julia Songok is a pediatrician, Associate Dean at Moi University School of Medicine, and Co-Lead Consultant of MNCH at AMPATH. Canadian co-PI Dr Astrid Christoffersen-Deb is an obstetrician/gynecologist and trained anthropologist at the British Columbia's Children's and Women's Hospitals (C&W) and Clinical Associate Professor at UBC. Prior to joining UBC in

2017, Dr Christoffersen-Deb lived and worked in Kenya as the Field Director for Reproductive Health at AMPATH. She continues to serve as a Technical Advisor at AMPATH and Visiting Professor at Moi University. Drs Songok and Christoffersen-Deb have led development and implementation of the Chamas program since 2012. Decision-Maker co-PI Dr Sammy Masibo (County Director, Health Corporate Services at County Government of Trans-Nzoia) joined the team in 2017, when the program expanded to Trans-Nzoia County.

Study design, data analysis, and knowledge mobilization for Chamas for Change is supported by a collaborative, international research team with expertise in public health, health systems, child/adolescent health, mixed-methods research, medical anthropology, and equity-centered design. Key members include: Justus Elung'at (MNCH Innovations Program Manager, AMPATH; Program Manager, Chamas for Change), Michael Scanlon (Assistant Director of Research at AMPATH and Indiana University Centre for Global Health), Dr Laura Ruhl (Field Director for Population Health at AMPATH, Assistant Professor of Clinical Medicine at Indiana University), Dr Julie Thorne (Assistant Professor, Obstetrics & Gynecology, UoT) and Violet Naanyu (Associate Professor, School of Arts & Social Sciences, Moi University; Visiting Associate Professor, Aga Khan University Kenya; Co-Field Director of Research, AMPATH). Moi University's Research and Projects Office (RSPO) will administer the grant and human resources, working closely with the team at AMPATH to manage operations, mentoring & evaluation, and program development (*see Letter of Support*). As Assistant Director of Research for AMPATH, M Scanlon will help ensure adherence to local research regulations and facilitate access to the robust research infrastructure at AMPATH.

In Canada, Alice Mūrage, Research Fellow, Faculty of Health Sciences at SFU, will provide expertise identifying and documenting the gendered dynamics of COVID-19 using the Gender & COVID-19 Matrix. Caylee Raber, Director of the Health Design Lab at Emily Carr University of Art + Design, brings prior experience using with the narrative and storytelling approach the investigators will use in Aim #3. Jeffery Bone, Biostatistical Lead at BC Children's Hospital Research Institute, will lead statistical analysis for Aim #2, and brings prior experience leading analysis for the RCT on Chamas for Change. The team will be supported by an administrative and research support staff at CICH, who work closely with UBC to support grant management and ethics submission for global health projects at C&W (*see Letter of Support*).

The investigators are proud to have mentored a strong, female-led team that has become an effective recruiting engine for promising graduates from Kenya and Canada who seek to change the conditions of inequity that undermine MNCH. The team leading and managing the program are gender-balanced with diverse knowledge and worldviews, informed by their own experiences living and working in Kenya and partnering with marginalized communities to address social and health inequities. The investigators have identified gender experts in Kenya (V Naanyu) and Canada (A Mūrage) with experience in research methodology and implementing community-led interventions that use a social and gender equity lens. The investigators will leverage resources at HPRO to further build the research teams' capacity in gender-transformative research, focusing on intersectionality approaches.

AMPATH and CICH are dedicated to training the next generation of global health researchers. For this project the investigators will recruit two Research Fellows (at UBC and Moi University, respectively) who will work and live in Kenya to support project implementation and knowledge exchange. To address systemic barriers in team composition and recruitment processes, the investigators will recruit from groups that have traditionally been under-represented in leadership positions within the global health community, including women from LMICs. The investigators will leverage AMPATH's and CICH's networks to promote the job position through collaborating institutions across sub-Saharan Africa and organizations within Canada that support international graduate students. Representatives from both Moi University and UBC will serve as interviewers and be involved in the final selection process. To address systematic barriers in training and development opportunities, the CICH Communications and Equity, Diversity and Inclusion Committees will work with AMPATH and HPRO to identify and disseminate relevant training and development opportunities through communication channels that are inclusive of different digital infrastructures (e.g., newsletters, WhatsApp, in-person meetings). All trainees involved in international travel will be required to identify a mentor in Canada and Kenya who will each have equal responsibility in mentorship activities. The investigators will also hire field officers and practicum students from rural communities in Trans-Nzoia, and regularly engage in team learn-ins for continuous professional development to further build local research capacity and address inequities in available training opportunities between high-income countries and LMICs.

To address systemic barriers in inclusion, all team members will be required to review the Canadian Coalition for Global Health Research Principles for Global Health Research and reflect upon the questions outlined in the Canadian Association for Global Health Equity Partnership Tool prior to beginning study activities. The investigators will identify and disseminate opportunities for education and training on promoting an inclusive and diverse research environment, resources that focus on understanding the legacy of colonialism in global health and best practices for decolonizing global health. Meeting and study activities will be planned with consideration of the different needs (e.g., childcare, access to fridge and breast pump for female team members who are breastfeeding), resources (i.e., wireless connectivity) and location (e.g., rural vs urban communities, Pacific vs Eastern Africa Time Zones), to minimize the burden on individual team members. This includes being aware of and taking into account different national and religious holidays and ensuring all members of the team have equitable access to health benefits and parental leave.

FIGURES

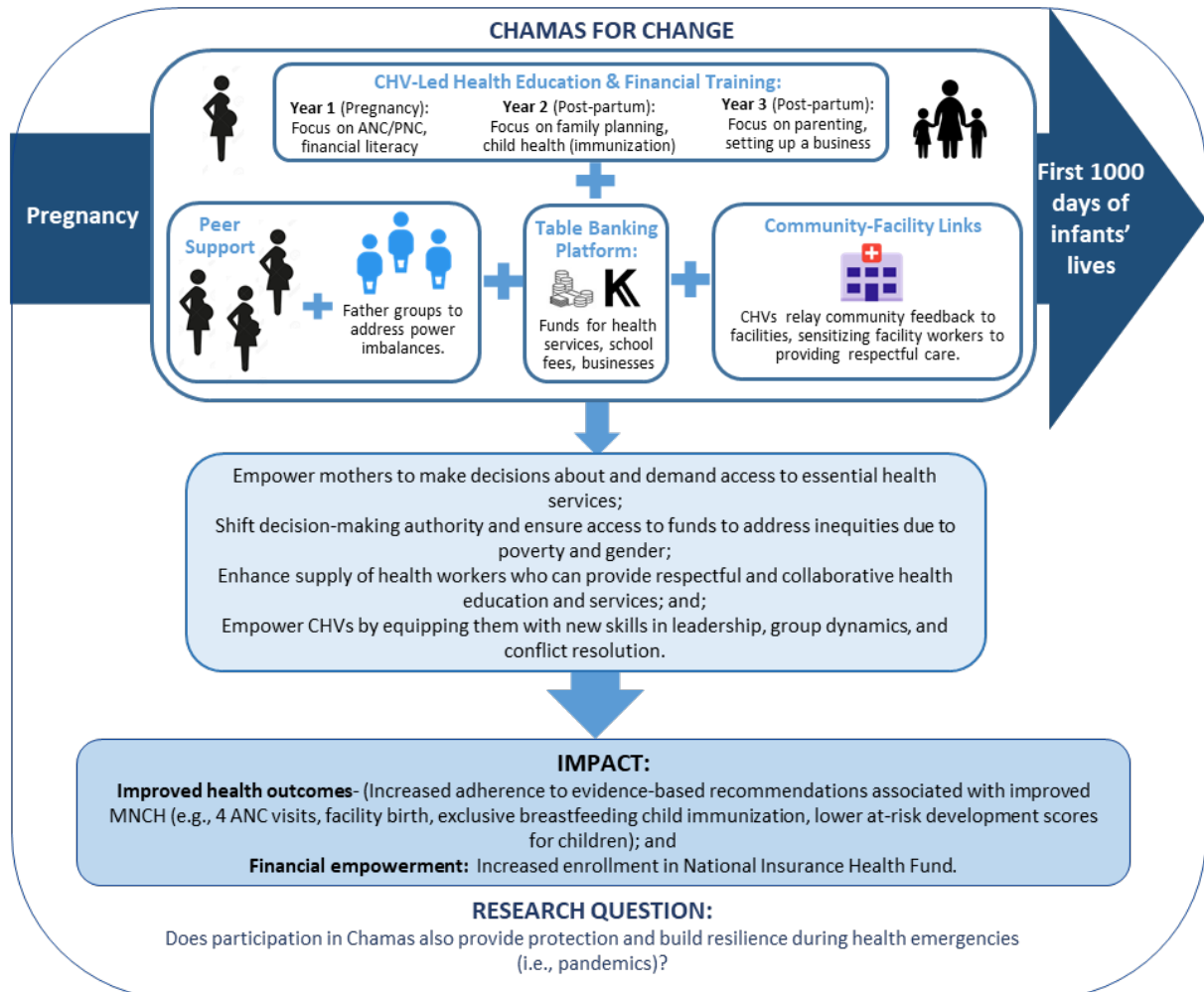


Figure 1: Overview of Chama cha MamaToto

Figure 2: Study Timeline (Gantt Chart doesn't fit below)

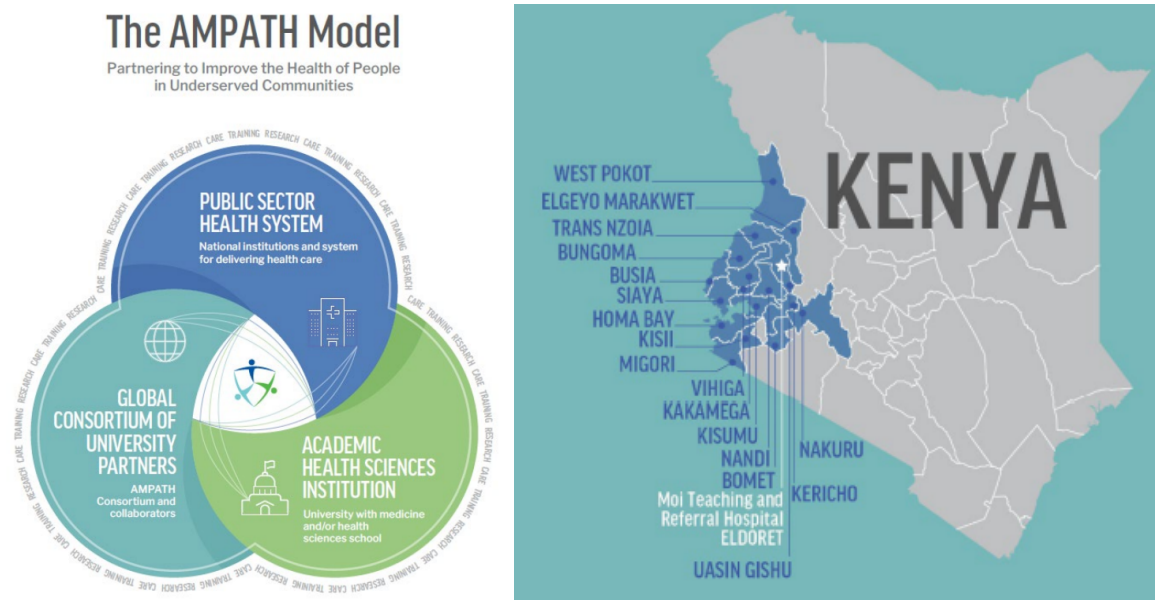


Figure 3: Overview of AMPATH (left) and Kenyan counties where AMPATH has partnered with the Ministry of Health to implement care programs (right).

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