



ANNUAL REPORT 2022

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Cover: Mother walking her daughter to school, Zambia.
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Letter from the management

We approached 2022 with a renewed hope of bright and productive days ahead. While moving forward, we were still cautious and concerned that the Covid-19 pandemic might present risks for our project staff and study participants. We had important new projects planned and looked forward to the analyses of our completed studies. Our hopes for 2022 progressively became reality with the growing control of the pandemic removing the remaining hindrances to project implementation and allowing a return to normality. Several of our projects were completed, resulting in impactful papers, and we organized new courses and education activities - all contributing towards our vision to promote maternal and child health in the years and decades to come.

Importance of large and high-quality studies: Creating evidence of effect or of no effect, not just no evidence of effect

Most of CISMAC's research evaluates interventions that, if effective and put to scale, can substantially and equitably improve maternal and child health, survival and development. One example was the trial that showed a highly beneficial effect of community-based promotion of [Kangaroo Mother Care \(KMC\)](#) for low birth weight babies. Well designed and well undertaken studies that reveal the lack of beneficial effects of interventions, such as the [NeoSupra trial](#), or effects that are too small to be translated into clinical practice or warrant scale-up in public health programs are also important. They are often called "negative studies", a term CISMAC questions because we believe all well performed trials of potentially impactful interventions are useful by curbing investments that will not result in health benefits.

Small studies yield effect estimates with low statistical precision, reflected in their wide confidence intervals. Such studies generate less useful information, especially when "negative". On the other hand, trials with a large sample size and high follow-up generate effect estimates with high precision and are of value even when the effect is estimated to be low. Thus, such trials generate reliable *evidence that an intervention has no or a too small effect rather than just no evidence of an effect*. This provides a more solid base for policy decisions.

Randomizing trial participants to no intervention or to an active comparator requires substantial uncertainty (also called "equipoise") with respect to intervention effect; the alternative would be unethical. Thus, we expect that some of CISMAC's trials will reveal no or very limited intervention effects, yet contributing importantly to the evidence-base for promoting maternal and child health by thwarting unjustified claims to roll out interventions that in individual smaller studies may show remarkable effect sizes. CISMAC strongly supports initiatives such as the [Cochrane](#) collaboration and [GRADE](#), and is proud that our trials provide them with evidence towards policy and practice.

Consolidating collaborations and extending CISMAC's work in research and capacity strengthening

CISMAC has for some time been working with Bergen Centre for Ethics and Priority Setting ([BCEPS](#)), a collaboration which was concretized in connection with a symposium on [equity aspects in randomized controlled trials](#) held in Boston in 2016. This productive collaboration between the two centres has already resulted in publications in this area both of generic relevance, such as the [CONSORT-Equity](#)

[extension](#), and by integrating [equity considerations](#) in CISMAC's [KMC trial](#). CISMAC scientists contributed to developing a proposal for the BCEPS+ Centre of Excellence, which was recently [granted funding](#) by the Research Council of Norway and the University of Bergen and will start its operations in mid-2023.

Strengthening the capacity of partners to conduct high quality studies has been a priority of CISMAC as this will be key to the sustainability of the consortium benefits. Two outstanding epidemiology courses were held with this purpose in Bergen in 2022. One, led by [Kenneth Rothman](#) and [Vera Ehrenstein](#), addressed the [Conceptual Foundations of Epidemiologic Study Design and Analysis](#). [Matthew Fox](#) then presented a course on [Advanced Epidemiology](#). In addition, in the fall of 2022, CISMAC organized the course [Introduction to implementation science in global health](#).

Our [webinars](#) continued throughout the year, providing an opportunity for partners to interact around a wide range of topics from implementation issues to data analyses and the sharing of study findings. We are now working closely with partners to develop an initiative for strengthening the capacity of our younger researchers in analytic epidemiology as well as in applying modern pedagogic methods when teaching this important topic.

Our experience of 2022 made us confident about the strengths and longevity of CISMAC. The challenging period of the pandemic showed a partnership that was productive even in the midst of significant adversity and that continued to invest in achieving ever greater technical capacity and scientific quality.

Our work with BCEPS within equity impact of health interventions, our ongoing and planned capacity strengthening activities combined with the Research Council of Norway's recent and constructive approval of a no-cost extension until August 2025 make us look forward to a successful continuation of the collaborative efforts in 2023 and beyond.



Halvor Sommerfelt

Halvor Sommerfelt,
Director



Ingvild F. Sandøy

Ingvild F. Sandøy
Deputy Director



Jose Martinez

Jose Martinez
Scientific Coordinator



Ane Straume

Ane Straume
Administrative Leader

RESEARCH INSIGHTS

Honouring Dr. Rajiv Bahl

Our colleague Rajiv Bahl, a key contributor to conceptualizing and implementing CISMAC, was awarded significant honours during 2022. In June, he received an Honorary Doctorate Degree from the University of Bergen. In September, he was appointed by the government of India to be the Director General of the Indian Council of Medical Research and Secretary for Health Research. Those of us who are fortunate to have had him as a collaborator and as a friend over the past years, are very excited about these important recognitions, and we want to share this pleasure with all of CISMAC's friends and supporters. ▶



Dr. Rajiv Bahl speaking during the opening of CISMAC in 2013.
Photo: Kim Andreassen



CISMAC director Halvor Sommerfelt receiving the Honorary doctorate on Dr. Bahl's behalf. Photo: Eivind Senneset

Rajiv is an outstanding epidemiologist. Born in Faridabad, India in 1966, he received his Doctor of Medicine degree in Paediatrics, from the Lady Hardinge Medical College, University of Delhi in 1993. In 1999, he received his Doctor of Philosophy (Ph.D.) degree from the All India Institute of Medical Sciences (AIIMS), New Delhi, where he worked until 2003. He then joined the WHO in Geneva where he became the Head of Research and Development for Maternal, Newborn, Child, and Adolescent Health in 2013.

Working with the WHO gave him the opportunity to lead priority setting for the global research agenda in maternal, newborn, child and adolescent health. The Global Research Priorities for Acceleration of Progress Towards Millennium Development Goal 4 that he helped to produce in 2008-9, guided investment in research in this area over the following years. In 2015, he led the development of Maternal, Newborn, Child, and Adolescent Health Research Priorities for the Sustainable Development Goals (SDG) era, a document that guides the research agenda up to 2025.

Beyond priority setting, Rajiv led the implementation of several major research initiatives at the WHO, taking studies from their conception to the use of their results for improving health. These initiatives mobilized outstanding researchers who carried out studies with top scientific quality, produced publications in high-impact journals and influenced formulation of health policies and programmes. His work has expanded the evidence-base on the benefits of breastfeeding and the design of effective interventions to improve infant feeding practices. He has also promoted and supported studies that generated evidence on the efficacy of ready-to-use therapeutic foods in South Asia, impacting on national guidelines for the management of children with severe acute malnutrition. More recently, he has advocated for increased investments in large population-based multi-country cohort studies to identify interventions for addressing prematurity, stillbirth, fetal growth restriction, stunting and poor cognitive development, and to learn how to implement them with high population coverage. The research he has supported has, for example, demonstrated the benefit of home visits for newborn care on neonatal survival in Ghana and India, transformed the algorithms for assessing and classifying neonatal infections, and sim-

HONORARY DOCTORATES

An honorary doctorate is a doctoral degree that is awarded by a university without the recipient previously having to defend a thesis in a public defence.

Such honorary doctorates are usually awarded to prominent people. Honorary doctorates may also be awarded in recognition of significant lifetime achievements.

In 2022 the UiB awarded 8 new honorary doctorates.

More info on this years honorary doctorates can be found on the UiB [website](#).

plified antibiotic therapy regimens, thereby facilitating the management of sick newborns while preserving treatment effectiveness. More recently, responding to the recognition of the very high risk of death faced by premature and other low birth weight babies, Rajiv conceived and mobilized resources for implementing studies to examine the effect of community-initiated Kangaroo Mother Care (KMC), the safety and efficacy of initiating KMC in health facilities immediately after birth, and to learn how to scale up KMC so that it can reach most of the newborns in need in low and middle-income countries (LMICs). Lessons from these recently completed projects are being published in high impact journals and disseminated to health professionals and policy makers. They clearly show the importance of keeping babies with their mothers, even when they are small or sick. This is gradually transforming the care of LBW infants in India and other LMICs.

In Norway, he has made important contributions to research projects and training at the Centre for International Health (CIH), Department of Global Health and Primary Care at the University of Bergen. He played a critical role in developing the materials and in teaching highly praised CIH courses in epidemiology. He was also centrally involved in developing several successful applications for research support from the EU, NUFU and the Research Council of Norway. He was the main external collaborator for securing funding for CISMAC. We are very proud of Rajiv, and wish him the best of luck in his new roles for the Indian government.

FALCH LECTURE 2022:

Epidemiology is easy – anyone can do it

Following our suggestion, the Faculty of Medicine invited Prof. Kenneth J. Rothman from Boston University to present the esteemed Falch Lecture. Prof. Rothman, one of the world's leading epidemiologists, was in Bergen to conduct an epidemiology course, co-taught with Prof. Vera Ehrenstein, for CISMAC and our Department of Global Public Health and Primary Care. Prof. Rothman accepted the invitation and delivered a lecture with the provocative title, "Epidemiology is easy – anyone can do it."

In his [lecture](#), Prof. Rothman explored how misguided methods can lead amateur "epidemiologists" to mistaken conclusions and inappropriate health advice. His ideas about these topics are particularly pertinent in the current climate where fake news seem to pose a constant threat to accurate public information.

The selection of [Prof. Rothman](#) among several other prominent medical scholars to deliver the Falch lecture of 2022 came as a result of his invaluable contributions within the field of epidemiology. Over a 50-year career, he has contributed to research on cancer, cardiovascular disease, neurology, perinatal health, trauma, environmental exposures and pharmacoepidemiology, among other topics. His work has resulted in a wide range of important papers published in high-ranking journals such as *Epidemiology*, *American Journal of Epidemiology*, *Journal of Clinical Epidemiology*, *The Lancet*, *New England Journal of Medicine*, and *Annals of Internal Medicine*. Prof. Rothman is the author of two widely used textbooks in epidemiology, one at the introductory level and the other at an advanced level. He has also served on the editorial board of the *New England Journal of Medicine* and the international advisory board for the *Lancet*. He founded the journal *Epidemiology*, was elected President of the Society for Epidemiological Research, is a Fellow of the international Society for Pharmacoepidemiology, and an Honorary Fellow of the American College of Epidemiology.

The auditorium at the medical faculty of UiB was packed to the brim when Prof. Rothman began the lecture, and was no less full at the finish, with some listening from the

corridor outside the lecture hall. His talk condensed several important epidemiological concepts that were communicated and complemented with entertaining stories from Prof. Rothman's life. For those who were lucky enough to be there, it was a great experience, which was discussed and referred to among research groups in epidemiology/public health as well as laboratory sciences in weeks thereafter.



Prof. Kenneth J. Rothman

CISMAC, the Centre for International Health, and the Department of Global Public Health and Primary Care and the Faculty of Medicine are very grateful for Prof. Rothman sharing with us his vast knowledge and deep understanding. The lecture was an inspirational introduction to the course he and Prof. Ehrenstein held later the same week, which in combination with the subsequent course by Prof. Mathew Fox put an important spotlight on modern epidemiology.

THE FALCH LECTURE IS...

- an annual honorary guest lecture presented by an internationally renowned medical researcher.
- funded by a foundation called "Søren Falch og Øyenlege Sigurd Falchs fond for medisinsk vitenskap" which was established in 1952.

Mother and child carrying water home from a well in Entebbe, Uganda.
Photo: Dennis Diatel Photography | iStock



MATRASET: Maternal health services and surveillance

We are proud to present the most recent project to enter under CISMAC's research umbrella: "Reporting in context: An interdisciplinary initiative to strengthen maternal health services and surveillance in Ethiopia and Tanzania" (MATRISET) ▶

Young woman carrying water from the well, Ethiopia. Credit: hadynyah | iStock





Researchers from Matriset discussing at meeting in Dar es Salaam, Tanzania. Photo: Ali Said

In the last 10 years, a number of measures have been introduced to reduce persistently high maternal mortality globally. Nevertheless, an estimated 300,000 women lose their lives in pregnancy and childbirth each year. The WHO's Maternal Death Surveillance and Response System (MDSR) is a tool for improving reporting of maternal deaths, identifying challenges and defining measures to remedy the problems. In low-income countries where the health service is less developed, significant weaknesses have been documented in reporting routines and data flow in the MDSR system. Systematic underreporting has been linked to pressure to meet global maternal health goals, heavy workload and lack of legal protection of health workers. This results in impaired quality of MDSR data and uncertain maternal mortality figures.

The project is carried out in Ethiopia and Tanzania by an interdisciplinary research group from the social sciences, law and medicine, and aims to improve the quality of maternal



mortality data. Through a combination of ethnography, survey and analysis of register data, the team will investigate the relation between observed and reported clinical practice. We look at the handling of reported data within the health bureaucracy and how the data is used to improve reporting and services. Through legal methods, we will investigate health personnel's experiences of blame and legal sanctions related to the reporting of maternal deaths. By drawing on social science theory on the generation of numbers and statistics (metrics), the project will contribute to increased knowledge about challenges in the reporting system, legal protection of health personnel, and the development of a better framework for reporting.

CISMAC is very happy to have entered into yet another interdisciplinary collaboration with this team of excellent researchers and look forward to an engaging partnership in the years to come.



Matriset team during their meeting in Dar es Salaam, Tanzania. Photo: Ali Said

FACTS

Study: [MATRISET](#)

Location: Ethiopia, Tanzania

Principal Investigator: Astrid Blystad (professor CIH, IGS, UiB). Nurse and social anthropologist.

Co-principal Investigators: Getnet Tadele (professor, Department of Sociology, Addis Ababa University, Ethiopia). Ali Said (MD, PhD, gyn-obs, Lecturer Muhimbili University of Health and Allied Sciences, Tanzania)

Co-investigators:

Tanzania, Muhas and UDSM: Richard Sambai-ga (Senior Lecturer, sociology), Baraka Kanyabuhinya (PhD, law), Latifa Mohamed (PhD candidate, sociology)

Ethiopia, AAU, EPHI: Damen Haile Mariam (Professor, MD, Public Health), Mitike Molla (Nurse, PhD), Mulu Beyene Kidanemariam (PhD candidate, law), Tezera Berheto (PhD candidate, public health), Asabneh Molla (PhD candidate, sociology), Alemnesh Mirkuzie (Nurse, PhD epidemiology), Abduilhafiz Hassen (PhD candidate, public health)

Norway, University of Bergen: Karen Marie Ingeborg Moland (Professor, PhD political science), Haldis Haukanes (Professor, PhD anthropology), Siri Lange (Professor, PhD anthropology), Henriette Sinding Aasen (Professor, law), Ingvild Fossgard Sandøy (Professor, MD, epidemiology), Ingrid Miljeteig (Professor, MD, medical ethics), Marte Emilie Sandvik Haaland (Post doc, anthropology), Andrea Melberg (Researcher, PhD, MD, Kaja Skoftedalen (PhD candidate, anthropology), Kerstin Almdal (PhD candidate, MD), Kornelia Herstad (Research track candidate, medicine)

United Kingdom, University of Sussex: Maya Unnithan (Professor, anthropology)

Partners: University of Bergen, Muhimbili University of Health and Allied Sciences, University of Dar es Salaam, Addis Ababa University, Ethiopian Public Health Institute and University of Sussex

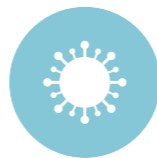
Associated partners: Gynecology/obstetrics-, midwives- and women's associations.

RESEARCH PROJECTS



COMAC

Since March 2020, Uganda faced several waves of the COVID-19 pandemic. A high urban population density and extensive and necessary social interaction along with challenging hygienic conditions represented major impediments to the country's battle against COVID-19. The COMAC study seeks to understand the spread and impact of the COVID-19 pandemic on vulnerable groups in Uganda. The project will have a particular focus on HIV-1 positive women and their babies.



Principal Investigators: Victoria Nankabirwa and Halvor Sommerfelt

RISE

In Zambia, approximately one third of young girls in rural areas have given birth by the age of 18. Adolescent pregnancies pose significant risks to both mothers and their babies. The Research Initiative to Support the Empowerment of girls (RISE) aims to measure the effect of interventions that include economic support, education and reproductive health programmes on early childbearing in rural Zambia. Nearly 5 000 7th grade girls from 157 rural schools were enrolled in the 5-year study.



Principal Investigator: Ingvild Fossgard Sandøy | Co-Principal Investigator: Patrick Musonda

Cost-Benefit RISE

Adolescent pregnancy is one of the greatest development challenges facing low- and middle-income countries, not only because it represents a danger to mother and child, but also because of its profound social and economic consequences. It is a particular challenge in rural Zambia. This study investigates the short- and long-term benefits of providing cash support to adolescent girls and their guardians / parents, as well as community dialogue in CISMAC's RISE trial to delay pregnancy and childbearing to an appropriate age.

Principal Investigators: Patrick Musonda, Ingvild Sandøy | Study Lead: Amani Thomas Mori

B₁₂ in Pregnancy

Worldwide, vitamin B₁₂ deficiency is common, affecting people of all ages. It can lead to a wide variety of health problems and can, without prompt treatment, result in permanent damage. In this study, we measure the effect of giving daily oral vitamin B₁₂ supplements to pregnant women and during a 6-month period after they have given birth on the neurodevelopment and growth of their children. The results may help revise dietary guidelines for South Asian women, and could lead to improved pregnancy outcomes as well as improved child neurodevelopment.



Principal Investigators: Ram Krishna Chandyo, Laxman Prasad Shrestha | Co-Principal Investigator: Tor A Strand

Child B₁₂ Follow-up

Vitamin B₁₂ deficiency is common and can occur at all ages. This study follows up children who participated in a placebo-controlled randomized trial in Nepal, assessing effects on child growth and neurodevelopment, one and two years beyond supplementation with vitamin B₁₂ to infants. If persistent improvements in growth and development are found, our results will guide international nutrition recommendations and can potentially improve the well-being of many children.



Principal Investigator: Tor Strand | Co-Principal Investigators: Laxman Shrestha, Prakash S Shrestha

cKMC

Nearly 80% of infant deaths occur in babies born with low birth weight (LBW). According to hospital-studies, up to 40% of these deaths could be prevented with Kangaroo Mother Care (KMC), where the baby is kept for several hours every day on the mother's chest, giving them warmth and access to life-saving breast milk. Almost all evaluations of KMC have been carried out in health facilities. This study evaluated KMC initiated in the homes, also called community-initiated KMC (cKMC). The study took place in India, where over one quarter of babies are born with LBW, and included 8 402 LBW babies. Promotion of and support for cKMC increased the survival chances of infants with 25%.



Principal Investigators: Sarmila Mazumder, Sunita Taneja | Co-Principal Investigator: Halvor Sommerfelt

Biological effects of cKMC

Training mothers in community initiated Kangaroo Mother Care (cKMC) may be an effective way to reduce mortality and morbidity of low birth weight babies (LBW). The current study is a sub-study of CISMAC's main cKMC trial and investigates some of the pathways with which cKMC can improve infant health and survival.

Principal Investigator: Bireshwar Sinha | Co-Principal Investigators: Nita Bandahari, Halvor Sommerfelt

Poverty and Equity cKMC

As an extension of the completed trial on the survival benefits of promoting Kangaroo Mother Care at home to low birth weight babies (cKMC), this equity study evaluates the impact on fairness outcomes such as survival benefits for the poorest vs. the less poor and the prevention of catastrophic health care expenditures among the poor in two districts in North India.

Principal Investigators: Sarmila Mazumder, Kjell Arne Johansson, Tarun Shankar Choudhary

Zinc-Sepsis

Severe infections, including sepsis and severe pneumonia, contribute to almost one quarter of the deaths in infants up to two months of age. Widely accessible and very cheap, a daily dose of zinc given to young infants under antibiotic treatment for probable serious bacterial infection was shown to increase the success of treatment by 43%. These encouraging results have prompted us to do a much larger study in almost 4 000 infants under two months of age to estimate the efficacy of the treatment to prevent death. The study involves a hospital in Nepal and four hospitals in New Delhi, India.



Principal Investigators: Nitya Wadhwa | Co-Principal Investigator: Tor A Strand

Zinc Equity

Low-cost health care interventions that prevent impoverishment and catastrophic health expenditures can be valuable national health initiatives. Zinc Equity is a sub-study of the ongoing zinc-sepsis trial. It evaluates the health and economic consequences for families of zinc given as an adjunct to standard treatment in young infants (age 3-59 days) hospitalized with "clinical severe infection". Zinc may shorten the length of stay and the demand for expensive intensive care for these infants. Comparing the two-arms of the trial will provide information about socio-economic inequalities in infant deaths, cost-effectiveness and financial risk protection.

Principal Investigators: Nitya Wadhwa, Kjell Arne Johansson
Co-Principal Investigator: Debjani Ram Purakayastha

eRegistry and care

The Norwegian Institute of Public Health and the World Health Organization have developed a framework and series of tool kits to make it easier for low- and middle-income countries to improve their collection and use of health information to the benefit of women's and children's health. This study is the first of its kind to assess the benefits of this type of programme in improving the quality of care in rural Bangladesh where major gaps remain, despite the progress made in reducing maternal and child mortality over the last decade.



Principal Investigator: J. Frederik Frøen | Co-Principal Investigator: Anisur Rahman

eRegQual

eRegistries are designed to increase the availability and timely use of routine maternal and child health (MCH) data. The Palestinian National Institute of Public Health, in close collaboration with the Ministry of Health in Palestine, is currently rolling out a nationwide MCH eRegistry. With support from CISMAC, the Norwegian Institute of Public Health is carrying out randomized controlled trials with 120 health center clusters in Palestine to assess if the eRegistry and its interactive checklists and clinical decision support can improve the quality of antenatal care.



Principal Investigator: J. Frederik Frøen | Co-Principal Investigator: Buthaina Ghanem

BCG

The Bacillus Calmette-Guérin (BCG) vaccine may have non-specific effects in infants, with protection beyond its ability to prevent tuberculosis (TB). In addition, some evidence suggests that giving BCG later in infancy may enhance its effects. This may be particularly important for HIV-1 exposed children who have an increased risk of severe infections. This study randomizes 3 500 HIV-1 exposed Ugandan (expandable to 4,500) infants to receive BCG either within 24 hours of being born or at 14 weeks of age. The results may impact policies concerning timing of BCG administration.



Principal Investigator: Victoria Nankabirwa | Co-Principal Investigator: Halvor Sommerfelt

BCG Immunology

The BCG immunology study is a sub-study of the larger BCG trial. The study seeks to provide additional information of the optimal timing of BCG vaccination among the growing population of HIV-1 exposed infants. Concretely, the substudy will describe possible immunological mechanisms of early vs late BCG vaccination in order to improve protection from infectious diseases in these vulnerable babies. The results will also be important for upcoming studies of new vaccines against tuberculosis in which CISMAC is also engaged.

Principal Investigators: Kurt Hanevik, Victoria Nankabirwa

EcoTime BCG

There is still uncertainty pertaining to when it is best to give the BCG vaccine to babies born to mothers infected with HIV-1. This study evaluates and compares the cost-effectiveness of giving the BCG vaccine to Ugandan HIV-1-exposed babies at birth or at 14 weeks of age. Combined with possible treatment benefits assessed in the main study, the cost implications of the two vaccination strategies will generate information important for vaccine programme development and implementation.

Principal Investigator: Victoria Nankabirwa | Co-Principal Investigator: Bjarne Robbestad
Master student: Steve Kabanda

Chlorhexidine

Infection of the umbilical cord stump (omphalitis) can lead to life threatening illness in the first 28 days of life. The risk of omphalitis is high in low- and middle-income countries. This trial takes place in Uganda and involves nearly 5 000 babies of mothers who are not infected with HIV-1. It assesses the effect of a single cleansing of the umbilical cord stump with an antiseptic solution of 4% chlorhexidine in birth facilities on the risk of omphalitis and severe newborn infections.



Principal Investigator: Victoria Nankabirwa | Co-Principal Investigator: Halvor Sommerfelt

SCALE-8

More than 250 million children living in low- and middle-income countries do not achieve their full development potential. This study follows a previous project assessing the effectiveness, feasibility and cost of integrated early stimulation and nutrition interventions delivered by a government community-based health service in Pakistan. It has re-enrolled children at 8 years of age from 80 population clusters to determine which beneficial effects may have endured to school age. The study will identify risks and protective factors that influence outcomes and will inform the development of improved interventions for child development.



Principal Investigator: Muneera A Rasheed | Co-Principal Investigator: Aisha K Yousafzai

SAFEZT

This three-year project examines global and national policy discourses surrounding fertility control and abortion, as well as local practices and moralities related to these issues among adolescents in Ethiopia, Zambia and Tanzania. The dynamics between the law, policies and access to fertility control and safe abortion services differ between these countries. The project aims to generate comparative knowledge of the interplay between policy, legislation and socio-cultural conditions framing girls' and women's reproductive choices.



Principal Investigator: Astrid Blystad | Co-Principal Investigator: Getnet Tadele

CCF instead of RCT?

This study evaluates whether a novel observational epidemiological study design, the case-control with follow-up (CCF), could be an efficient alternative to randomized controlled trials (RCTs), case-control (CC) studies and cohort studies for investigating the association between exposures and rare outcomes. To find out, we did a CCF and a CC study in parallel with the recently completed RCT in Uganda that measures the association between cleansing of the umbilical cord stump with chlorhexidine on the day of birth and the risk of subsequent severe illness in the newborns.



Principal Investigator: Victoria Nankabirwa | Co-Principal Investigator: Hans Steinsland

Girl Power

Lack of reproductive health information and lack of economic opportunities may contribute to a high proportion of girls in low- and middle-income countries becoming pregnant at a young age. This study investigates how reproductive health information and entrepreneurship training affect the decision-making of girls when it comes to postponing pregnancy and engaging in economic activities. More than 3 400 Tanzanian school girls drawn from 80 schools across four regions of Tanzania are involved in this now completed cluster randomized controlled trial.



Principal Investigator: Bertil Tungodden

The CAP trial

Low dietary intake of calcium increases the risk of pre-eclampsia and eclampsia, which are serious hypertensive disorders in pregnancy that are dangerous for mother and baby. Although calcium supplementation is recommended by WHO from 20 weeks of pregnancy, no research has evaluated whether starting it before pregnancy can reduce the risk among women with previous pre-eclampsia. This multi-center randomized trial in South Africa, Argentina and Zimbabwe estimated the effect of calcium supplementation before and in the first half of pregnancy on the risk of re-current pre-eclampsia.



Principal Investigator: Justus Hofmeyer

NeoSupra

Globally, many babies are born too exhausted to breathe spontaneously after birth. Such babies need immediate assistance – otherwise they die. At Mulago Hospital, Kampala, Uganda, we conducted a randomized controlled trial to see if the use of a supraglottic airway device instead of a facemask, which is commonly used for ventilation, can reduce the risk of dying of brain damage in newborns who did not breathe after birth. The now published results are important for low- and middle-resourced settings where many such deaths occur.



Principal Investigators: Thorkild Tylleskär, Josaphat Byamugisha

Small babies

Babies who are born preterm or at term but small-for-gestational age face high risks of death, of growth failure and of neurodevelopmental deficits in infancy and in later life. The identification of interventions to promote their early catch-up growth and reduce health and development risks is a research priority for scientists and public health policy makers. Responding to this need, CISMALC supports a large randomized controlled trial in India to assess the impact of an integrated health, nutrition, early child stimulation and responsive care intervention package on growth and neurodevelopment.



Principal Investigators: Ranadip Chowdhury, Tor Strand

ePOSIT

Antenatal care (ANC) is a cornerstone for promoting maternal and child health. Together with the WHO we have identified two priority research questions: 1. How can digital health interventions (DHIs) support ANC scale-up?; 2. Can Uganda's currently recommended 4 ANC visits be doubled? ePOSIT will study the implementation of DHIs in ANC and undertake a cluster-randomized trial to evaluate the impact of 8 versus 4 ANC visits in the district of Mukono in Uganda.



Principal Investigators: J. Frederik Frøen | Co-Principal Investigator: Victoria Nankabirwa

MATRISSET

Significant weaknesses have been documented in reporting routines and data flow in maternal death reporting, compromising the quality of maternal mortality data. Under-reporting has been linked to a complexity of social, legal and political factors, including pressure to meet global maternal health goals. The MATRISSET project (Research Council of Norway 2021-26) is an interdisciplinary initiative that explores institutional reporting routines, legal frameworks and accountability processes in maternal death surveillance in Ethiopia and Tanzania.



Principal Investigators: Astrid Blystad | Co-Principal Investigators: Getnet Tadele, Ali Said



Father with his daughter, Ethiopia.
Credit: Artush | iStock

BUILDING FOR THE FUTURE

The CIH/CISMAC Webinar series 2022

In 2022, we continued our webinar series, which has been running since 2018. A total of 11 webinars were conducted during the year.

The spring semester (Jan-June) saw 7 webinars leading up to two courses in epidemiology which took place in Bergen in April 2022. These webinars served as preparatory sessions for course participants and others interested in epidemiology. This series centered around Professor Kenneth J. Rothmans excellent book “Epidemiology – an introduction”.

Each webinar was led by one of our young scholars who was to attend the two April courses. These webinars required a considerable amount of preparation by these young presenters which all did an excellent job, also in engaged discussions. The webinars attracted a lot of listeners with an average of more than 50 participants and encompassed engaged and interesting discussions. These discussions continued beyond the allotted time periods, also in other media, such as by email, WhatsApp etc. You can read more about the courses and about the usefulness of these webinars in our story on the Epidemiology courses on pages 26–29. Many of the course participants reported back that the preparatory webinars were important for their learning during the two courses.

As discussed by the management earlier in this report, CISMAC intends to develop a training program in analytic epidemiology. The experiences gained from these preparatory webinars will be used in the planning of this initiative.

An international and interdisciplinary space for discussions

The autumn semester (Aug – Dec) opened up for a wider range of webinar topics. They ranged from the effect of promoting Kangaroo-mother care on breastfeeding performance and protecting families from being pushed into poverty to topics such as how to deal with a lack of adherence in randomized controlled trials. The webinars draw speakers and audience from all over the world generating a fruitful space for discussions both across subject-matter boundaries and across disciplines. A great deal of our webinars are led by young researchers and we strive to facilitate a stimulating and engaging place to share, teach and learn more within various topics related to maternal and child health. We look forward to listen to and engage with an exciting list of speakers in 2023. For an overview of our past and future webinars you can find them on our website.

CIH/CISMAC WEBINARS

The CIH/CISMAC webinars take place once a month, usually the first Wednesday from 12.30–14.00 CET.

The full webinar schedule can be found on our [website](#).

Hosted by CISM MAC in 2022:

High Profile courses in Epidemiology

In 2022 CISM MAC facilitated two high-profile courses in Bergen. From 20 to 22 April, Professors Kenneth Rothman and Vera Ehrenstein were responsible for a course on Conceptual Foundations of Epidemiologic Study Design and Analysis, while Professor Matthew Fox followed up with a course on Advanced Epidemiology from 25 to 29 April.

Ricky Heggheim

As CISM MAC Director Halvor Sommerfelt explained, the idea for the course with Rothman and Ehrenstein came as a result of a meeting with [Kenneth Rothman](#) in year 2000 and was realised in cooperation with the Bergen Centre for Ethics and Priority Setting ([BCEPS](#)).

"Ken has written some of the most influential books on epidemiology. I myself attended the courses he held in Boston more than twenty years ago, and became very inspired."

Sommerfelt says that Rothman has a different approach to epidemiology than many others, and that he hopes the students can get a new perspective in how they view the subject.

"His books have definitely influenced our teaching in epidemiology here at the [Centre for International Health](#) and the Department of Global Public Health and Primary Care ([IGS](#))", says Sommerfelt.

Students and researchers with backgrounds from more than 20 nations attended the courses. Through its status as Centre of Excellence ([CoE](#)), CISM MAC has the opportunity to bring together people from partner universities in Asia and Africa.

[Conceptual Foundations of Epidemiologic Study Design and Analysis](#) is a course about the basic principles of epidemiology. The target group is mainly PhD students and

researchers with prior knowledge on the subject. However, in-depth knowledge of epidemiology was not a requirement to benefit from the course.

"There were students from different levels who participated in the course, including both Master's and PhD students. In addition, a number of scientific staff took the course to gain a deeper understanding of epidemiology. Even though



Prof Kenneth J. Rothman lecturing in Bergen. Photo: Ricky Heggheim/IGS

the course addresses the basic principles of epidemiology, I believe it is essential to have a sufficiently deep understanding of the basics in order to answer more advanced questions," Sommerfelt explains.

"There was one student who asked about the difference between statistical generalisation and scientific generalisation. [...] Regardless of whether you are new as an epidemiologist or have worked with the subject for many years, these are questions that are fundamentally important to reflect upon."

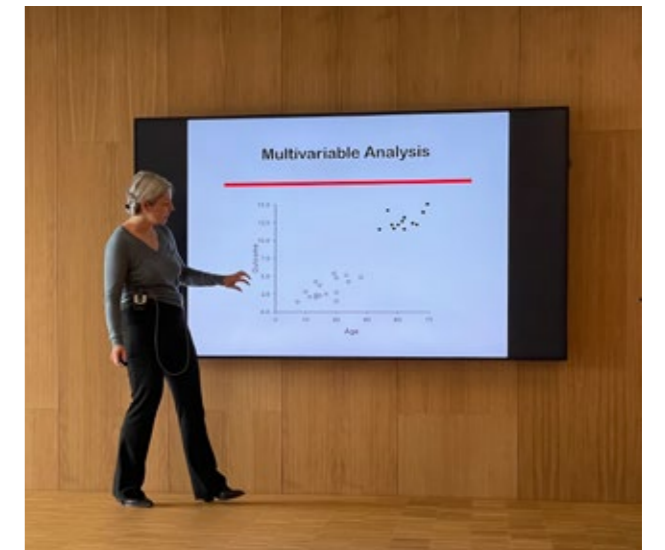
Well prepared

Kenneth Rothman was impressed with the students' commitment during the course. There was one question during the discussion round that both he and [Vera Ehrenstein](#) noticed in particular.

"There was one student who asked about the difference between statistical generalisation and scientific generalisation. I think that was a very interesting question. Regardless of whether you are new as an epidemiologist or have worked with the subject for many years, these are questions that are fundamentally important to reflect upon. Maybe it is an issue where we have not gone into enough depth", said Ehrenstein.

"The concept is basic, and it is not certain that you read about it in more advanced epidemiology books, but it is still something you must relate to as an epidemiologist", Rothman added.

Both were happy with the way in which CISM MAC had organised their course, and the course participants were well prepared in advance.



Prof Vera Ehrenstein lecturing at UiB. Photo: Ricky Heggheim/IGS

"From November to March, we conducted webinars every other week where we went through Rothman's book *Epidemiology: An Introduction* chapter by chapter. We did this to ensure that the course participants would get maximum benefit from the three-day long course, which was very condensed", Sommerfelt explains.

He says it is widely believed that Rothman's book is a simple introduction to epidemiology. This is an opinion he does not share.

"The book goes into depth on the most fundamental principles in the subject. It addresses issues that epidemiologists at all levels need to reflect on", he says and adds that the participants who had studied the book well and participated in the webinars in advance, benefited in particular from the course. He himself was extremely pleased with the course held by Rothman and Ehrenstein.

"Rothman was exactly as I remembered him. He did not limit himself to presenting only what is in the book. Instead, he helped us to reflect on the basic principles of epidemiology. We must understand that epidemiology is not just about mathematics and statistics. I believe that we who actively engage in epidemiological research, in the pursuit of research funding and in all the work of conduct-

ing high-quality studies, find too little time and use too little of our thinking to ask the most important questions. The course by Rothman and Ehrenstein will hopefully help us as researchers and educators set aside more time to go more in depth. This is the only way we will be able to better describe and understand causality. Such an understanding is important for developing new inventions and improving the implementation of existing measures that can improve people's health", explains Sommerfelt.

The following week marked the start of [Matthew Fox's](#) course in [Advanced Epidemiology](#), which in many ways served as a follow-up course to the one held by Rothman and Ehrenstein.

“The course by Rothman and Ehrenstein will hopefully help us as researchers and educators to set aside more time to go more in depth. This is the only way we will be able to better describe and understand causality.”

"I think that many of the participants in Fox's course would have struggled to keep up without having participated in our webinars and the course held by Rothman and Ehrenstein," says Sommerfelt.

Importance of the Centre of Excellence

Head of Department at IGS, Guri Rørtveit, says that the Centre for Excellence has played a vital role in facilitating the courses.

"Without the contact network that CISMAC has gained by being a Centre of Excellence (CoE), courses of this type would not have been possible to complete. We are privileged to have this centre, and it also demonstrates how important such centres are for a larger professional environment around the department," Rørtveit says.

Halvor Sommerfelt agrees. He says that a CoE makes it easier to plan courses with such a strong research expertise from abroad.



Students, lecturers and facilitators of CISMAC courses in epidemiology at UiB 2022. Photo: Ricky Heggheim/IGS

"A CoE has a long-term perspective, which makes it possible to plan ambitious activities. We also have greater opportunities to solve problems together," he says and adds an example of what he means by this.

"During the course with Matthew Fox, we got a research question from him that I did not fully grasp. I talked to a very skilled Indian course participant, who is one of our postdoctoral research fellows, and she said that she should take a closer look at it. In that way, we both gained a deeper understanding of the question," Sommerfelt explains.

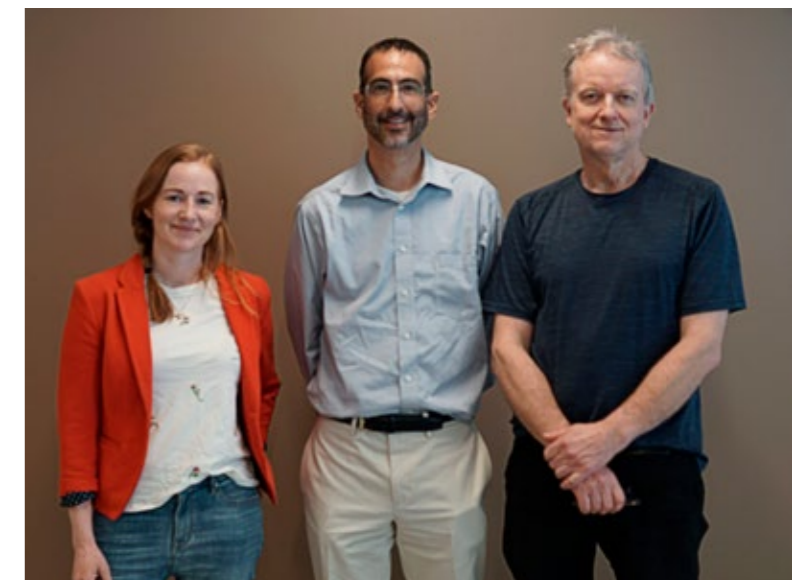
Guri Rørtveit is very pleased with the courses and says that the motivation to arrange similar courses is high.

"As the Head of IGS, I want to increase the department's research efforts in a long-term perspective. The depart-

ment has two new CoE applications that have reached the second round of evaluation, and this is important for both the department and the university. With a potential new CoE, we will have the opportunity to arrange this type of course and develop the concept further. Our focus is on strengthening the capacity of ongoing research, and if we succeed in our application for new CoE funding, the opportunity will be there to achieve this aim."

She commented that that response to the course has been overwhelming.

"There are students who have been in contact with me and said that it is the best course they have ever attended. Students and researchers across national borders have established new contacts and extended their networks. There is no doubt that research is strengthened by measures such as this."



From the left: Ane Straume, Matthew Fox, Halvor Sommerfelt. Photo: IGS



Students and lecturers in Implementation Science. Photo: Ricky Heggheim/IGS

A well executed course in implementation science

In November 2022, CISMAC, in collaboration with the Norwegian Research School of Global Health organized a course on the use of implementation science in global health.

Ricky Heggheim

With the course, participants gained knowledge of implementation science principles and procedures in global health, with an emphasis on health interventions in low- and middle-income countries. The aim was that by the end of the course, participants would be able to propose an implementation

science project and apply relevant theories, models, and frameworks.

[Leif Eriksson](#) and [Anna Bergström](#) from Sweden's Uppsala University taught the course. According to them, the course is meant to provide an introduction to implementation research.

“There are many guidelines in the field of health, and new guidelines are continuously developed. They frequently become something different than what they were intended to be when used in actual practice, i.e. in health facilities. Many policies are either not implemented at all or not applied adequately. Patients may not receive proper care as a result of this. It may result in legal disputes and large financial losses in some circumstances. Implementation science is about, to put it simply, aligning new knowledge and new guidelines with what is done in health facilities,” Bergström explains.

According to Eriksson, implementation science is a new field of science, “The students must learn how to study implementation and apply new knowledge in the workplace. Is there anything they can contribute to make the implementation process more effective and correct?”

Eriksson goes on to say that while it may be tempting to believe that implementation can be completed quickly, in reality it is a lengthy process. Many implementations fail because several guidelines are often implemented at the same time, and there is a lot of pressure to get them in place as soon as possible.

“We must improve our ability to see each issue separately and plan implementation accordingly”

“Prioritization and planning, like many other things, are important when it comes to implementation. It is common to receive an e-mail from superiors stating that this is how we will do things from now on. After that, a few days pass before another email arrives with a new rule that everyone must follow. We must improve our ability to see each issue separately and plan implementation accordingly,” Eriksson says.

Participants from all over the world

One of the participants in this course was Barsha Pathak from India. She currently works as a researcher at the Society for Applied Studies in New Delhi. This course forms part of her PhD education. Professor Ingvild Fossgard Sandøy from the Centre for International Health and deputy director of CISMAC is one of her supervisors. Pathak found the course very rewarding.



Barsha Pathak from India was among those who attended the course in implementation science in global health.

“The course’s primary emphasis is on the foundations of implementation science. Our teachers in the course explain how to do implementation research using the frameworks and models. We also receive assistance in learning how to use the frameworks in practice through this course,” Pathak explained.

The first days were spent getting to know the concepts and the fundamentals of implementation science. Then, the following days they went deeper into the issues.

She is very pleased with the chance to collaborate with other course participants and, in doing so, students have the chance to discuss the course materials and exchange experiences from their various home countries.

First in-person course following COVID

The students completed seven days of the course before being placed into groups of four to work on the assignment, which must be presented verbally online.

“We are leaving for home right away, but will stay in touch on WhatsApp,” Pathak says.

The groups will meet on Zoom an hour before the assignment to have the final discussions. The specific assignment

“I believe everyone here has done and read about implementation research in their home countries. The issue is that we did it on our own without having the chance to have in-depth conversations with our peers from a different setting.”

will then be completed. The course instructors will also provide them with feedback and suggestions.

The interactions that were fostered between the students and the course teachers, in Pathak's opinion, is what makes the course the most worthwhile.

“I believe everyone here has done and read about implementation research in their home countries. The issue is that we did it on our own without having the chance to have in-depth conversations with our peers from a different setting. When we can actually be here together and spend time talking about our experiences with one another, it becomes entirely different. As it was not possible during COVID, I really missed this.”

She calls the course extremely vibrant and interactive. There was time for debate and questions throughout the course, and the problems were addressed in plenary sessions.

“The conversations were at a very high level. Everyone offered solutions and ideas for resolving the challenges [we discussed]. I really appreciated the chance to return home before participating in a few Zoom lectures and finishing with an oral presentation that includes instructor feedback. As a result, we have the opportunity to consider and process what we have learned as well as place it in the perspective of what we already know from our home countries.”

She is very pleased with the level of the course, not to mention how Bergström and Eriksson delivered their lectures.

“They had no pressing need to complete the syllabus. Twenty students and researchers from various backgrounds make

up the class. The context in our home countries are very different. This could imply that some implementations are simple in one location but challenging in another. When we relate the circumstances in our home countries, Anna and Leif pay attention and offer constructive criticism. This kind of involvement in the classroom appeals to me greatly, and I believe implementation research courses should be taught in this manner.”



Associate professor Anna Bergstrom. Photo: Ricky Heggheim/IGS

Woman with her grandchild, India.
Credit: hadynyah | iStock



FACTS & FIGURES

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Terese Togstad Tveit
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Project administration



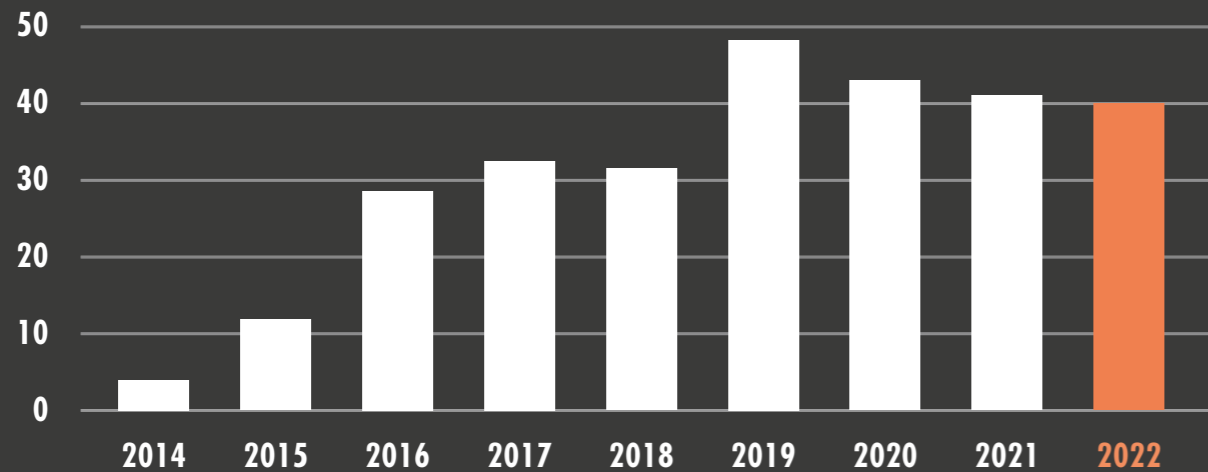
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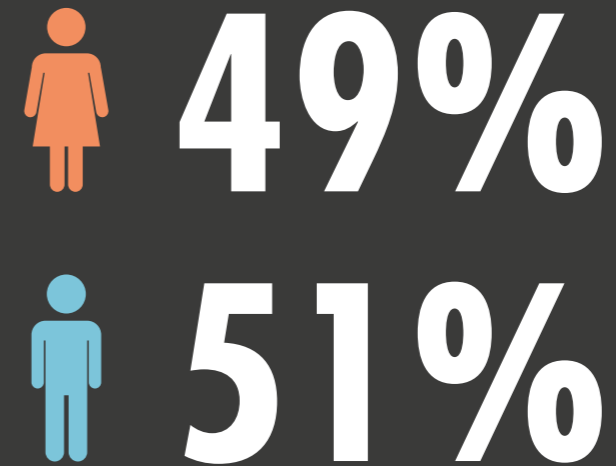
Ricky Heggheim
Web and communication

CISMAC IN NUMBERS

PUBLICATIONS PER YEAR



GENDER DISTRIBUTION, PRINCIPAL INVESTIGATORS



FUNDING



COUNTRIES WHERE CISMAC STUDIES ARE TAKING PLACE



LIST OF SCIENTIFIC PUBLICATIONS IN 2022

Of the 25 studies supported by CISMALC since its inception, 16 have now been completed, generating 282 publications in peer-reviewed scientific journals, of which many are of high impact. Below you find our list of publications for 2022. You can find the full list of publications on our [website](#).

Arach, Anna Agnes Ojok; Kiguli, Juliet; Nankabirwa, Victoria; Nakasujja, Noeline; Mukunya, David; Musaba, Milton W.; Napyo, Agnes Kasede; Tumwine, James K; Ndeezi, Grace; Rujumba, Joseph. **“Your heart keeps bleeding”: lived experiences of parents with a perinatal death in Northern Uganda.** BMC Pregnancy and Childbirth, 2022 22(1).

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Photo this page:

Boy at his farm in South Africa.

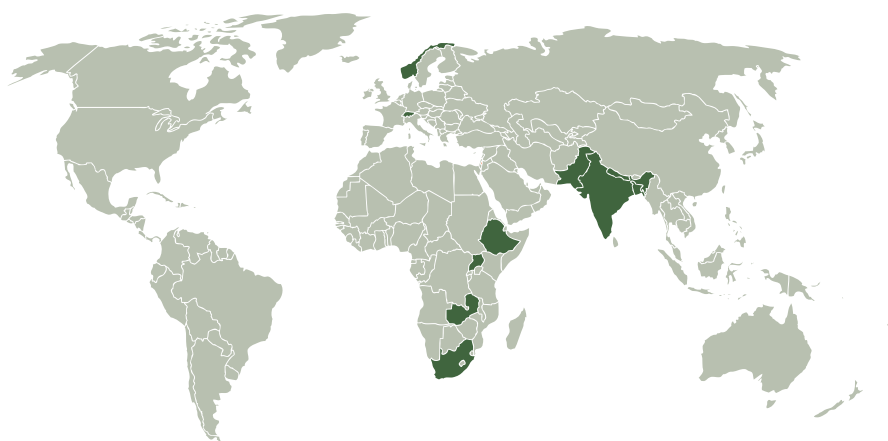
Credit: heidijpax | iStock





View from the Sipi falls in the Mount Elgon national park in Uganda.
Photo: Dennis Wegewijs | iStock

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TOWARDS A BRIGHTER FUTURE FOR MOTHERS AND CHILDREN

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CENTRE FOR INTERVENTION SCIENCE IN MATERNAL AND CHILD HEALTH (CISMAC)

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