Maternal, reproductive and child health

Keywords

Description of the research
The overall aim of Swedish support to research and research capability strengthening covered by the developmental budget is to strengthen and develop research of relevance for poverty alleviation in low-income countries (Strategy document for Sida support to research 2010-2014). This objective closely links to the Millennium Development Goals (MDG) 1990-2015 that have poverty alleviation as the overarching goal. Several other MDGs address global health issues of importance for poverty alleviation. For maternal, reproductive and child health MDG4 (child survival) and MDG5 (maternal health) are of special relevance.

Maternal, reproductive and child health (research) are partly overlapping concepts. Maternal health refers to the health of women during pregnancy, childbirth and the postpartum period. Reproductive health is broader and implies, in addition to aspects of maternal health, that people (men and women) have a responsible, satisfying and safe sex life and that they have the capability to reproduce and the freedom to decide if, and how often to do so. Universal access to reproductive health was agreed upon in the Population and Development conference in Cairo in 1994 and added, with an initial delay, to the MDGs. Reproductive health often includes aspects of newborn health. Child and adolescent health covers the age interval from birth to 19 years, where newborn health (the first month) has received increasing attention recently but where adolescent health (10-19 years) still may be seen as a neglected age interval in global health. In this review some aspects of global nutrition research will also be included due to its paramount importance for global health, especially for maternal and child health, and its absence from the overall list of reviews.

There has been an accelerated reduction in maternal deaths since the MDGs were formulated, especially evident in Asia (1). Bangladesh is one of the estimated 15 countries that will reach the MDG5, and a recent analysis points at a combination of improvements within and outside the health sector as plausible reasons to this progress, providing a rationale for a broader development agenda along with universal coverage of good-quality reproductive health services(2). Also child survival has shown an accelerating improvement after the millennium shift, with most of the decrease in mortality after the neonatal period (3). The highest maternal, newborn and child death rates and the highest absolute numbers of deaths are found in sub-Saharan Africa and South Asia, with 10 countries having almost two thirds of the global maternal and newborn deaths as well as stillbirths (3) Children before the age of five years constitute less than a tenth of the global population but generate one quarter of the total global burden of diseases. Neonatal conditions alone (first month of life) result in almost a tenth of the global disease burden. Annually there are three million neonatal deaths, most of which occur in low- and middle-income countries. In addition, there is almost the same number of stillbirths, a neglected problem in research as well as in health programs. Undernutrition (consisting of foetal growth restriction, stunting, wasting, deficiencies of vitamin A and zinc and suboptimal breastfeeding) accounts for about 45% of mortality before the age of 5 years(4). In addition, research is accumulating that foetal and young child undernutrition, reflected in a sustained high prevalence of stunting in low- and middle-income countries, is causally linked to the current epidemic of type 2 diabetes and other non-communicable diseases in countries with an ongoing rapid epidemiological and nutrition transition(5,6).

Global health research has suffered from what has been labelled the “10/90 gap”, i.e. that only 10% of global health research resources are used to address the health problems of 90% of the world.
population(7). Some progress in resolving these inequities in the fields of maternal, reproductive and child health research has been made in the latest decades(8). The Lancet series analysing magnitude of the problems, potentials for change and research gaps have been of major importance for this positive development, e.g. the series on child survival(9), the repeated series of papers on neonatal survival (10), on maternal mortality(11), on maternal and child nutrition(4) and on child development(12). Another important contribution to global health progress in this area is the countdown reports that analyzes the global health situation in relation to the health-related MDGs(13) and the increasing awareness and studies of equity in maternal and child health(14). A common conclusion in most of these publications is that there are a large number of evidence-based and cost-effective interventions that has the potential of substantially reducing mortality and health problems in the field of maternal, reproductive and child health, but there are priority research questions in reducing the know-do gap, i.e. how to deliver these interventions. In contrast to these expressed priorities a major part of funding and global health research efforts are still devoted to discovery, with less emphasis to development of feasible interventions or to issues related to delivery of interventions (i.e. implementation research)(15-18).

An analysis based on a consultative process of research priorities in sexual and reproductive health in low- and middle-income countries underlines the need for research that translates evidence into practice, studies that address questions related to scale-up of evidence-based interventions or that deals with issues related to the integration of services, e.g. the linkage of HIV services to other reproductive health services. In line with this a recent analysis of global newborn health research priorities ranks research areas related to delivery of services highest and stresses the importance of allocation of resources to these types of research for further reduction of child mortality(16). In the field of childhood pneumonia research on barriers to care seeking, access and scale up of interventions was getting top priority(19), and research on implementation of evidence-based interventions was also prioritized in the field of childhood diarrhoeal diseases(20). An expert-led process for identifying research priorities in adolescent sexual and reproductive health in low- and middle-income countries ranked research questions related to scale-up of existing interventions high(15).

Sweden through Sida/SAREC has been a pioneer in actions against these disparities in global health research. At the global level it contributed to the establishment of several international bodies that work for a fair distribution of global health research resources, and was a very important voice in global health research policy formation. Within the various bilateral development collaborations ambitious and long-term efforts have been made to build research capacity and infrastructure for research (within this field an example is the build-up and support to health and demographic surveillance systems). The Swedish universities have very actively contributed to this by long-term collaborative research and research training with the unique “sandwich” model (i.e. continued work at the home university interfoliated by shorter or longer periods at the Swedish university). Within the field of maternal, reproductive health and child health there are several examples of the success of these training efforts, where former Sida-trained PhDs have or have had positions such as high-level official at PAHO, head of health at UNICEF, director of a leading public health institute in Ethiopia, dean of a medical faculty in Tanzania and head of maternal and child health at Ministry of health in Vietnam.

The Sida-funded research within global maternal, reproductive and child health (through the U-forsk program at Sida and later Global Health program at Vetenskapsrådet) has strongly benefitted from synergies with Sida’s bilateral research capability strengthening programs with institutions in primarily African and Asian countries. Below a few examples are given with an effort to characterize the research, how it position itself in relation to current research priorities and its relative importance.

Research groups at Umeå University and Uppsala University in collaboration with partners in Tanzania and some other African countries have addressed issues related to maternal mortality, maternal health and reproduction by a large number of projects, where several African and Swedish doctoral students have been trained and capacity and research infrastructure have been strengthened at the partner universities in Africa. The topics have to a large extent dealt with “what works when and why” and have consisted of intervention studies (e.g. trials) but also qualitative studies. The Uppsala institution has been a WHO collaborative centre partly related to these achievements. These efforts have been supported by a
combination of bilateral research funding and individual U-forsk grants. Groups at Karolinska Institutet and Uppsala University with partners in Uganda and India study contraception and abortions with clinical studies, randomized trials and qualitative approaches in order to strengthen delivery of services. WHO has designated the Karolinska group as a collaborating partner in human reproduction.

Research groups at Uppsala University, Karolinska Institutet and Dalarna University have been involved in large projects in Vietnam to improve newborn survival. Currently these efforts are focusing on research questions related to scale-up of community-based and hospital-based participatory interventions for perinatal and newborn survival. Even here research students have been trained, with “twinning” of doctoral students from Swedish and partner universities. These efforts have built upon earlier bilateral research funding but are now funded by the Global Health program and other grants.

In different large research projects in Uganda the diagnosis and management of children with fever have been addressed. This has directly contributed to change the WHO/UNICEF and Uganda policy to integrated community case management (iCCM) of Malaria, Pneumonia and Diarrhoea by means of Community Health Workers, which is now expanding through Africa supported by UNICEF and several other organizations. Several Ugandan and Swedish doctoral students have been trained and the efforts have benefitted from strong synergies between bilateral Sida funds, U-forsk and Global Health funding, as well as grants to the Ugandan partners from international funding agencies.

Groups at Karolinska Institutet and Uppsala University together with institutions in South Africa and other international partners have addressed research questions related to the prevention of mother-to-child transmission of HIV, primarily through community-based research. Some of the projects have analyzed the dilemmas related to infant feeding when HIV is prevalent. These projects have contributed to inform policy and programs, primarily in South Africa. PhD students from South Africa and Sweden have been trained, and Swedish as well as European funding programs have provided funding.

Maternal and child malnutrition has been addressed in studies in Bangladesh, where Uppsala University collaborates with the local research institution and several international partner institutions in the US, UK and Japan. Nutrition interventions in early pregnancy resulted in major improvement in infant survival, but also in favourable effects on child growth and metabolic markers in childhood. The current research that has received funding from the Global Health program is related to the DoHAD framework, addressing the question whether the developmental origin of adult chronic diseases can be modified by nutrition interventions in pregnancy. This project has benefitted from bilateral research funding to the Bangladeshi institution and several grants from Sweden as well as from UNICEF and funding agencies in UK, the US and Japan. A large number of research publications have been produced and more than 15 PhD students have been trained.

Strengths and weaknesses

The topics addressed by the Swedish groups active in global maternal, reproductive and child health research have a large extent fall within the research priorities that have been formulated in recent years(16,19,20). Within these projects African, Asian, Latin American and Swedish research students have been trained and capacity has been built in Sweden as well as in the international partner institutions. Research quality has overall been very good and of high relevance, reflected in a large number of publications in high-impact journals as well as in several examples of impact on policy and practice.

Swedish universities have to some extent allocated resources to global health (most larger universities) and Uppsala University has since several decades invested in professorships and associate professorships within maternal, reproductive and child health. These universities offer Masters- as well as PhD programs with a focus on global health, and, as reflected in the examples above, quite frequently collaborate with other Swedish institutions in their global health research programs. An analysis of publications within global maternal, reproductive and child health from Swedish institutions reflect an extensive international network and a large number of publications with partners from (in descending order) Bangladesh, Vietnam, South Africa, Uganda,
India, Tanzania, Ethiopia and several other countries. Many of these collaborations include partners not only in one low- or middle-income country but also other international partners, e.g. in the US, UK and Norway.

During the last 10 years (2004-2013) 41 projects within maternal, reproductive and child health received funding from Sida U-forsk or Vetenskapsrådet Global Health program (totally 213 grants were allocated to global health projects), i.e. on average 4 projects per year (range 2-8 projects). The successful grant applicant within this research field was a senior researcher, on average applying when her or his PhD degree had been obtained 15 years before the year of application.

Trends, tendencies and prognosis for the future

Global maternal, reproductive and child health represent a relatively large proportion of the global disease burden, and represent health problems that are highly relevant for the current MDGs and the forthcoming sustainable development goals. A relatively small number of Swedish research groups, mainly found at Uppsala University, Karolinska Institutet and Umeå University have developed research program within these fields during the past 3-4 decades and the universities have also invested in higher positions for global health research. Good collaborative links have been established with institutions in Africa, Asia and to a limited extent Latin America, as well as between the Swedish institutions.

Funding has been very limited to this relatively large and prioritized global health research area, and few grants have been provided to post-doc researchers in recent years. Research within this field often falls within the interest areas of Forte, but regrettably that funding agency has not permitted funding of global research, except from an institutional grant to Umeå University.

Successful larger projects have in most cases benefitted from co-funding and synergies between the Sida-funded bilateral research program (capacity strengthening) and the U-forsk or Vetenskapsrådet Global Health funding program. To some extent funding has also been obtained from international donors with the African or Asian partner institutions as applicants. Quality assurance and promotion of such synergies were earlier achieved by the SAREC secretariat and later the Research secretariat at Sida. The recent reorganizations of Sida has reduced the research secretariat to approximately twenty percent of its original size, and left the important decisions regarding bilateral research funding to the different embassies. This is a threat to the scientific quality of the bilateral research programs and the earlier synergies are gone or seriously impaired. Further, the voice of Sweden that earlier played such an important role in the global health research discussions is no longer found.

Several of the successful Swedish collaborative research projects within global maternal, reproductive and child health (e.g. among those examples above) had not been possible without a health and demographic surveillance system. Sida has supported the establishment of such systems within the bilateral research programs in a number of countries and by support to the network if such sites (INDEPTH), and the Swedish institutions have got considerable experience of establishing and promoting such important research infrastructure.

With the dismantling of the research secretariat at Sida there is a need to develop new strategies to further strengthen Swedish involvement in global health research and research capability strengthening in low- and middle-income countries. Swedish universities as well as Vetenskapsrådet and other Swedish research funding agencies could increase their involvement for the global policy discussion, the strengthening of research capacity building in countries and regions and the quality assurance of the Swedish bilateral investments in research and research training.

Recommendations

- The global research area maternal, reproductive and child health represent a major part of the global burden of diseases and is prioritized in relation to poverty alleviation expressed within the MDGs and the discussed sustainable development goals. In spite of this allocation of U-forsk and later Global Health research funds to this area has been small. Sida should consider whether its
Global Health research funds should be prioritized for research that more closely addresses immediate issues related to poverty alleviation.

- Research within this area as well as global health research overall is done by relatively few research groups at Swedish universities. In order to secure future capacity for this important area networking and synergies between the different Swedish groups and their international partners should be strengthened. There could be several mechanisms for this, such as networking grants, doctoral schools etc.
- Sweden had and could still have an important voice in the global health research and research policy discussion. The role of Sida and its research secretariat has been considerably reduced. Swedish universities and research funding agencies such as Vetenskapsrådet, Forte, Vinnova, STINT and others could play an important role in this. A national conference or consultation could maybe analyze the situation, create visions for the future and suggest new roles in Sweden's involvement in global health research.

References


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