Impact Of Reproductive Health Services On Socio-Economic Development In Sub-Saharan Africa:
Connecting Evidence At Macro, Meso And Micro-Level

A Reproductive Health and Development Research Programme

Draft Discussion Document on Policy Implications

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Introduction
This document presents the main results of a research programme on the relationships between reproductive health and socio-economic development in sub-Saharan Africa, with a special focus on Tanzania. Its purpose is to serve as a basis for discussion on the policy implications of the results of the studies that have been done as part of this programme. These discussions are planned to take place in Tanzania in February 2012. After that, this document will be adapted and will include the results of those discussions in terms of policy recommendations. In order to best serve the purpose of a discussion document on the main results of the research programme in audiences that are not necessarily scientific, these results are presented here in a language that is devoid of scientific jargon and complexities of scientific methodology. Also, the results presented here have been reduced to include only those that could most likely lead to policy recommendations.

In paragraph 2, the aims, main research questions, and sources of information are briefly discussed. Subsequently, in paragraph 3, the basic scientific model underlying the programme is introduced and explained in the form of a conceptual framework. Paragraph 4 includes the main results of the 13 (draft) research papers, that have been produced thus far. These results are clustered in four categories of research questions, that follow logically from the conceptual framework, that indicates in a stepwise manner the potential interrelationships between reproductive health and socio-economic development of the population. For each of the four clusters discussion statements have been formulated, that are related to the main research outcomes, as a starting point for the discussion on policy recommendations that could eventually result. Finally, short summaries of the 13 (draft) research papers are included in an Annex to this document.
Population and Development (PopDev) Research Programme
The research programme was initiated in 2008 by Radboud University Nijmegen, Centre for International Development Initiatives (CIDIN), Nijmegen Centre for Economics (NICE) and Nijmegen International Centre for Health Systems Research and Education (NICHE), the Netherlands, and Muhimbili University for Health and Allied Sciences (MUHAS), Dar-es-Salaam, Tanzania. Funding for the programme was provided by the Netherlands Science Council (WOTRO) and the William and Flora Hewlett Foundation. The main focus of the research is on the interaction between investments in improving reproductive health and social and economic development of the population, which is expressed the programme title:

**Impact Of Reproductive Health (RH) Services On Socio-Economic Development In Sub-Saharan Africa: Connecting Evidence At Macro, Meso And Micro-Level.**

After some adaptations of the initial conceptual framework of the research programme, the core research questions have been formulated as:
1. How do individual and service characteristics influence actual use of RH services?
2. What is the contribution of RH service delivery to the reproductive health status of the population?
3. How does improved RH impact on the socio-economic status of the population?
4. What is the impact of policy decisions on the availability, accessibility and quality of RH services?

Each of these four research questions corresponds to a cluster of sub-projects, that are identified below as clusters A (for question 1), B (question 2), C (question 3) and D (question 4).

To address these research questions, both existing data files have been re-analysed and new data have been collected and analysed. The existing data files used were:
- Database Developing World (DDW), in which household level datasets for many developing countries are connected, harmonized and provided with district and national variables that can be used to explain household-level processes. DDW includes data from 32 sub-Saharan African countries.
- Kagera (Tanzania) Health and Development Survey (KHDS), which was originally conducted by the World Bank and Muhimbili University College of Health Sciences. The original sample consisted of 915 households who were interviewed four times: 1991, 1992, 1993 and 1994. In 2004 these households were re-interviewed.
- Tanzania Service Provision Assessment (TSPA) survey conducted in 2006 by Measure DHS. This was a nationally representative facility-based survey that covered 611 health facilities in Tanzania, randomly selected out of 5,663 health facilities.
• PlanRep data base, in which public spending data were obtained for Kagera, Mwanza and Mara

In addition to this, the following new datasets were created through original fieldwork:
• Tanzania Demographic and Health Survey (TDHS) follow-up survey conducted in 2010: 807 Tanzanian women, age 20-55, from the Lake Zone Region from a sub-sample of the of 2004 THDS were re-interviewed, resulting in a panel data set.
• A sub-sample of the above mentioned sample, consisting of 518 women (out of the original 807), from the Tanzanian Lake Region, who gave birth to at least one child in the last 5 years, and who were subjected to a choice experiment.
• A purposive sample, conceptually driven by research questions, of district level health policy makers and related stakeholders in three districts in Mwanza Region (Tanzania). Data were collected through in-depth interviews and nominal group technique (NGT).
• A stratified random sample of 445 women of reproductive age 18-49, cohabiting or married, and with children, in three locations in Mwanza Region (Tanzania).
• A sample of 63 delivering women in a public hospital in Mwanza city, of whom 31 women were purposively sampled because they experienced a complicated delivery and a control group of 32 women with an uncomplicated delivery. Furthermore, 37 women were interviewed who had been admitted for (spontaneous or induced) post-abortion care.
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Policy review of study results


**Introduction**

This chapter presents the main results of the research programme, and explores which policy recommendations could follow from these results. For this purpose, the results are ordered and integrated in a logical sequence, which is based on an adapted version of the Conceptual Framework underlying the research programme. The framework is presented in the next paragraph.

The logic of the Conceptual Framework is as follows. The basic question of the research programme is whether and how investments in reproductive health (RH) can contribute to socio-economic development (or poverty reduction) of the population.

The first question is whether and how RH services that are available are actually used, and which factors influence this use. This research cluster A is split in two separate parts. The first sub-cluster (A1; three studies) looks at the question how characteristics of RH services determine their actual use; and the second one (A2; five studies) looks at individual and social characteristics of women, and how those influence service use. Characteristics of the services that are investigated include basically: availability, accessibility and quality.

The second question then becomes whether and how use of RH services does impact on women’s RH status. Three studies explore various elements of this potential causal relationship, and they constitute research cluster B. The indicators used for RH service use relate to: antenatal care, delivery care, post (unsafe) abortion care, and family planning.

The third question is how improvements in the RH status of women can lead to socio-economic development. Five of the 13 studies (partially) answer this question. Those studies make up research category C in the framework. Indicators used for “RH status” are: Age at first birth, child spacing, number of children, maternal health and child health. Indicators used for socio-economic development are: education of children, women’s employment, and household wealth.

Finally, there is the question on the relationship between reproductive health and policy decisions that affect it. Ideally, those decisions should be influenced by (changes in) reproductive health and health care needs, and they should in turn affect the availability, accessibility and quality of RH service delivery. These mechanisms are explored in research cluster D (three studies, one of which is forthcoming).

In the conceptual framework, this is indicated by the arrow that links the entire interrelated system backwards to the first level: RH service delivery.

At each level of the system discussion statements are formulated on what the policy implications could be of the study results in each of the four research clusters.
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Conceptual framework
Conceptual Framework RH and Socio-Economic Development Research Programme (adapted version), and related research projects

Reproductive Health (incl. FP) Service Delivery
- Availability
- Accessibility
- Quality

A1. Research numbers: 1, 2, 3

Reproductive Health Service Use
- Antenatal care
- Delivery care
- Post (unsafe) abortion care
- Family planning (information and services)

B. Research numbers: 3, 6, 7

Reproductive Health Status
- Age at first birth
- Child spacing
- Number of children
- Maternal health
- Newborn/child health

C. Research numbers: 6, 7, 8, 9, 10

Socio-economic Status
- Education of children
- Women’s employment
- Household wealth

D. Research numbers: 11, 12, 13

Reproductive Health (incl. Family Planning) Policies
- Prioritization RH/FP in national (health) policies
- Decentralised decision making (budget allocation)
- Central Family Planning decision making (partly)
- Basket funding international donor assistance

A2. Research numbers: 1, 2, 3, 4, 5

Policy feedback mechanisms
The research numbers in the above framework refer to the following studies:

2. Bart van Rijsbergen & Ben D’Exelle, Variance in preferences for obstetric care facilities in the Tanzanian Lake region.
4. Idda Mosha & Ruerd Ruben, The influence of communication, wealth, knowledge and social network on family planning utilization among couples in Mwanza region, Tanzania.
7. Abiba Longwe & Jeroen Smits, Impact of contraceptive use on the change in educational enrolment in 622 sub-national areas in sub-Saharan Africa.
8. Abiba Longwe & Jeroen Smits, Effects of family planning outcomes on primary school attendance in sub-Saharan Africa.
10. Abiba Longwe, Janine Huisman & Jeroen Smits, Reproductive Health Facilities and Changes in Wealth in 622 Districts of 25 African Countries
11. Dereck Chitama, Rob Baltussen, Evert Ketting, Switbert Kamazima, Anna Nswilla and Phares. G. M. Mujinja, From papers to practices: district level priority setting processes and criteria for family planning, maternal, newborn and child health interventions in Tanzania.

In the next paragraphs, the main results of these 13 studies and related policy discussion statements are presented. Each paragraph deals with one level of the causal chain, as indicated in the conceptual framework.
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Factors determining the use of RH services (research cluster A.)
Our research focuses on two types of factors actually influencing service use: 1. Service characteristics, and 2. Individual, family, and context characteristics.

**Service characteristics as determinants of service use (A1.)**

Three studies look at service characteristics influencing use of services: Research numbers 1, 2, and 3. The research questions of the first one (1) are:

1. To what extent is the low use of delivery care by poor and lowly empowered women the result of barriers to access, or the result of women’s preferences? i.e. what do women want to choose or what are they able to choose?
2. How do emergency conditions play a role in this equation?

The research questions of the second study (2) are:

3. To what extent do preferences for obstetric care facilities differ among women in the Tanzanian Lake region?
4. What causes this heterogeneity in preferences?

The research questions of the third study (3) are:

5. What characteristics of women influence the risk of a complicated delivery?
6. How does (unsafe) abortion contribute to maternal complications?

To address the research questions 1 to 4, observational data on delivery care are combined with the data from a choice experiment in a sample of 518 women, age 20-55, from the Tanzanian Lake Region, who gave birth to at least one child in the last 5 years. Questions 5 and 6 are addressed, using research among 63 delivering women and 37 women with abortion complications in a hospital in Mwanza city.

The most prominent results of these three studies:

- Poorer women are more likely to give birth at home, and in case of complications they are much more likely than wealthier women not to attend a hospital, which indicates that poor women face serious barriers to hospitals, especially when needing emergency obstetric care.
- In the case of uncomplicated delivery, women in general tend to give high importance to technical quality and attitudes of service providers.
- More empowered women are more likely to use high quality obstetric care, although they also give more importance to the cost of services.
- Although distance to a health facility is important for women, those women who experienced complications at a previous birth are less influenced by this factor in their preference for a facility. Surprisingly, distance is also less important to poor women.
- By far the most important attribute influencing facility preference is availability of drugs and equipment. More empowered women show an even stronger preference for technical quality. Women are even prepared to pay far more for the availability of equipment and drugs compared to other facility attributes.
• Among women delivering in a hospital, poor, and less educated women have a significantly higher risk of a complicated delivery, compared to more wealthy women. This probably indicates that wealthier women tend to deliver in a hospital anyway, whereas poorer women tend to do so only in case of complications.
• Poor women pay fewer antenatal visits and start them later in pregnancy, compared to wealthier women.
• Wealthier women, who can afford it, are more likely to visit private facilities for antenatal care because public facilities tend to be of lower quality.
• A considerable share of complications due to “spontaneous” abortions are in fact illegally induced in an unsafe way. Women are reluctant to admit this, because of the strong stigma on (illegal) induced abortion.
• Women who (probably) had induced abortions tend to be younger, have fewer children, are more often students and unmarried, and they have a higher rate of unplanned pregnancies than delivering women.

**Discussion statements**
1. Exemption schemes need to be designed such that they are most useful in case of emergency delivery, when access barriers for the poorest women are most severe.
2. For improving maternal health, it is more effective to strengthen the technical competence of service providers who assist in home delivery, than to ease access to hospital facilities.
3. Investing in quality of medical care, rather than reducing distance to the facility seems more effective for increasing RH service use, because nowadays most women live reasonably close to a facility.
4. There is a need for a national campaign to encourage women, especially poor women, to start antenatal care early in pregnancy, and to have at least 4 antenatal check-ups in total, as recommended by WHO. Antenatal care should be available at home for pregnant.
5. Unsafe abortion being a serious threat to maternal health, particularly among young women, legal and safe abortion services should be made available in Tanzania.

**Individual, family, and context characteristics as determinants of service use (A2.)**
Five (draft) publications (1, 2, 3, 4, 5) deal in different ways, and sometimes only partly, with the relationship between these background factors and use of RH services. The research questions as well as the results of those studies partly overlap and reinforce each other. Fieldwork for all of them has been done in the Lake Region.
The databases of studies 1-3 have been indicated above, under A1. Study 4 uses the results of a questionnaire in a stratified random sample of 445 female respondents.
of reproductive age (18 – 49 years), cohabiting or married, and with children, in three districts of Mwanza region. Data for study 5 is based on the results of follow-up interviews among 807 women, in 2010, in Mwanza, Kagera and Mara regions, who had participated in the 2004 THDS (panel data).

The main question of the studies that relate to factors influencing the use of RH services is basically:
What is the role of poverty, women’s empowerment, past experience of complications during pregnancy and delivery, communication between husband and wife, and social networks on the use of RH services? The RH services here include antenatal, delivery and (post-)abortion care, as well as family planning services.

The main results of the studies are:

- Poverty is a very important factor influencing the use of RH services. Often in combination with a poor educational level, poverty leads to:
  - More home- and fewer hospital deliveries, and if combined with experience of obstetric complications the effect of poverty is even stronger (1);
  - Poorer knowledge of family planning and less use of family planning methods (4, 5);
  - More complicated deliveries, partly as a result of starting antenatal care later in pregnancy, and paying fewer antenatal care visits (3);
  - A reduced appreciation of good technical quality of RH services (2);
  - Primarily using (generally poorer quality) public instead of private health facilities, because the former are mostly free of charge (3).

Women’s empowerment turns out to be a complex and multi-dimensional concept; different parameters of empowerment vary in their effect on RH service use (5):
- Empowerment in general increases the likelihood of hospital delivery, and to a higher appreciation of technical quality of services;
- Rejection of domestic violence is related to increased use of antenatal care;
- Female monetary economic activity stimulates use of all RH services (family planning, antenatal care, and hospital delivery).

- Adoption of family planning is also positively influenced by women’s education (5), communication between wife and husband (but only in urban areas) and by supportive social networks (4)

- Use of RH services because of medical complications due to unsafe abortions is indirectly determined by such personal (and social) factors as being unmarried and relatively young, having no or few children, and still being at school, because these factors determine the unacceptability of pregnancy, and thus the decision to have an (unsafe) abortion (3).
Because individual and family characteristics are usually not “actionable”, i.e. they can hardly be changed immediately by policy measures, these study results do not automatically lead to recommendations. Still, the following statements are worth being discussed at this level:

**Discussion statements**

1. Pro-poor policies in delivering RH services should be intensified if more poor women are to be reached by those services.
2. Female empowerment through investing in women’s education, strengthening women in rejecting domestic violence, and creating monetary job opportunities (such as through mini loans) can indirectly, but also directly be an investment in more proper use of RH services.
3. Motivation for family planning should not only address individual women, but also their husbands, and their wider social environment (i.e. the community).
6

Reproductive health status as determined by RH service use (research cluster B.)
Three studies (3, 6 and 7) have asked the question to what extent and how the RH of women can be improved by offering and using RH services. Studies number 6 and 7 analyse a combined dataset from 25 sub-Saharan countries (DDW).

Study 3 looks at the relation between SES (socio-economic status) and the use of antenatal care, the risk of a complicated delivery, and unsafe abortion. The influence of SES on RH service use has already been dealt with in the previous paragraph. Here, the question is reduced to the influence of antenatal care use on one aspect of the RH status of women, being the risk of a complicated delivery.

Study 6 deals primarily with the influence of RH variables on (changes in) household wealth, which is discussed in the next paragraph. But at one point it also looks at the influence of services on RH status in terms of reduced family size.

Study 7 deals primarily with the influence of reproductive health variables on primary school enrolment of children, which is also discussed in the next paragraph. But it also includes the question: To what extent does increasing knowledge and acceptance of contraceptives lead to increasing use of contraceptives, and subsequently: does this lead to a reduction of the number of young children?

The results of these three studies can be summarised as follows:

- Not surprisingly, it is confirmed that increased use of contraception is associated with fewer children under age 6. In other words, family planning information (and probably also service delivery) is associated with smaller family size.
- Increased quality and quantity of RH services reduces the number of children born (between 2004 and 2010). This confirms the previously mentioned result, but because this is a panel study it also confirms the causality of improved RH service delivery leading to smaller family size.
- Among women who start antenatal care later in pregnancy, and who have fewer antenatal care check-ups, the risk of complicated delivery is indeed increased. This concerns particularly poor women.
- Because (for legal reasons) women cannot use official medical services if they need an abortion, they are forced to rely on unqualified service providers working under (very) poor conditions, which leads to an increased risk of complications, and thus to poor RH status (maternal morbidity and mortality).
Discussion statements
1. Excessive childbearing, which is known to be a major cause of maternal morbidity and mortality, can be easily reduced by offering family planning information and services, as part of RH service delivery. All health facilities should offer such family planning services.
2. Particularly poor women should be better informed about the need for, and benefits of timely and repeated use of antenatal care, and these services should be easy to reach for those women.
3. Legal and safe abortion services can substantially improve women’s reproductive health. It also will reduce the costs, for both health systems and women, of treating complications resulting from unsafe abortions. Absence of these services does not reduce the incidence of (unsafe) abortions.
7

Influence of RH on socio-economic development (research cluster C.)
Five studies (6, 7, 8, 9 and 10) look explicitly at the relationships between the RH status of women and the socio-economic status and development prospects of women and households. Socio-economic indicators used are education of children, women’s employment and household wealth. These studies are of particular importance because the main question of this research programme has been to what extent and how investments in reproductive health (including family planning) can contribute to socio-economic development at the individual, district and national level.

Studies 7 and 8, using data from 25 sub-Saharan African countries, ask the question whether various family planning outcomes influence primary school participation of children. Based on the same dataset, study 10 investigates the influence of availability of RH facilities on household wealth. Study 6 looks at the effect of various fertility measures on changes in household wealth, and study 9, using panel data from the Lake Region, looks at the effect of fertility on female labour force participation.

The main results of the five studies are:

- Children born shortly after their preceding sibling or who were succeeded shortly after by a younger sibling, children with a very young sibling and children with a pregnant mother all are significantly less likely to be in school than children living in households with more favourable family planning outcomes. This is true for both girls and boys. In other words, family planning has a positive effect on child education.
- A lower average number of children under age 6 in a district is positively associated with improvements in primary school participation of children aged 8-11 in that district. This means that not only child spacing, but also limiting family size has a positive effect on child education.
- An increase in the number of children below 13 has a clear negative effect on the increase in household wealth. Additional children have especially negative consequences for households in which already a large number of children is present.
- In households where women perceive themselves as healthier there is more improvement in household wealth than where this is not the case.
- Availability of more and better quality antenatal care facilities has a positive effect on household wealth change. In other words, reproductive health facilities affect socio-economic development through improvements in mother and child health.
- For women who recently started their own household, there is a negative relation between the number of children she has and the likelihood that she will be gainfully employed. So, in this group, family planning has a positive effect on female labour force participation.
- For women who started a family longer ago this relationship is converted: the more children she has the more likely she is to participate in the labour force. It
could be that this effect is related to the fact that women with several children tend to have a higher status in the community, which increases her chances of finding paid work.

**Discussion statements**

1. Family planning should not only be promoted for reasons of improving maternal and child health, but also as an investment in the development of children.
2. Family planning should also be promoted as an investment household wealth.
3. Because family planning is clearly also an investment in socio-economic development of women, children, households, communities and society at large, decisions to invest in it should be taken by policy makers who are responsible for socio-economic development, and not only by those who are responsible for health.
8

Reproductive Health Policies affecting RH service delivery (research cluster D.)
Three studies (11, 12, 13) deal with the relationship between policy decisions and the quality of RH service delivery.

Study 11 uses data from in-depth interviews and NGTs with district health policy makers and related stakeholders in Mwanza region. It is likely that the results also apply in the rest of Tanzania. Study 12 looks at the question whether the poor benefit more from subsidisation of family planning and maternal health services than the rich, using data from the 2010 DHS follow-up study. Study 13 uses the dataset from a representative Tanzanian-wide survey among public and private health facilities.

Research questions of the three studies were:
1. What are the priority setting processes and criteria for RH at district level in Tanzania? Specifically, what are the RH actor’s engagement and understanding, the criteria used in decision making, the way criteria are identified, and the information or evidence and tools used to prioritise RH interventions at district level in Tanzania?
2. Does a substantial proportion of FPMH public spending go to the poor, or does it particularly benefit economically better-off?
3. What is the availability and quality of family planning and STI/HIV services (which is part of RH) delivered by the public and by the private sector in Tanzania?

The main results of both studies are:
• District Reproductive and Child Health Sector (RCHS) coordinators, who are responsible for implementation of interventions in the districts, are not engaged in the district health planning, and therefore hardly influence prioritisation of RH in district health planning.
• Priority setting processes are ad hoc, intuitive and implicit. Bargaining power of planners is more decisive for resource allocation than severity of health problems.
• RH information, needed for priority setting, tends to be incomplete, inaccurate and not up to date.
• Priority setting team members have low skills and knowledge of priority setting on RH.

The conclusion at this point is: Given these shortfalls, there is little chance that prioritisation of RH interventions will be efficient and fair. Therefore, the scope and breadth of RH services will remain limited and is likely to lead to poor RH outcomes.

• Public spending on family planning and on antenatal services in Kagera and Mara region is pro-poor, but it is pro-rich in Mwanza region.
• In Kagera region, public spending on deliveries assisted by trained medical personnel is slightly progressive or pro-poor. However, in Mwanza and Mara region it is slightly pro-rich or regressive.
The conclusion at this point is that public subsidisation of FPMH services is often not pro-poor, although it is intended to be.

- The vast majority of public health facilities (95%) offer family planning services, whereas more than half (52%) of private facilities do not offer those. (Almost 40% of all facilities in the sample are private.)
- Private facilities are less likely to offer several modern contraceptive methods (progestin-only pills, injectables, male condoms, implants, and emergency contraceptive pills). However, private facilities are more likely to offer “natural” family planning methods.
- In general there is a lack of family planning standards, procedural manuals and guidelines in health facilities. This lack is more serious in private facilities.
- Less than half of both public and private facilities have visual aids for teaching about STIs and HIV/AIDS; models for demonstrating how to use condoms; and posters for general awareness of STIs or HIV/AIDS.

The conclusion at this point is: Family planning services should be available in every region of the country, also in those regions where many people use private health facilities, that do not offer these services at all. The finding that several private facilities tend to focus on counselling on far less reliable “natural” methods is a serious source of concern.

Discussion statements
1. Because RH improvement is a national priority in Tanzania, and because RH is one of the MDGs (number 5), key stakeholders of RH at the district level must be actively involved in the formulation of district health plans. They should be trained in using priority setting techniques and epidemiological data on RH in their districts should be made available.
2. Data on unmet need for family planning (from DHS), instead of burden of disease data, must be used for priority setting in health planning, because family planning is not a “cure for a disease”, but lack of family planning services is a major determinant of poor mother and child health, and of social and economic development in general.
3. Facilities that, for ideological reasons, do not want to offer family planning services (or only offer unreliable “natural” methods) should be excluded from the national planning of family planning facilities.
4. The broad targeting applied in subsidising family planning interventions is not effective in reaching the poor. It should be supplemented by narrow targeting.
5. The degree of inequality and inefficiency in FPMH public spending varies, sometimes widely, from region to region and from FPMH service to service in northern Tanzania. Research is needed in order to assess whether this is also the case in other parts of the country.
ANNEX: SUMMARIES OF POPULATION AND DEVELOPMENT RESEARCH PAPERS

2. Bart van Rijsbergen & Ben D’Exelle, Variance in preferences for obstetric care facilities in the Tanzanian Lake region.
3. Sanne van der Zee & Evert Ketting, Inequity in maternal health: relating socioeconomic status to maternal risk in Mwanza, northern Tanzania.
4. Idda Mosha & Ruerd Reuben, The influence of communication, wealth, knowledge and social network on family planning utilization among couples in Mwanza region, Tanzania.
7. Abiba Longwe & Jeroen Smits, Impact of contraceptive use on the change in educational enrolment in 622 sub-national areas in sub-Saharan Africa.
8. Abiba Longwe & Jeroen Smits, Effects of family planning outcomes on primary school attendance in sub-Saharan Africa.
11. Dereck Chitama, Rob Baltussen, Evert Ketting, Switbert Kamazima, Anna Nswilla and Phares. G. M. Mujinja, From papers to practices: district level priority setting processes and criteria for family planning, maternal, newborn and child health interventions in Tanzania.
1. Use of Delivery Care in Tanzania: The Importance of Poverty, Empowerment and Emergency

Bart van Rijsbergen & Ben D’Exelle

Main research questions
1. To which extent is the low use of delivery care by poor and lowly empowered women the result of barriers to access, or the result of women’s preferences? i.e. what do women want to choose or what are they able to choose?
2. How do emergency conditions play a role in this equation?

Implementation of the research: methods & sample
To address the research questions, we combine observational data on delivery care with the data from a choice experiment in a sample of 518 women, age 20-55, from the Tanzanian Lake Region, who gave birth to at least one child in the last 5 years. We compare two analyses that investigate the influence of wealth, empowerment and emergency conditions on 1) women’s use of health care facilities and 2) women’s preferences for health care facilities.

In the first analysis, we investigate the influence of wealth, women’s empowerment and emergency conditions on the likelihood of delivery at different health facilities. For this, we ask respondents in the sample where they delivered their last pregnancy. This information is classified into three categories: 1. delivery at home, 2. delivery in a local health facility (dispensary, health centre or village health post) and 3. delivery in a hospital. This variable is used as dependent variable in a multinomial probit regression.

In the second analysis, we study women’s preferences for delivery services. To capture such preferences, we let the women in the sample participate in a ranking exercise of hypothetical options of obstetric care providers. To examine these ranking data we use conjoint analysis techniques.

Main outcomes
The analysis of observational data shows that poorer women are less likely to give birth in a hospital or local health facility, compared to home delivery. The difference between poor and rich women becomes much larger when maternal complications are taken into account. We calculate predicted probabilities, and find that the difference between poorer and wealthier women for home delivery, is 11% when there are no complications. However, this difference more than doubles to 29% percent, in case of complications. A similar effect is observed for the likelihood of delivery at a hospital (14% vs. 28%) but not for delivery at local health facilities.

The preference data shows that women who delivered their last pregnancy at home give less importance to provider attitude and technical quality in case of normal delivery. This suggests that poor women’s lower likelihood to deliver in hospitals
might, at least partly, be induced by their weaker preference for technical quality. This does not mean that poverty cannot create important ‘barriers to access’. As indicated by the analysis of the observational data, differences between poor and rich women regarding their likelihood to deliver in a hospital become very prominent in case of emergency conditions. This is an important result as use of high-quality obstetric care is of highest importance in emergency conditions, when most cases of maternal death occur (Mavalankar and Rosenfield, 2005).

Conclusions and policy implications
The last finding indicates that exemption schemes need to be re-designed in such a way that they are most useful in case of emergency delivery, when access barriers for the poorest women are most severe.

Our results also suggest some additional venues to further increase the use of high-quality obstetric care. In particular, the observation that technical quality receives lower attention among women with lower empowerment indicates that more can be done to raise these women's awareness of the importance of high-quality obstetric care. Moreover, as female empowerment leads to women giving more importance to the costs of services, exemption schemes may be most effective among the more empowered women. Increasing female empowerment, therefore, may stimulate the use of delivery care both directly and indirectly.

Our analysis also shed light on the influence of complications on women's use of and preferences for health facilities. While we found that complications stimulate women to deliver in a hospital (and more so for richer women), the influence of complications on women's preferences is less clear. If anything, we found that preferences are less strongly correlated with socio-economic characteristics in the emergency treatment than in the normal treatment. This is not surprising given the fact that without high-quality obstetric care complications make women end up in life threatening conditions, in which case few people would question the need for medical intervention. Besides analyzing the influence of complications on women’s preferences, a useful extension to our research would be to analyze the causes and effects of the anticipation of such complications. As suggested by the identified effect of former complications on women’s preferences in our analysis, there might be substantial variation in individual beliefs about the risk of future complications. A further investigation of factors that influence women’s beliefs and their behavioural effects would certainly be a promising extension to our research.

Finally, the starting point for our research was that little medical assistance is available for home delivery, and therefore women need to be stimulated to give birth in health centres where skilled care is available. However, for those women who prefer delivery at home over delivery in a health facility, it is perhaps better to increase the coverage of home deliveries by skilled assistance. An interesting way to do so is through the use of domiciliary care practices (NBS, 2007). The results of our analyses may be relevant here as well. Our analysis of women’s preferences indicates that particular groups of women may need to be convinced of the importance of high-quality care, even if this care is brought directly to them.
References


2. Variance In Preferences For Obstetric Care Facilities In The Tanzanian Lake Region

Bart van Rijsbergen & Ben D’Exelle

Main research questions
1. To what extent do preferences for obstetric care facilities differ among women in the Tanzanian Lake region?
2. What causes this heterogeneity in preferences?

Data and methods
To address the research questions, we combine observational socio-economic and maternal health data with data from a choice experiment in a sample of 397 20-55 year old women, from the Tanzanian Lake Region, who gave birth to at least one child in the last 5 years.

We compare two types of analyses (using rank-ordered logit and mixed logit models) that investigate the influence of facility characteristics on women's preferences for health care facilities, both with and without interactions with individual characteristics. We also calculate willingness to pay measures.

Main results
Estimation results indicate that women prefer doctors more than nurses, friendly and responsive staff more than unfriendly and non-responsive staff. They prefer facilities at a smaller distance more than facilities further away, facilities with lower costs more than facilities with higher costs, and women prefer facilities well equipped with drugs and necessities for delivery more than facilities without equipment.

These results are evident on average, but a considerable amount of variation exists in these preferences. For the attributes provider type, provider attitude and costs no assignable explanation can be determined for the existence of heterogeneity. For the attributes distance and technical quality part of the heterogeneity can be explained by differences in socio-economic characteristics.

Women who experienced complications at a previous birth are less influenced by the distance to a facility in their preference for a facility. Due to their earlier experiences with complicated delivery, these women are thought to have a more realistic idea of the importance of distance to the facility when needing urgent medical support. As a consequence, they know distance is much less of an issue when they are at risk of complications. Distance is also less important to poor women, who are less influenced by distance to a facility than wealthier women.
By far the most important attribute influencing facility preference is the availability of drugs and equipment. The effect of this attribute is mediated by empowerment and in some models by wealth. More empowered women show an even stronger preference for technical quality.

Conclusions and policy implications
Preferences for obstetric facilities are strongly influenced by the quality of medical care and especially the availability of equipment and drugs. Women are prepared to pay far more for the availability of equipment and drugs compared to the other facility attributes. Demand is expected to increase when quality of delivery care is improved. Improvements in delivery care have shown to be very cost effective (World Bank, 2002). Second most important attribute is provider attitude and third distance to the facility. Choosing home confinement does not seem to be very illogical, when health facilities are inadequately equipped for providing delivery assistance and staffed with unfriendly staff. The influence of distance on women’s preferences is limited and even strongly reduced when women experienced complications at a previous delivery. Health facilities in Tanzania can be reached within one hour by 93% of the population (De Savigny et al., 2008), and are closer to rural households than in many African countries (Mrisho et al., 2007). Investing in quality of medical care, rather than reducing distance to the facility seems more appropriate. Investing in female empowerment might further increase the demand for obstetric care.

References


3. Inequity In Maternal Health: Relating Socio-Economic Status To Maternal Risk In Mwanza, Northern Tanzania

Sanne van der Zee & Evert Ketting

Introduction
Although the maternal mortality rate has declined since 1980, it remains high in particular parts of the world. In 2008, 508 maternal deaths per 100,00 live births were reported in Eastern Africa, against 7 in Western Europe (Hogan et al. 2010). Also, least progress on Millennium Development Goal five has been made in Sub-Saharan Africa (Dogba and Fournier 2009). A significant contributor to maternal deaths is unsafe abortion. According to the most recent estimates (WHO 2011) 21.6 million unsafe abortions took place in 2008, of which 98.3% happened in developing countries. As a result, 47,000 women died, and many more were (permanently) injured.

The present study was carried out at the regional governmental Sekou Toure Hospital in Mwanza, Tanzania.

Main research questions
The first study objective was to identify potential associations between socio-economic characteristics and the risk of a complicated delivery. The second objective was to obtain more knowledge on (unsafe) abortion as a factor contributing to maternal complications. The main research question was: What is the relation between SES (socio-economic status), the use of antenatal care, the risk of a complicated delivery, and unsafe abortion?

Material and methods
Sixty-three women were interviewed after delivery, of which 31 women were purposively sampled because they experienced a complicated delivery and 32 women with an uncomplicated delivery were selected. The sample of 63 women was divided into three levels of wealth: poor, average, and wealthy.

Furthermore, 37 women were interviewed who had been admitted for post-abortion care, and who possibly had had an induced abortion.

Main outcomes
Among the 31 complicated deliveries, the proportion of women classified as poor (58.1%) was significantly higher than those that are categorized as average (32.2%) or wealthy (9.7%). Correlation (r) between ‘number of antenatal visits’ and ‘risk of complication’ is -0.237 (p = 0.03 one tailed). Between ‘month of first antenatal visit’ and ‘risk of complication’, correlation is 0.373 (p = 0.002 one tailed). Odds ratios showed that poor women have a significantly higher risk of a complicated delivery. In addition, it appeared that poor women receive significantly less often antenatal care, and pay their first antenatal visit at a later stage of pregnancy than women
of average or high wealth. Logistic regression identified a significant effect of antenatal care on the risk of a complicated delivery. In-depth interviews have shown that the care in government facilities is of a low quality, which is why women who can afford it, seek antenatal care in either private or mission clinics. Healthcare in government facilities is free of charge for pregnant women, but not all women can afford to go to other types of clinics. This probably explains why women of average or high wealth receive more antenatal care. At last, educational level also relates to the risk of complications; the fewer years a woman went to school, the higher the risk of a complication.

The majority of the 37 women with abortion complications were reluctant in admitting to have induced an abortion, as the practice is illegal in Tanzania and highly stigmatized. In many cases it was uncertain whether an abortion was induced or spontaneous. An emphatic approach was applied in interviewing these women. Yet, it was difficult to find women who were willing to talk about inducing their abortion. The majority of the women claimed the abortion was spontaneous. In cooperation with the hospital staff, a classification of abortion was established. Eleven women indeed had a spontaneous abortion as there was an obvious medical cause for it, such as severe malaria. Four women admitted to have induced the abortion. For the remaining 22 women, it was suspected an induced abortion took place. Based on the staff’s experience, they have been classified as ‘probably induced’ (N=5) or ‘possibly induced’ (N=17). In further analyses, the eleven spontaneous abortions were excluded. The abortion group was compared with the group of women in delivery on a number of socio-economic and demographic characteristics. Aborting women were significantly younger, had fewer children, were more often students and unmarried, and they had a higher rate of unplanned pregnancies.

Conclusions and policy implications
In Tanzania, the number of women who suffer from complications, or even die due to pregnancy, is among the highest in the world. It is therefore highly recommended for policymakers to start making significant changes in the countries’ rules, regulations, and policies regarding maternal healthcare. There is an evident relation between the risk of complications for pregnant women and their socio-economic status, which is being influenced by whether or not women receive enough antenatal care and if they receive it in an early stage of the pregnancy. The maternal mortality rate in Tanzania can improve if women receive sufficient antenatal care and start it at an early stage of pregnancy. All women have access to government maternal health services, however, good antenatal care is often only available for those who can afford it. Decent antenatal care has to be available for all Tanzanian women, including women of lower socio-economic status, which is why policymakers are urged to take action and improve the delivery of maternal healthcare services. Furthermore, it is useful for future research to investigate the relation between the three concepts, SES, ANC, and the risk of complicated delivery, more in detail. This research worked with a rather small sample; therefore it is possible
that this relation can be clarified further. Additional aspects may also be relevant. It would be interesting to conduct a similar research in rural and more remote areas, as it is expected that fewer antenatal care facilities are available there. Scientific research remains necessary to clarify what the issues are in improving maternal health in Sub-Saharan Africa. Many children in developing countries lose their mother’s care and support when growing up, as too many women die during childbirth. This can be prevented and has to be improved through improving reproductive healthcare in Africa. Reproductive healthcare has to be equally available to all.

Studies on unsafe abortion have been carried out in Tanzania before, however, not in Mwanza Region specifically. Obtaining information is difficult due to the legal restrictions on induced abortion. Reducing maternal morbidity and mortality is part of the Millennium Development Goals, and if policy makers want to make progress on this, it is necessary to have knowledge on the role of unsafe abortion. Based on the results and experiences during this research, a number of predictors are suggested that can indicate the likelihood of an abortion being induced. These include having an unplanned pregnancy, a young age, not being married or cohabiting, being a student, being nulliparous, and if the girl or woman is brought to the hospital by someone else than the husband. This study can be considered as a first step in formulating relevant predictors. Until now, such an instrument is not available. If it will be possible to make a reliable estimation of an abortion being induced, it should also be possible to get a better understanding of the incidence of induced (unsafe) abortion in developing countries. According to Grimes et al. (2006), costs for the treatment of abortion related complications are a high burden on healthcare systems in developing countries that are already impoverished. For policymakers, there is an opportunity here to reduce these high costs when the issue of unsafe abortion is being addressed. Unsafe abortion has an impact on the health of a woman as sometimes permanent injuries are the result, which may also affect her economic activities. For effective policies on the problem of unsafe abortion, knowledge of backgrounds, circumstances, and influencing factors in women’s decision-making are required. Future research of the development of an index that can estimate the likelihood of an abortion being induced is crucial. Future research should also investigate whether there are regional differences in the importance of the predictors. It is well known that unsafe abortion causes a high morbidity and mortality. In addition, the financial burden resulting from treating complications after an unsafe abortion are very high. Restrictive rules and regulations do not lead to a lower incidence. However, more liberal rules and regulations can lead to a lower morbidity and mortality rate, as well as a significant decline in costs. It is therefore highly recommended to review the current restrictive laws on unsafe abortion in order to find possibilities for women to obtain a safe abortion when necessary.
References


4. **The Influence Of Communication, Wealth, Knowledge And Social Network On FP Utilization Among Couples In Mwanza Region, Tanzania**

Idda Mosha & Ruerd Reuben

**Main research questions**
1. What is the influence of social networks in family planning utilization?
2. What is the influence of couple communication on family planning use?
3. Is there any relationship between knowledge and family planning use?
4. What is the relationship between wealth and family planning use?
5. What is the relationship between socio demographic variables and family planning use?

**Material and methods**
Multistage sampling was adopted to select three districts: Ilemela,(urban) Magu,(semi urban) and Misungwi (rural) in Mwanza region. One ward was selected from each district, and from the wards one village/street was selected. A stratified random sampling method was employed to select 445 female respondents of reproductive age (18 – 49 years), cohabiting or married, and with children to participate in the study. An oral questionnaire was used to collect information from respondents. For this analysis we only used the results of interviews with women.

**Main outcomes**
The study findings showed a significant positive association between wealth and family planning (FP) use (p=.000). These findings support the conclusions of other studies, for instance Wang et al. (2010); Bresch et al (2010); Bengtsson and Dribe (2010). Furthermore, the study findings showed that couple communication had a significant positive association with FP use (p=.000). This corroborates other studies; for instance, a study done by Hollerbach (1995) which contends that communication among the spouses is important in fertility decline. Also, Nyblade and Menken (1993) found a statistically significant association between couple communication and their contraceptive use. In addition, it was found that communication in urban areas was significantly associated with FP use, as opposed to rural areas. The study findings also showed a significant association between the strength and support of social networks and FP use. (p = .000) These findings are in line with similar findings from other studies, for example Casterine (2001); Palloni (2001) and Behrman et al. (2002). In addition, the study findings showed a significant association between knowledge on FP and FP use (p=.000).

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1 This includes friends and relatives; it was operationalized using a 5 point Likert scale from strongly agree to strongly disagree. The statements were based on FP themes and the extent to which the respondents will seek advice, discuss, seek support and approval from friends and relatives on her decision to use FP.
Conclusion
The findings showed significant associations between, wealth, social network, knowledge and communication among spouses. Therefore, interventions targeting to increase or improve communication, knowledge and social networks among the people should be designed and implemented. In order to be effective, the need to have small family size and its advantages should be stressed.

Policy implications / recommendations
Our research suggests that information, education and communication activities to promote family planning in Tanzania should focus on the importance of dialogue between husband and wife. Information and education interventions should address both men and women, and should focus on improving couple communication. Furthermore, policy makers should design more interventions dealing with imparting information on family planning to communities especially those in rural areas. Campaigns and seminars on family planning services should be organized in order to educate communities about the benefits of family planning. School children should be educated about family planning in today’s society and about the importance of adopting family planning in the future.

References


5. How Empowerment Reduces Women’s Exposure to Reproductive Health Risks: Evidence from Northern Tanzania

Judith Westeneng & Ben D’Exelle

Problem statement
In most developing countries, women do not have complete control over their physical well-being, including their health, bodily integrity and security. This becomes clear when pregnancy-related decisions are made. When and how many children to have, and whether and where to seek pre-natal and delivery care when pregnant, are crucial decisions that directly influence the health and survival prospects of women and their (unborn) children. However, as these decisions are made within the context of a household or family, they are often outside the control of women themselves (Urassa et al. 1997; Becker 1996). Even though the UN Conference on Population and Development (ICPD) in 1994, which set maternal health at the centre of the international agenda, highlighted the important role of women’s empowerment, progress has been slower than expected, especially in Eastern Africa. The concept of empowerment is of a complex nature, and having agency in one dimension, does not necessarily imply having agency in another dimension (Mason 1986). At the same time, the influence of women’s empowerment may differ substantially within the ‘reproductive cycle’. Vital decisions need to be made before pregnancy, during pregnancy and at child birth. Decisions made at each of these three phases can have far-reaching consequences for women’s well-being and their families. Hence, unpacking the different dimensions of empowerment and reproductive health is necessary to improve our knowledge about the potential impact of female empowerment on women’s exposure to reproductive health risks.

Research Question
Which dimensions of female empowerment affect which decisions in the reproductive health cycle?

Methods & Data
We re-interviewed 807 Tanzanian women from the Lake Zone Region from a subsample of the Demographic and Health Survey (TDHS) of 2004, resulting in a panel data set. With this data set we study the impact of female empowerment, as measured in 2004, on important risk factors for reproductive health that are measured between 2004 and 2010. We focus on three reproductive health aspects: contraceptive use, antenatal care and home delivery. We incorporate seven separate indicators of empowerment, which we categorize into four domains that policymakers are able to work on. The first domain is involvement in daily decision-making measured by domestic decision-making and control over money. Second,
the economic dimension includes employment and the financial contribution women make to their household's resources. The third dimension is the educational level of women. Finally, bodily integrity is measured by rejection of domestic violence and control over sexual relationships.

**Results**

According to our results, the various empowerment indicators have diverse effects across the three phases in the reproductive cycle. Four out of seven empowerment indicators show strong and robust results. First, education exerts a positive effect on the use of family planning methods, but not on the other reproductive health outcomes. Second, rejection of domestic violence is unrelated to contraceptive use and hospital delivery, but does show a consistent positive effect on the number of antenatal care visits and lowers the probability of home delivery. Third, female employment increases the likelihood to deliver at a hospital. Fourth, women's contribution to household income is the only indicator that has an important effect on all reproductive health decisions. Women who make a financial contribution to the household's economy are more likely to use contraceptive methods, tend to make more antenatal care visits and are less likely to deliver at home.

**Policy recommendations**

Our study confirms some positive relationships between women's empowerment and reproductive health behaviour. It also shows that the outcomes are not consistently affected by the same dimensions of empowerment. Based on our results, improving women's economic position, increasing the education of girls and women, and reducing the acceptance of domestic violence seem to be the three best entry points for policy makers in Tanzania.

First, whether women are able to contribute to household income has a consistent and positive influence at all three stages in the reproductive cycle. Increasing women's opportunities to engage economically and earn an income would therefore be an important policy. It is expected to advance the fallback position of women, hence their bargaining power, and accordingly lead to better reproductive health practices. A well-known possibility is micro credit. It should be kept in mind though that economic engagement may increase the burden of women. In addition, offering financial services is often not sufficient to improve a woman's position, as they do not always control the money (for example Goetz & Sen Gupta, 1996) or lack the skills to invest it wisely.

Second, female education is another important domain for policymakers, especially to improve family planning practices. There is abundant evidence of the influence of contextual and household factors on school enrolment and drop-out rates. Reducing financial barriers, access to schools in rural areas, basic materials, teacher quality, the presence of female teachers, and investing in gender sensitive curricula are a few important policy recommendations to increase school enrolment and reduce drop-out rates, especially for girls (Buchmann & Hannum, 2001; Filmer & Pritchett, 1999; Glewe & Kremer, 2006; Huisman & Smits, 2009; Huisman, 2011; Leach, 1998).
Finally, promoting respect for bodily integrity may also be an important policy area as it leads to better reproductive health practices in terms of more antenatal care use and a lower likelihood of delivery at home. Several policy instruments may be considered. First, domestic violence could be identified and worked on within the health-care setting (Campbell, 2002; Garcia-Moreno, 2002). In the Tanzanian setting, however, this would limit the reach of the intervention, as health care is not accessible to all, and especially not to lower empowered women. Public education efforts using mass media is a second option. Radio or television programs are a good means to discuss gender sensitive issues and to expose people to non-traditional values (Blanc, 2001). Third, awareness and education campaigns at schools or at community level could aim at addressing gender norms; and groups of local women could act as models and to counsel abused women (Blanc, 2001; Fawcett, Heise, Isita-Espejel, & Pick, 1999).

References


6. Fertility and Changes in Household Wealth in the Tanzanian Lake Region

Janine Huisman & Jeroen Smits

Main Research Questions
How does a change in fertility affect household wealth?
How is the effect of change in fertility on household wealth influenced by the circumstances in which a household lives?

Material and Methods
To answer these research questions we use data from a household survey conducted in the summer of 2010 in the Lake region of Tanzania (Kagera, Mwanza and Mara). This survey was a follow up of an earlier household survey conducted in 2004. For 804 women living in 54 communities in the three regions, data for two points in time were obtained.

Dependent variable is the change in household wealth over the period from 2004 to 2010. Household wealth is measured on the basis of assets of the household, like having a TV, radio, iron, fridge, phone, bike, car, bank account, electricity, water supply and sanitation, housing characteristics, like material of walls, roof and floor, number of rooms, and possession of agricultural land and cattle, as well as information on food consumption, such as number of meals a day, number of times the household eats meat a week. To calculate our wealth index we included for 2004 and 2010 the assets of the household in which the woman lived at that time.

Major independent variables are number of children below the age of 13 in the household and the change therein between 2004 and 2010. We assume that it will be predominantly the younger children who put a strain on household wealth. Older children might no longer go to school and/or might help out doing household chores or in the family business and looking after younger siblings. Other independent variables are the number of adults present in the household in 2004 and change therein between 2004 and 2010. We included the household wealth index for 2004 to indicate the level of wealth the household started with. Since level of education and occupation have an important impact on wealth and change therein, we included variables indicating level of education of the woman, work status of the woman and change herein, occupation of the woman's partner, and whether or not the woman had a partner in 2004 and change herein.

Independent variables indicating context characteristics are the average number of antenatal care visits women in the village had for their last pregnancy which resulted in a birth (index year 2010) as an indicator of the availability and quality of reproductive health facilities in the village, living in the city and moving the coun-
tryside to the city, and village-level development (measured with an index constructed on the basis of the proportion of households in the district with a fridge, car, telephone, television, electricity, or running water). Data are analyzed using multilevel regression models, including explanatory variables at the household and village level. Interaction analyses are performed to find out to what extent the effects of fertility on household wealth depend on the circumstances in which the household lives.

Main Outcomes
Our descriptive analysis shows that on average use of contraceptives is low, ranging from 11.9% of women using contraceptives in Mwanza to 31.9% in Kagera. Low contraceptive use is not due to lack of knowledge, as has also been found in previous studies. When asked which methods they know, or whether they have heard about specific methods, almost all women answer affirmative.

The results of our multivariate multilevel analysis show that an increase in the number of children below 13 has a significant negative effect on the increase in household wealth. This confirms our expectation that births, but also an increase in the number of young children due to other reasons, has negative wealth implications. Starting out with more dependent children in 2004 also has a negative, but insignificant effect on household wealth.

More adults present in the household in 2004 increases the likelihood of a positive wealth change. Households who start out with a higher level of wealth have a lower probability of wealth increase. When the woman has no or only some education, the chances that the household in which she lives increases its wealth position are reduced. The same effect is found when the woman works in the baseline year, although this effect is insignificant. Interestingly, when the woman works in 2004 but loses her job afterwards, the negative effect on wealth is even increased, this time significantly so, indicating that women who work do so out of poverty. A partner with a lower or upper nonfarm occupation tends to have a positive effect on wealth increase. Women who lost a partner are worst off in terms of household wealth. Women who did not have a partner in 2004, but did have one in 2010, gain most in terms of household wealth.

Living in a city increases the likelihood of an improvement in the household wealth situation, although this variable is insignificant, probably because of the better income earning possibilities in urban areas. This assumption is also indicated by the strong positive significant effect moving from the countryside to the city has on household wealth. The positive significant effect of living in a higher developed area on wealth change seems to point in the same direction.
More and better quality antenatal care facilities have a positive effect on wealth change. This confirms our hypothesis that reproductive health facilities affect socio-economic development through mother and child health. Our interactions between a change in the number of children in the household below the age of 13 and relevant other variables, show that additional children have especially negative consequences for households in which already a large number of children was present. This indicates that giving birth might be especially burdensome to women who already have given birth several times. The interaction between a change in the number of children and our indicator of quality and quantity of antenatal care is significantly negative. This indicates that although availability of good quality antenatal care has a positive effect on household wealth, this effect is less positive for households to which more children are added. Consequently, antenatal care cannot make up entirely for the negative effect of additional young children.

**Policy implications**
Ensuring the availability of good quality antenatal care seems a possible avenue to improve socio-economic development of households. However, given that the positive effects of antenatal care cannot neutralize the negative effect of additional children on wealth development, making sure couples get access to measures to prevent undesired births is a necessity. Given the low use of contraceptive measures in the Tanzanian Lake Region, increasing contraceptive use seems like a good candidate to achieve this. Since knowledge of contraceptives is almost universal, low use is probably due to other reasons. From previous research it is known that fear of negative health effects of contraceptive use is an important reason for low use. In this respect it might be worthwhile to make the public aware of the fact that although in theory contraceptives incidentally might have negative health effects, these effects are rare and in general certainly much less severe than the negative effects of undesired pregnancies and births.
7. Impact of Contraceptive Use on the Change in Educational Enrolment in 622 sub-national Areas In Sub-Saharan Africa

Abiba Longwe & Jeroen Smits

Research Questions
This paper aims to gain understanding on how the availability and use of RH services in African countries influence the RH situation of households and through this the educational participation of young children. Our research questions are:
1. To what extent does a reduction of the number of young children (births) influence primary school participation of children aged 8-11 in sub-national areas of African countries?
2. To what extent does increasing use of contraceptives lead to reduction of the number of young children (and increasing primary school participation) in sub-national areas of African countries?
3. To what extent does increasing knowledge and acceptance of contraceptives lead to increasing use of contraceptives (and increasing primary school participation) in sub-national areas of African countries?

Implementation of research
A district panel dataset is used for 622 districts of 25 African countries with at least two waves of Demographic and Health surveys (DHS) from 1995 to 2010. The data is derived from a harmonized set of DHS's that were constructed as part of the “Database Developing World” project (www.databasedevelopingworld.org). The data is analyzed with path analysis, performed by combining results of separate regression analyses. All regression models contained fixed effects country dummies, to control for clustering of districts within countries. The theoretical path model for this study is shown in figure 1.
We use two-level multilevel regression analysis with explanatory variables at district and national level to estimate each equation of the path diagram. The dependent variable is the increase in % of children aged 8-11 who attend primary school in the district. Major independent variables are increase in average number of children under age 6 in the district, increase in % of women using modern contraceptives in the relevant group and increase in % women accepting FP of women who are eligible to use. Socio-economic factors like district level of development, district education level and availability of health facilities in a district are used as control factors. We also controlled for knowledge of modern contraceptives method in all districts.

Outcomes
The findings of regression analysis are largely in line with expectations. We find that:
- Increase in primary school participation is negatively influenced by an increase in average number of children under age 6 in a district.
- District with higher increases in % of women using modern contraceptives show a decrease in average number of children under age 6.
- Increase in modern contraceptive usage is positively associated to an increase in modern contraceptives acceptance.
- Increase in acceptance of contraceptives by women who are eligible to use is positively affected by the level of knowledge of modern contraceptive methods.
The estimated path model is shown in figure 2.

Figure 2. Outcome path model of RH service availability, contraceptive use and primary school participation

Total effects of focus variables on change in school participation are as follows (also see table 1):

- The total effect of a decrease in the number of children under age six in the district is positive.
- The total effect of an increase in contraceptive use is positive.
- The total effect of an increase in acceptance of modern contraceptives is positive.
- The total effect of knowledge of modern contraceptives is positive.
- The total effect of availability of health facilities is positive.
Table 1. Direct, indirect and total effects of focus variables on the annual increase in primary education participation

<table>
<thead>
<tr>
<th>Annual increase in % of children aged 8-11 who attend primary school in district</th>
<th>Direct</th>
<th>Indirect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual increase in average number of children under age 6 in the district</td>
<td>-0.193</td>
<td>-</td>
<td>-0.193</td>
</tr>
<tr>
<td>Annual increase in % of women using modern contraceptives in the relevant group</td>
<td>-</td>
<td>0.022</td>
<td>0.022</td>
</tr>
<tr>
<td>Annual increase in % women accepting FP of women who are eligible to use</td>
<td>-</td>
<td>0.006</td>
<td>0.006</td>
</tr>
<tr>
<td>Knowledge of modern contraceptive methods at T1</td>
<td>-</td>
<td>0.005</td>
<td>0.005</td>
</tr>
<tr>
<td>Health facilities availability index at T1</td>
<td>-</td>
<td>0.080</td>
<td>0.080</td>
</tr>
<tr>
<td>District development level at T1</td>
<td>0.154</td>
<td>-0.007</td>
<td>0.147</td>
</tr>
<tr>
<td>District education level at T1</td>
<td>-0.008</td>
<td>0.103</td>
<td>0.095</td>
</tr>
<tr>
<td>% of children aged 8-11 who attend primary school in the district at T1</td>
<td>-0.628</td>
<td>-</td>
<td>-0.628</td>
</tr>
<tr>
<td>Average number of children under age 6 in the district at T1</td>
<td>-</td>
<td>0.164</td>
<td>0.164</td>
</tr>
<tr>
<td>% of women using modern contraceptives in the relevant group at T1</td>
<td>-</td>
<td>-0.023</td>
<td>-0.023</td>
</tr>
<tr>
<td>% women accepting FP of women who are eligible to use at T1</td>
<td>-</td>
<td>-0.005</td>
<td>-0.005</td>
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Conclusions

- A decrease in the average number of children under age 6 in a district is positively associated with improvements in primary school participation of children aged 8-11 in that district.
- Increases in acceptance, knowledge and actual use of modern contraceptives improve the household situation by reducing the number of young children in a district, which in turn improves the primary school participation of children in that particular district.
- Availability of health services in a district has a positive influence on the actual use of family planning services (like use of contraceptives). As contraceptive use improves, a major socioeconomic outcome (primary school participation) at the district level also improves.

Policy Implications

Our findings provide several important practical implications for policy makers on how to develop family planning based strategies that would enhance economic growth and alleviate poverty. Thus, it is important for policy makers, as well as other stakeholders to make an attempt to promote contraceptive use behavior. This can be achieved by making sure RH service facilities are readily available and easily accessible by the general population.
8. Effects Of Family Planning Outcomes On Primary School Attendance In Sub-Saharan Africa

Abiba Longwe & Jeroen Smits

Main Research question
The major research question addressed in this article is: To what extent is primary school attendance of young children influenced by poor family planning at the household level?

Materials and methods
To answer this question we analyze the influence of family planning variables at the household and context level on education participation of young children in 30 sub-Saharan African countries.

More specifically we analyze the effects of new births/mother’s pregnancy when a child is at school age, preceding and succeeding birth intervals, and number and gender of siblings at the household level. Sexual and reproductive health variables included at context level are availability and characteristics of family planning services in the district.

We use large representative datasets from the Demographic and Health Surveys derived from a unique data infrastructure, the “Database Developing World” (www.databasedevelopingworld.org), in which household level datasets for many developing countries are connected, harmonized and provided with district and national variables that can be used to explain household-level processes. Data is available for 102,638 children living in 303 districts of 30 Sub-Saharan African countries.

The data are analyzed with advanced multilevel regression models, addressing the clustered structure of the data in a methodologically sound way, allowing for inclusion of explanatory variables at different levels (country, district, household) simultaneously. The method used in this paper is three-level multilevel logistic regression analysis. The dependent variable is a dummy indicating whether (1) or not (0) children aged 8-11 are enrolled in school at the time of interview. Independent variables are family planning variables and control factors at both the household and contextual level.

Main Outcomes
We have studied the relationships between four family planning outcomes (length of preceding and of succeeding birth intervals, presence of a young sibling, and mother’s pregnancy) and primary school attendance. Poor family planning outcomes were expected to reduce investments in human capital of children, i.e.
education. Shorter birth intervals are negative for women's health and reduce the possibilities of mothers to give attention to their children in their vulnerable young years. Presence of a young sibling and pregnancy of the mother might pull children out of school to help at home.

The findings of our study are largely in line with these expectations. Our analyses revealed that children who were born shortly after their preceding sibling or who were succeeded shortly after by a younger sibling, children with a very young sibling and children with a pregnant mother all had significantly lower odds of being in school than children living in households with more favorable family planning outcomes.

A preceding birth interval of less than two years is associated with a 15% lower odds of being in school for boys and girls; a similar succeeding birth interval lowers this odds by 7% for girls and 6% for boys. Having a pregnant mother lowers it by about 9%, and presence of a sibling below age three in the family by 11% for boys and by 15% for girls. These associations are independent of each other, which means that they add up. A girl with a sibling below age three, a pregnant mother and short preceding and succeeding birth intervals has an 0.848*0.929*0.852*0.909=0.610 or 39% lower odds of being in school than a girl with longer birth intervals, no young sibling and no pregnant mother. A boy in this situation would have a 0.852*0.939*0.886*0.917=0.650 or 35% lower odds of being in school. The coefficients differ not much between boys and girls, thus indicating that competition with a closely spaced sibling affects boys and girls to the same extent and that boys are kept at home as much as girls to assist a pregnant mother. Only the care for a young sibling seems to be put somewhat more often on the shoulders of girls.

Besides models with direct effects of the explanatory variables, we estimated models with interaction effects between family planning variables and household- and context factors. This interaction analysis was meant to explore whether and how the relationships between family planning factors and school attendance differ among households and contexts with different characteristics and to make the outcomes more situation-specific. Results reveal a substantial number of significant interactions. The idea that the relationships differ among contexts and that a situation-specific approach is important is thus confirmed by our data.

Policy implications
This research contributes evidence to the ongoing debates on linkages between SRH investments and poverty reduction, in terms of educational opportunities for children. It also contributes new knowledge on factors influencing education participation by demonstrating that poor family planning at the household level can be detrimental to the achievement of Millennium Development Goal 2: Universal primary education. The substantial negative association with school attendance
of short birth intervals, presence of young siblings and pregnancies stresses the importance of good and accessible family planning facilities and of information campaigns aimed at informing broad audiences about their existence and benefits of their use.

The results strongly confirm that investments in family planning generate wider benefits than only improving the health of mothers and children. They also clearly contribute to higher educational levels of individuals and societies, and through this to their development in general. One practical implication of this result is that decisions to invest in family planning should not only be taken by responsible health authorities, but also by authorities with a broader development mandate. Another implication is that in family planning information and education programmes for the general population ample attention should be given to non-health benefits of family planning.
9. The Influence of Fertility and Household Composition on Female Labour Supply: Evidence from Panel Data on Tanzania

Judith Westeneng & Ben D’Exelle

Problem statement
The influence of fertility on female labour supply has been studied extensively in Western societies, but little evidence is available in Sub-Saharan Africa. A priori there is no reason to believe that this influence should be positive or negative. There may be two processes at work, each going in the opposite direction. First, child rearing is time consuming, and therefore women will have less time available to work; the so-called ‘substitution effect’. On the other hand, an additional income might be required to cover the costs of raising children, also referred to as the ‘income effect’ (Iacovou, 2001). If the income effect outweighs the substitution effect the final relationship will be positive. Most studies in Western countries have found a negative relation between fertility and female labour supply (e.g. Angrist & Evans, 1998; Uunk et al., 2005). This relationship, however, might be very different in Sub-Saharan Africa where the household composition as well as the internal labour division tend to be very different from Western settings.

Research Question
What is the impact of fertility on female time allocation to income-generating activities in Northern Tanzania?

Methods & Data
This article uses the Kagera Health and Development Survey (KHDS), which was originally conducted by the World Bank and Muhimbili University College of Health Sciences. The original sample consisted of 915 households who were interviewed four times: 1991, 1992, 1993 and 1994. In 2004 these households were re-interviewed. Of the original households, 877 were traced. These households were multiplied into 3,051 households as a result of marriage and separation. Thanks to intensive tracking activities, attrition was very low: over 90 percent of the households were re-contacted and 82% of the original individuals were re-interviewed (Beegle et al., 2007). For this article the 1991 wave is used as a baseline study to be compared to the 2004 wave. We link the change in the number of biological children, aged 0-5 years, currently living in the household, to the change in total number of hours spent per week on income-generating activities of women. Because of the importance of extended households in African societies, we control for household composition and the position of women in their household.
Results & Conclusions
Whereas in industrialized countries, a negative correlation has been consistently shown, the outcomes of our study provide a different picture. Including all women in our sample, we observe that the number of biological children of pre-school age residing in the household exerts a positive influence on the mother's labour supply. However, considering the women in the sample to be too diverse regarding their position in their household and the expected influence on the labour division within the household, we split up the sample in two different categories of women: one category that recently started their own household; the other category consisting of women who had split off from the mother unit long before. Estimating regressions separately for both categories, we observe that the influence of fertility on female labour supply has opposite signs. For women who recently started their own household we observe a negative relation, which is consistent with most existing research. In contrast, for women who had become autonomous long before, we find a positive effect of fertility on female labour supply. Young women who recently split off from the mother unit have a lower status and bargaining power than those who have become autonomous long before. With the status of women in Sub-Saharan Africa being highly contingent on motherhood, it is not surprising to observe that fertility strongly reduces female labour supply for women who recently started their own household. With increased status based on their motherhood, however, women obtain more bargaining power and access to social networks, and therefore more possibilities to participate in the labour force. Consequently, over time the effect of fertility on labour supply reduces and becomes positive.

Policy recommendations
For poverty alleviation purposes, policy makers might be interested in increasing the economic engagement of women. Our analyses show that it is vital to consider the status of the women in their household in addressing the right policy interventions. The older group of women who have been at the head of a household for some time increase their hours at work to cope with an increase in the number of children, i.e. they need the additional income. Hence, poverty drives them to increase their work load. Limiting the number of children might lessen the burden of poverty. Although the income effect might disappear, it would also give women the possibility to work more during their life time (they would not need to stop working due to additional pregnancies and the care for infants).

Women who have only recently started their own household tend to lessen the number of hours worked to take care of their children. Stimulating contraceptive use to delay the first birth could have a beneficial effect for this group. It would give the couple the possibility to accumulate more income, it will prevent women from becoming pregnant at a too young age (and hence reducing health risks) and it will lower the total number of children the couple will have.
For both groups it is also important to address the existing norms about the position of women. For example, increasing their economic engagement might also increase their total burden as they remain responsible for the household chores. Furthermore, women’s status increases with the number of children.

References


10. Reproductive Health Facilities and Changes in Wealth in 622 Districts of 25 African Countries

Abiba Longwe, Janine Huisman & Jeroen Smits

Main Research Questions
The aim of this paper is to gain understanding of how the availability of reproductive health facilities influences the reproductive health situation and through that the wealth situation of households in 25 African countries. More specifically we want to answer the following research questions:

• To what extent does a reduction of the number of young children (births) influence household wealth?
• To what extent does an increase in the use of contraceptives lead to a reduction in the number of young children (and change in household wealth)?
• To what extent does an increase in the acceptance of contraceptives lead to an increase in use (and change in household wealth)? How does a change in fertility affect household wealth?

Material and Methods
To answer these research questions we use data from a district panel database with information on 622 districts in 25 African countries. The district panel database is constructed by connecting and harmonizing data from Demographic and Health Surveys (DHS) conducted between 1995 and 2010, which was done as part of the ‘Database Developing World’-project (www.databasedevelopingworld.org). Since we use panel data we only included countries for which two waves of DHS-surveys were available.

The data are analyzed with a path analysis, in which results from separate regressions are combined to determine direct, indirect and total effects of variables. To control for the clustering of the districts within countries, we included dummies for all countries. The theoretical model can be found in Figure 1.
Our dependent variable is the increase in average level of wealth of households living in the district, measured as the change in percentage of households in the district owning a television. Major independent variables are the average number of children under age 6 in the district, increase in percentage of women using modern contraceptives, increase in the percentage of women accepting contraceptives and an index measuring availability of district health facilities. Socioeconomic factors like district level of development and district educational level are used as control variables. We also controlled for knowledge of modern contraceptives methods in all districts.

Main Outcomes
The results from our analyses are in line with our expectations. An increase in the average number of children under age 6 in the district has a direct negative effect on the increase in district level of wealth, indicating that increased birth spacing and fewer additional pregnancies and births, indeed do have a positive wealth effect. The indirect effects of availability of SRH-facilities, knowledge of modern contraceptives in the baseline year, annual increase in percentage of women using modern contraceptives and annual increase in the percentage of women accepting contraceptives all have a positive effect on wealth increase. These results show that, as we hypothesized, better availability of SRH services and an increase in knowledge, acceptability and actual use of contraceptives all have a positive effect on district-level wealth.
Policy Implications
Our findings provide several important practical implications for policy makers on how to develop family planning based strategies that would enhance economic growth and alleviate poverty. As our analysis shows, decreasing the number of young children may have an important role in improving wealth at the household level and through this effect also on district level of development. Our findings further emphasize the importance of contraceptive knowledge, acceptance and use in decreasing the number of young children in households and consequently improving socio-economic outcomes. Thus, it is important for policy makers, as well as other stakeholders to improve availability of reproductive health facilities and to promote contraceptive use. Since it is known that one of the reasons for low contraceptive use is fear of negative side effects, the latter might be achieved by information campaigns that reduce these fears.
11. From Papers To Practices: District Level Priority Setting Processes And Criteria For Family Planning, Maternal, Newborn And Child Health Interventions In Tanzania

Dereck Chitama, Rob Baltussen, Evert Ketting, Switbert Kamazima, Anna Nswilla and Phares. G. M. Mujinja

Introduction
In Tanzania, the council health management teams (CHMTs) and council health planning teams (CHPTs) are responsible for the identification of the priority interventions from the district hospital, health centres, dispensaries, community, district's reproductive and child health section (RCHS) and other sections to be included in the comprehensive council health plan (CCHP). Nevertheless, there are concerns that the CCHP process does not employ priority setting mechanisms suited for recognizing the need and priorities of FMNCH interventions. As a result, FMNCH’s important interventions are often overlooked leading to poor delivery and coverage of FMNCH services.

Objectives
This paper seeks to capture and analyse the priority setting processes and criteria for family planning, maternal, newborn and child health (FMNCH) interventions at district level in Tanzania. Specifically, the paper seeks to understand whether the FMNCH interventions priority setting process is efficient and fair.

Material and methods
We used an exploratory study mixing both qualitative and quantitative methods to capture and analyse the priority setting for FMNCH at district level, and identify the criteria for priority setting in Magu, Kwimba and Misungwi districts. We purposively sampled participants from the district’s RCHS staff, CHMT, council health planning team (CHPT), regional and district RCHS coordinators, because our sampling strategy was conceptually driven by the research questions from the outset. All RCHS’s staff, CHMT and CHPT were included in the research to avoid within case selection biases. Also, we made random sampling of participants from the general population groups (GPGs). We collected the data using the nominal group technique (NGT), in-depth interviews (IDIs) with key informants and documentary review. A total of nine NGT with 17-22 participants and eight in-depth interviews were conducted. We analysed the collected data using both content analysis for qualitative data and correlation analysis for quantitative data.

Main outcomes & conclusions
The results show that the current priority setting processes for FMNCH at district level have several shortcomings. There are practical problems in engaging relevant
FMNCH stakeholder’s priority setting process, and the amount and quality of FMNCH information and planning tools used during prioritization are largely insufficient. The priority setting processes are ad hoc and implicit, and knowledge and skills for priority setting on FMNCH interventions are low among decision making team members. Knowledgeable stakeholders on specific FMNCH interventions are often not involved in the priority setting process. The prioritization processes have a bargaining character due to lack of criteria and lack of technical and supervisory support to the priority setting teams. The revealed shortcomings render the priority setting processes for FMNCH inefficient and unfair (or unsuccessful). In addition, participants identified the priority setting criteria and established the perceived relative importance of the identified criteria. The local burden of the problem was found to be the most important criterion identified by the district’s RCHS and the GPG. The CHPTs considered prevention as most important criterion followed by intervention cost criterion. However, we noted differences exist in judging the relative importance attached to the criteria by district’s RCHS, CHPT and the GPG.

Policy implications / recommendations
Three important policy implications can be drawn from the results of this study. First, change in FMNCH stakeholders’ engagement in the district priority setting process is essential. Currently, the major FMNCH stakeholders’ are not permanent members of the CHMT and CCHP team. For example, the district RCHS are not permanent members of the CHMT and CCHP team. Thus, they have to send their proposed plan to CHMT for inclusion in the CCHP. However, RCHS coordinators noted that more often important FMNCH interventions are left out during prioritization process. This implies, the scope and breadth of FMNCH services to be delivered at district level is likely to remain limited and may lead to poor FMNCH outcomes. Therefore, adherence to the principles of fair representation and participatory priority setting process might influence the way priority setting decision are reached. Also, it will ensure inclusiveness of multiple values of FMNCH stakeholders in the district priority setting process.

Second, our analysis suggests that the district health planning process need to build greater technical and management capacity of the RCH sections and CHMT/CHPT in priority setting process. Currently, the RCH and CHMT/CHPT use incomplete and inaccurate FMNCH information during prioritization, there is low skill and knowledge of the priority setting team members on FMNCH and the bargaining nature of the prioritization process due to lack of criteria leading to unfair priority setting process. The Regional Health Management Teams (RHMTs) are supposed to provide priority setting technical support and supervision to the districts. However, in reality the RHMTs rarely conduct technical and supervisory support to both district’s RCHs and CHPTs despite having a seat in the CHPT. Hence, due to low skill and knowledge of the priority setting and use of use incomplete and inaccurate FMNCH information, complete scanning complete scanning of the inter-
ventions and advance warning of the possible undesirable impact will be missing. As a result, the few resources available are more likely to be allocated to interventions with a negligible improvement in FMNCH outcomes. In this context, capacity building through priority setting trainings and other activities like technical and supportive supervisions, mentoring and coaching are very much needed.

Third, our analysis suggests the bargaining nature of priority setting process both at the district’s RCHS and health system levels due to non use of the priority setting criteria. Despite many criteria for priority setting being proposed and debated and the CCHP guideline in place, we found no explicit criteria are used to prioritize different interventions both at district RCHS and health system levels. Participants of the planning teams arbitrarily agree on what is an important and what is not an important intervention. Thus, priority setting decisions are always based on reasons that are not grounded in explicit criteria. In the absence of explicit criteria, resources will always be allocated to interventions dictated by influential members of the decision making panels especially when power differences exist in the priority setting team. In this context, deliberate efforts in establishing explicit priority setting criteria are essential to ensure a fair priority setting process.

Lastly, our analysis shows the need for the development of an efficient and fair priority setting processes and framework to take the needs of FMNCH on board. The improvement strategy should utilize rigorous research methods combining both normative and empirical methods to further analyze and correct the identified shortcomings to inform the development of an efficient and fair priority setting processes and framework. Also, good practices in some districts should be used as examples of how to improve the current priority setting process for FMNCH interventions.
12. **Socio-economic differences in family planning and maternal health public spending in northern Tanzania: Insights from benefit incidence analysis.**

Dereck Chitama, Idda Mosha, Judith Westeneng, Rusibamayila, N., Evert Ketting, Rob Baltussen and Phare P.G.M. Mujinja

**Background**
Many publicly funded health programmes are designed explicitly in the hope that the poor will be the primary beneficiaries. Evidence that the use of publicly funded programmes is higher among the less poor should cause policy makers to worry and command their attention. This calls for a closer look at how the benefits of public spending (or benefit incidence) on family planning and maternal health (FPMH) services are distributed among socio-economic groups across the population.

**Objectives**
The objective of this paper is to assess whether the distributional and efficiency objective of FMCH public spending has been successful in reaching the poor and other vulnerable groups in the form of the services prescribed at the regional level in Tanzania. Specifically, the article answers the questions: who gain most?; is it indeed the poor? Or does a substantial proportion, or even a disproportionate proportion of FPMH public spending go to the economically better-off?

**Methods**
We assessed the socio-economic profile of the people reached by publicly funded FPMH services in three regions in Northern Tanzania (Kagera, Mwanza and Mara), and compared this profile with the socio-economic profile of the entire population. We employed benefit incidence analysis (BIA) in undertaking this assessment. BIA combines the information about the unit subsidy for providing goods or services with the information on the subsidy's use, to show how the benefits of the government's spending are distributed across the population or across socio-economic groups. On the basis of this distribution we analyse the concentration index to quantify the degree of socio-economic status related inequality in the variable.

**Results**
We found pro-poor public spending on family planning in Kagera and Mara region, but pro-rich public spending in Mwanza region. At the same time, we found that the poor are faring worse in terms of fertility rate compared to the better-offs in all three regions. For public spending on antenatal services, we found the same trend as in family planning: public spending is pro-poor in Kagera and Mara region, while in Mwanza region it is pro-rich or better offs. For deliveries assisted by trained
medical personnel, we found that in Kagera region, public spending was slightly progressive or pro-poor. In Mwanza and Mara region, public spending at this point was slightly pro-rich or regressive.

**Conclusion**

We assessed whether the desirable FPMH distributional and efficiency objectives are indeed being met by public spending practices. The findings suggest that assumptions made about FPMH serving the poor are largely false in northern Tanzania. Additional research is needed to assess whether this is also the case in other parts of the country. In general, the degree of inequality and inefficiency in FPMH public spending varies, sometimes widely, from region to region and from FPMH service to service. We suggest improving the targeting of public subsidies within the universal package through geographic targeting of new investments, as this may contribute to reducing this poor-rich gap in benefiting from public subsidies. Thus, the combination of both broad targeting and narrow targeting\(^2\) of FPMH services is needed if distributional and efficiency objectives of FPMH public spending is to be attained.

**Policy implications**

Our findings suggest several courses of action for achieving the distributional and efficiency objectives of public spending practices. First, a review of the current targeting processes in FPMH interventions is required, if both distributional and efficiency policy objectives of FPMH public spending are to be achieved. This can be done by improving the targeting of public subsidies within the universal package through geographic targeting of new investments. Furthermore, a combination of both broad targeting and narrow targeting of FPMH services is recommended.

\(^2\) Under this approach benefits are intended to be targeted directly to the poor
Background
Family planning in developing countries is likely to be scaled-up if both public and private health facilities at all levels are well prepared to offer various methods of family planning. Likewise, it is crucial for public and private health facilities to conform to established norms that involve having in place family planning service guidelines or protocols as well as visual aids for family planning education.

Objective
To assess and compare public and private health facilities in terms of their provision of family planning services. Specific areas of comparison include: methods of family planning offered, availability of guidelines or protocols for family planning services, and availability of visual aids for family planning education.

Materials and methods
We used data from the Tanzania Service Provision Assessment (TSPA) survey of the year 2006 collected by Measure DHS (give reference to full original report). This was a nationally representative facility-based survey that covered 611 health facilities in mainland Tanzania and island (randomly selected out of 5,663 health facilities). Facilities surveyed included hospitals, health centres, and dispensaries under public or private authority. For this paper, data from 427 health facilities that were providing family planning services in mainland Tanzania were analyzed. These included 106 hospitals, 34 health centers, and 287 dispensaries. Of these, 78 were private facilities and 349 were public facilities.

Data analysis was based on the health facility questionnaire, which had questions on family planning service. Data were analyzed using SPSS computer programme in the terms of frequencies, percentages as well as binary unadjusted (you only use “adjusted”, so why mention “unadjusted’?) and adjusted logistic regression analysis.

Results
The vast majority of public health facilities offer family planning services, whereas more than half of private facilities do not offer those (Table 1).
Table 1: Family planning offered by public v.s. private health facilities

<table>
<thead>
<tr>
<th>Offering FP</th>
<th>Public facilities</th>
<th>Private facilities</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offering FP</td>
<td>349 (95.4%)</td>
<td>78 (47.9%)</td>
<td>427 (80.7%)</td>
</tr>
<tr>
<td>Not offering FP</td>
<td>17 (4.6%)</td>
<td>85 (52.1%)</td>
<td>102 (19.3%)</td>
</tr>
<tr>
<td>Total</td>
<td>366 (61.2%)</td>
<td>163 (38.8%)</td>
<td>529 (100.0%)</td>
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It is not known why so few private facilities include family planning services, but it means that potential users may have limited access to family planning if there is only a privately run health facility available in their region.

Findings on methods of family planning offered revealed that less than half of public and private health facilities were offering the female condom, spermicides, diaphragm and emergency contraceptive pills. Compared to public health facilities, private health facilities were less likely to offer: combined oral pills (AOR=0.02; 95% CI: 0.01-0.08), progestin-only pill (AOR=0.37; 95% CI: 0.20-0.70), progestin-only injectable (AOR=0.06; 95% CI: 0.02-0.16), male condoms (AOR=0.11; 95% CI: 0.04-0.25), implants (AOR=0.53; 95% CI: 0.31-0.91), and emergency contraceptive pills (AOR=0.49 (0.29-0.84). However, privately owned facilities were about two times more likely to report that they offer counseling on natural methods of family planning as compared to the publicly owned facilities (AOR= 2.12; 95% CI: 1.15-3.92).

Less than half of surveyed facilities reported to have family planning program components and standards, the family planning procedure manual 2004, guidelines for STI diagnosis or treatment, and syndromic diagnosis and treatment of STIs. Comparatively, public health facilities were significantly more likely to report having family planning program components and standards (AOR=0.32; 95% CI: 0.16-0.65); family planning procedure manual of 2004 (AOR=0.43; 95% CI: 0.20-0.91); and guidelines for STI diagnosis or treatment (AOR=0.49; 95% CI: 0.29-0.82).

Regarding availability of visual aids for teaching family planning related issues, it was found that less than half of both public and private facilities have visual aids for teaching about STIs and HIV/AIDS; models for demonstrating how to use condoms; and posters for general awareness of STIs or HIV/AIDS. Private health facilities were significantly less likely than public facilities to have samples of family planning methods (AOR=0.30; 95% CI: 0.17-0.53); visual aids for teaching about STIs (AOR=0.46; 95% CI: 0.26-0.81), visual aids for teaching about HIV/AIDS (AOR=0.46; 95% CI: 0.26-0.83), models for demonstrating how to use condoms (AOR= 0.31; 95% CI: 0.17-0.57), and posters for general promotion of family planning (AOR=0.52; 95% CI = 0.31-0.87).
Policy implications and future research
Our findings have policy implications for availability and for supportive supervision of health facilities. It should be assured that family planning services are available in every region of the country, also in those regions where many people use private health facilities, that do not offer these services at all. Such facilities, which are often religion-based, may have special reasons for not offering family planning services at all, or only “natural” family planning methods, that severely restrict choice of methods. The finding that several private facilities tend to focus on counseling on “natural” methods points in this direction, which is a serious source of concern. In those cases, the government should make sure that services without such restrictions are made available as an alternative.

In the process of monitoring family planning services, there is a need to ensure that a range of methods is provided by both public and private facilities. It should be a role of supervisors to check whether the facility has complete and accurate information about all methods of family planning offered. For supervisors it is also important to check whether a mix of methods matches the needs of all potential clients. There is a need to also instill standards of family planning services in both the public and private facilities. This includes making sure that guidelines and teaching aids for family planning are available in every facility.

In the context of absence of guidelines for family planning services, there is a need for future research to compare quality of family planning services offered by facilities that have the guidelines and those not having the guidelines. Likewise, research is needed to compare family planning services between health facilities that report to have teaching aids for family planning education and those not having them.