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research MONITOR

The biannual newsletter of the Global Development Network

Issue No. 7, December 2009

EVALUATING HEALTH INTERVENTIONS FROM THE DEVELOPING WORLD

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Launched in 1999, the Global Development Network (GDN) is an international organization of research and policy institutes promoting the generation, sharing, and application to policy of multi disciplinary knowledge for the purpose of development.

Evaluating Innovative Health Interventions from the Developing World

Bridging the Macro-Micro Evidence gap

Lyn Squire & Ranjeeta Thomas

Introduction

The Global Development Network's (GDN) project "Promoting Innovative Programs from the Developing World: Towards Realizing the Health MDGs in Africa and Asia" looks to inform policy with evidence on the effectiveness of health programs that have the potential to improve health outcomes in developing countries. In this project, 19 programs that aim to achieve the health Millennium Development Goals (MDGs) of child and maternal mortality, halting and reversing the trend of communicable diseases such as HIV/AIDS, malaria and other diseases were evaluated, to measure their impact on their target population. This article touches on some of the results of the individual studies but also tries to draw some broader policy and methodological conclusions.

Identifying Solutions

The programs in this project vary in scope of their implementation, covering national programs implemented by governments, multi-country programs implemented by international organizations and large non-governmental institutions (NGOs) and smaller indigenously developed and implemented solutions. While much attention usually focuses on the first and second types of programs, less information is available about smaller local programs, both in terms of their existence and reliable evidence of their impact. This project looks to bridge this gap in evidence. Table 1 lists the programs by country, health issue addressed and implemented.

Evaluating solutions

The project consists of rigorous impact evaluations of both new and ongoing programs. It includes applications of a range of methods, with randomized experimental evaluations as well as observational designs. Some of the non-experimental studies use cross-sectional primary data, with methods such as matching estimators and instrumental variables (IV), and others using longitudinal secondary data, with methods such as difference-in-differences (DiD) and DiD combined with matching.

Randomized Experimental Designs

Four of the programs use randomized experimental designs to examine a variety of outcomes and the economic implications of the programs. This method's adaptability to different definitions of treatment and multiple treatment arms can be seen in this project. For example, the experimental program in Nicaragua randomizes 'incentives' to obtain health insurance for informal sector workers in the capital city of Managua. It uses multiple treatment arms and randomizes information on the insurance, costs of insurance and convenience of signing-up for insurance. The impact of the treatment is relatively straightforward to recover, by comparing the difference in the means within (before and after) and between the treatment and control groups for the outcome of interest (in this case the uptake of insurance).

In contrast to economic incentives, the experimental program in Thailand analyzes the take-up of HIV testing when the service is initiated by providers. Closer in design to a purely experimental setting, a cluster-randomized trial design allocated hospitals with low and high HIV prevalence to treatment and controls. The intervention in this program involves presenting each patient between the ages of 13 and 64 who visited an outpatient department with an invitation card for free counseling and HIV/AIDS test. Successful randomized evaluations provide the best basis for internally valid estimates of treatment effects by simultaneously controlling for differences in observables and unobservables. But this needs to be placed in the light of the financial outlays required to achieve these results and the generalizability of the outcomes. The experimental evaluations in this project required the highest financial investment in comparison to the other methods used, and were all implemented as small-medium scale pilot programs. However, an extension of the results is not necessarily natural when such programs are implemented on a much larger scale in the same location and even less when transported for replication in another region or country. Scaling up in the same location could lead to general equilibrium effects and different factors could influence outcomes in different locations, especially in developing countries. Identifying universally consistent impacts of specific factors requires replication of these programs in different settings. Further financial investments still need to be made in re-evaluating these programs in local settings. Despite the high costs and the long turnaround time, randomized experiments are particularly useful in evaluating ideas that have not been implemented before. However, their contribution in evaluating ongoing programs is limited and this task typically requires the use of observational data.

Programs evaluated under the "Promoting Innovative Programs from the Developing World: Towards Realizing the Health MDGs" project

Program	Country	Health Issue	Implementing Agency
Safe Motherhood Program	China	Maternal Care	Government
Reproductive Health Capacity	Vietnam	Maternal Care	Government
The PARSalud Program	Peru	Maternal Health	Government
Mother and Infant Health Project	Ukraine	Maternal Health	Government
Safe Motherhood Hospital Program	Thailand	Maternal Health	Government
Alcohol Based Hand Sanitizers	Colombia	Child health	Pilot randomized evaluation
PSF Family Health Program	Brazil	Healthcare Delivery	Government
Health Services Extension Program	Ethiopia	Healthcare Delivery	Government
Family Planning Program	Iran	Healthcare Delivery	Government
Young Medical Volunteers	Vietnam	Healthcare Delivery	Government
Performance Based Financing	Rwanda	Healthcare Delivery, HIV/AIDS	Government
'Yeshasvini' Community - Based Health Insurance	India	Health Insurance	Local initiative
National Health Insurance Scheme	Ghana	Health Insurance	Government
Social Security Health Insurance	Nicaragua	Health Insurance	Pilot randomized evaluation
Micro-franchising the - distribution of anti-malarial drugs	Kenya	Malaria	Government
School-based Malaria Program	Malawi	Malaria	International NGO
Conditional Cash Transfers	Malawi	Schooling, Sexual Behavior, HIV/AIDS	Pilot randomized evaluation
HIV/AIDS Education Program	Cameroon	HIV/AIDS	International Organizations
Provider-initiated Voluntary - HIV Counseling and Testing	Thailand	HIV/AIDS	Pilot randomized evaluation

National Interventions

In this project, six of the programs are evaluated using difference-in-differences (DiD). These programs are national interventions that cover large portions of the population and have been active for several years. As in the case of randomized experiments, data is required before and after the intervention for both treatment and control groups. The Family Health Program (PSF) in Brazil illustrates the different dimensions of using a DiD approach. It uses municipality-level data from five different sources to capture information on different aspects of mortality (outcomes), timing and implementation of the program (treatment-variation) and municipality-level controls (covariates). It uses variation in which municipalities adopted the program and the length of time they have been exposed to it for identification of treatment effects. In the absence of randomization, the DiD approach will often give reliable estimates of program impact for on-going programs. Implementation of such evaluations does not require the complex administrative mechanisms of randomized evaluations. It also provides the quickest turn-around time for policy messages. The biggest benefit of the DiD approach is the high return to investment in the evaluation requiring the least financial investment in the evaluation. These evaluation costs must be viewed in light of the size of the programs being evaluated and the years of operation of the program; covering almost 85-90% of the

"...programs in this project can be broadly classified based on their economic rationale ... interventions that rely primarily on the allocation of additional resources ... and those that attempt to change the incentives for providers or users of health services".

target locations in the case of Brazil and Iran and multiple regions in Ukraine, Kenya and Peru. These programs have also been operational for several years allowing for long-term impacts to be estimated and heterogeneity in treatment effects. The identified impacts also pertain to a much larger population or in some cases the entire target population.

Matching approach

The longitudinal data required by DiD estimators is still not widely available in all regions, limiting the applicability of this approach for many programs. An alternative approach to DiD is that of matching. This approach, in contrast to the earlier two approaches, is based on the assumption that selection into treatment is fully reflected by observable variables. This cross-sectional approach is applicable when experimental control groups are not available for direct comparison of outcomes. The wide range of programs that can be evaluated using this approach is evident in those selected for this project. The Ghana National Health Insurance is similar to those in the DiD category and is a large scale, nationwide program covering 55% of the national population. It is similar to the Safe Motherhood program in Thailand, implemented in central, general and community hospitals and the Health Services Extension program in Ethiopia. All the evaluations in this category involved primary data collection. The range of costs for this approach lies between the DiD evaluations at the lower end and the randomized experiments at the upper end. However, in comparison to the DiD approach, the return to investment in matching is compromised if the validity of the approach is questionable due to the lack of pre-program information to control for likely differences. This method, however, encourages evaluations in several instances where longitudinal data may not be available. Until it becomes standard to collect data pre and post intervention for programs implemented in the future, this method is an efficient solution to the evaluation of program impact.

Policy Messages

The policy objectives of the programs in this project can be broadly classified based on their economic rationale for intervention. This principle reflects the distinction between interventions that rely primarily on the allocation of additional resources to a well-defined purpose and those that attempt to change the incentives confronting providers or users of health and related services. In reality, all interventions contain a mix of the two, but most interventions reflect one or the other to a greater extent. Six of the studies show how maternal and child health can be improved by earmarking resources to specific issues. The programs in this category demonstrate what can be achieved even in resource-scarce environments provided resources are well directed. Consider the Brazilian Family Health Program. It delivers basic health care through professional teams composed of, at least, one family doctor, a nurse, an assistant nurse, and six health community agents. In some cases, teams also include a dentist, an assistant dentist, and a dental hygiene technician. Each team serves about 3,000 to 4,500 people. This community-based program has proven highly successful, reducing infant mortality by 20% and mortality in the 1 to 4 age group by 25% in municipalities that have participated for eight years. Another example is the China Safe Motherhood Program. The program concentrated on three measures to improve hospital delivery: health education, better health infrastructure, and social mobilization, and featured two innovations – demand-side reimbursement in which pregnant women receive subsidies directly from local government, and the temporary assignment of obstetric experts from provincial tertiary hospitals to primary maternal care centers. The results are impressive. After seven years of participation in the program, the hospital delivery rate improved by 3.99 per 100 live births and the maternal mortality ratio due to haemorrhaging declined by 10.23 per 100 live births. The results suggest that even modest sums can have a significant impact provided resources are effectively directed. These six programs have many innovative features, but can be thought of as conventional projects in as much as they apply financial and human resources to a specific health issue.

Innovative interventions hold promise

In contrast, a second group of seven interventions attempts to change the incentives confronting providers or users of health services. This group examines a range of exciting ideas -- conditional cash transfers, insurance, performance-based contracts – that hold much promise. Even seemingly trivial changes in incentives can have impact. Changing from opting in to opting out of HIV testing increased tenfold the number of tests taken by attendees at Thai clinics, for example.

Two insurance programs in this category are intended to attract enrolees in much lower-income populations and both incurred subsidies. Against this, both achieved significant health benefits. Ghana's National Heath Insurance Scheme introduced in 2003 is, as its name indicates, is a national program designed to make health care services affordable to all and to ultimately replace the existing "cash-and-carry" system. It covers about 95 per cent of common diseases, with only a handful of specialized services, such as HIV antiretroviral drugs, VIP accommodations etc., being excluded from the package. Maternal health care, the focus of the impact evaluation, improved significantly: compared with their uninsured counterparts, enrolled women were more likely to give birth in hospitals; 15.8 per cent more were attended by trained health professionals at the time of delivery; 15 per cent more received prenatal care; 2.1 per cent had fewer birth complications, and 1.8 per cent experienced fewer infant deaths. The Yeshasvini Insurance Scheme operating in the Indian state of Karnataka is an innovative program that allows individuals to insure against low probability, high-cost health events, mainly surgical procedures,

the cost of which could be prohibitive or catastrophic for poor households. Insured cohorts in the Yeshasvini program reported more surgery cases than the uninsured ones during the 4 years of the evaluation but, at the same time, experienced significantly less indebtedness and sale of assets indicating the program not only improved health status but also protected economic status. These two programs point to the potential, and the fiscal cost, the subsidy required to attract enrolees, for successful insurance programs in low-income situations.

Innovative service delivery mechanisms

Innovation in designing delivery mechanisms can play a crucial role in improving health status. The latest 'miracle' drug will be of little value if it fails to reach those it is intended to benefit. Programs aiming to increase the prospects of successful delivery of preventive care and treatment often make use of the existing infrastructure for other non-health, public services to provide health services. The final group of six interventions illustrates how non-health mechanisms can be used to deliver health programs. The School Based Malaria Program, in which teachers are trained to diagnose malaria and other health problems on the basis of signs and symptoms according to the national protocol and to dispense medicine from specially prepared Pupil Treatment Kits, is a good example. The program succeeded in reducing absenteeism and repetition. The mean number of days pupils were sick, however, was higher in treated schools than in the control ones, a result attributed by the authors to better reporting of sick cases in the treated schools. Nevertheless, the mean number of days absent from school was significantly higher in control schools than in the treated ones and a cost-benefit analysis based solely on the reduced repetition rates was positive. Moreover, teachers reported that no more than an average of 5 minutes was required for diagnosis and treatment per child. It is unlikely therefore that this program significantly impacted the time available for teaching.

Conclusion

The project also supports two general lessons. First, a successful intervention in one country does not necessarily migrate easily to another location. Context matters. Local conditions matter: cost structures differ; cultural sensitivities vary; administrative capacities are different. Thus, the successful interventions in this project were usually preceded by careful analysis of context and need. Policy-makers are keen to identify new, potentially successful interventions, and the results of this project provide some pointers. When looking for winners, therefore, it may be more important to grasp the idea behind a particular intervention rather than the specifics of its implementation. That said, implementation has to be addressed and examples from elsewhere in the world offer a useful starting point.

From an evaluation perspective, answers to the problems facing health policy in developing countries do not necessarily lie in new programs. Often existing programs can provide insights into success. It is however necessary to build in the idea of evaluation while a program is being designed. Investing in baseline data collection from an evaluation perspective should be a key component of a program's design and rigorous evaluations need to be implemented to identify genuine winners that can be expanded and replicated in the effort to achieve the Millennium Development Goals. ❖

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Innovation in designing delivery mechanisms can play a crucial role in improving health status. The latest 'miracle' drug will be of little value if it fails to reach those it is intended to benefit.

Public-Private Partnership for Community-based Healthcare: The 'Yeshasvini' Health Insurance Scheme in Rural India

Aradhna Aggarwal

Introduction

This paper reports the results of an impact evaluation of "Yeshasvini Cooperative Farmers' Health Insurance," one of the largest community-based, self-funded health insurance programs in India. It evaluates the performance of the program in terms of utilization of health care services, financial protection, and treatment outcomes among participating households. It also assesses the impact of the program on the economic well being of insured households. While addressing the issue of health outcomes, the study weaves a gender perspective within the analysis.

The Program

The program was introduced in June 2003 in the Indian state of Karnataka, as a result of joint efforts of a government official and a famous Indian cardiologist. The program is a unique example of partnership between the public, private and cooperative sectors. The State Co-operative Department mobilizes membership with the help of the cooperative society network, collects revenue, and oversees operations of the program while private sector hospitals network with the program to provide medical services. Some government-run and charitable hospitals are also part of the network. Currently, 349 hospitals are in the network. Though the program operates under the aegis of the State Department, it is governed by an independent trust which is assisted by a third party administrator as an executive organ. The trust comprises of representatives of relevant government departments and hospitals in the network. Yeshasvini has effectively created a large membership base. Currently, almost 3 million people are enrolled in the program. The premium in 2007-08 was INR 10 (Indian Rupees) per month for every adult and every child, with a 15 per cent discount on additional members if the household size was more than 5 (Table 1; pg 7). However, at the current level of premium, financial sustainability is not achievable even with the vast membership base. Realizing this, in addition to subscription, the trust also welcomes donations from private and government bodies, and government subsidy. As of July 2008, total funds of the Trust were to the tune of INR. 500 million.

The benefit package is well-defined and well-designed, focusing on high-cost surgery events that could be catastrophic for poor households. The program does not cover in-patient admission without surgery. Individual hospitals are allowed to add on different benefits if they so want. The trust has fixed a price for each surgery. A well specified list of exclusions is provided to all the hospitals. An important feature of the program is that the price for surgery paid to a network-hospital is significantly below normal market–prices, in order to discourage unwarranted surgeries. The maximum coverage per person per year amounts to INR 200,000 with free OPD (Out-Patient Department) sessions. Thus, the program offers the poor the opportunity to benefit from advanced and highly expensive surgical treatments which otherwise would not be accessible to them. It is, therefore, expected that the program should have desirable effects on health-related outcomes for the poor.

Study Design

For analyzing the impact of the program, a fairly comprehensive list of health indicators covering nearly all categories of medical episodes, along with several indicators of economic well-being, was developed. Impacts were estimated by propensity score matching and kernel-based methods. The analysis is based on cross-section data from randomly selected 4109 households in 82 villages across 16 districts in rural Karnataka. Primary data was collected on, among other things, general household and individual characteristics, health status, use of health services, satisfaction from treatment, and health related expenditures through interviews using a fully structured questionnaire.

Key Findings

Health care utilization: The results suggest that the program has had substantial impacts on health care utilization. It has made it possible for the members to access better quality treatment at no additional costs. These results are more pronounced for outpatient care and surgeries than for non–surgical inpatient treatment. Beneficiaries are not significantly wealthier than non-beneficiaries. This indicates that the benefits are reaching the poor as well.

Financial protection: There is evidence of financial protection in terms of reduced borrowings or sale of assets in the event of surgery. Such evidence is also available for other medical episodes, it . However, it is weak.

Treatment outcome: Treatment outcomes of surgery are most pronounced. Significantly, more Yeshasvini households reported

Table 1: Performance indicators of the program

	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
Enrolment (millions)	1.6	2.02	1.47	1.85	2.32	3.0
Premium*	60	60	120*	120	120	120
Contribution collected**	96.91	119.76	163.44	215.45	276.3	361.0
Government Contribution**	45	35.8	110	208.5	200	150.0*
Other Sources**	3.88	11.34	5.45	5.06	20.15	-
Total Amt Collected**	145.79	166.89	278.9	429.02	496.46	-
Surgeries (Numbers)	9,047	15,236	19,677	39,602	60,668	-
Surgery to enrolment ratio	0.57	0.75	1.35	2.13	2.60	-
Utilisation_Subscription ratio (%)	30.1	114.8	160.1	178.8	195.7	-
Amt of sanction per surgery*	11786.49	12124.09	13299.49	9784.908	8915.7	
Avg. Payoff to premium ratio	0.990	0.990	0.991	0.988	0.987	-
Free OPD (Numbers)	35,814	50,171	52,892	206,977	155,572	-

** Indian Rupees; ** Millions of Indian Rupees*

Source: Yeshasvini Trust

better life and lesser requirement for post surgery processes. The satisfaction level for OPD treatment was also higher for participating households than what was reported by the uninsured cooperatives.

Maternal health: There was no clear evidence of the program having any marked impact on maternal health though there is evidence of an increased use of institutional facilities for deliveries.

Economic well-being: Economic impact is reflected in increased income but this is not translated into less borrowing or greater asset purchase. Savings and expenditures seem to have increased. While overall effects are small, they are larger for members with lower economic and social status.

There is also some suggestion that the program is cost-effective. The administrative cost of the program is as low as INR. 3.82 per member. The fiscal cost per member too is quite low. Better care, greater financial protection and better treatment results can be ensured at the fiscal cost of INR.112 per member per year.

Policy Implications

Our results suggest that the program has been successful in extending benefits to the poor in catastrophic medical events and presents an interesting case study. In micro terms, the effects are rather small. At the macro level however, it may have an important impact on the expansion of healthcare services by providers. With over 70 per cent of the population excluded from the quality treatment, it is difficult to achieve economies of scale in the healthcare sector. This creates a vicious circle of high cost and non-accessibility of treatment.

Our findings suggest that a successful Community-Based Health Insurance (CBHI) program can break this vicious circle. But there is no CBHI that can, on sustained basis, offer a benefit package that is comprehensive in nature because the programs are voluntary and contributions are small. Financial sustainability, thus, remains an issue. The study suggests that the managers should augment the resources. Introduction of a sliding contribution scale rather than a single flat rate contribution, family packages, and additional services in terms of health checks may improve membership and collection of resources. Considering the positive effects of the program, the study, however, emphasizes that membership should be made compulsory along the lines of social insurance. The program needs to be carried to the next level. Finally, the study cautions that health insurance is no substitute for quality health infrastructure and transport facilities at affordable price. The study shows that households living far away from facilities are less likely to enroll. Thus, the success of the program itself is contingent on the existence of a well-knit network of hospitals. ❖

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"The study cautions that health insurance is no substitute for quality health infrastructure and transport facilities at affordable prices."

Ghana's National Health Insurance Scheme: Improving Access and Utilization

Joseph Mensah and Joseph R. Oppong

Introduction

In 2003, the Government of Ghana established a National Health Insurance Scheme (NHIS). Two major objectives of the program are to make health care services affordable to all and to ultimately replace the existing "cash-and-carry" system, which is considered by many health observers to be highly regressive. The NHIS is structured around the District-wide Mutual Health Insurance Schemes. Such schemes have historically been established by organizations such as hospitals, NGOs, churches, and District Assemblies.

The Program

The NHIS is regulated by the National Health Insurance Council (NHIC) headquartered in Accra, the national capital. The Council manages the National Health Insurance Fund (NHIF) through the collection, investment, disbursement, and administration of the NHIS. The Council also undertakes the licensing, regulation, and accreditation of health providers. At the district level, there are Health Insurance Assemblies which comprise of all members of the scheme. The district schemes are governed by Boards of Trustees and Scheme Managers. The staff at the District level include an Administrator, Publicity and Marketing Manager, Claims Manager, Accountant, Data Control Manager, and Data Entry Clerk.

The NHIS covers about 95 per cent of the common diseases; it is democratic and has a bottom-up character, being administered by Health Insurance Assemblies. Its premiums are based on one's ability to pay, with special exemptions for the core poor and the elderly. Ideally, four groups are identified—the core poor, the poor, middle income, and rich—and each pay different amounts. However, because such identification is difficult, flat rates are often implemented. All contributors' premiums cover their children and dependents below 18 years of age. Earlier on, only children of registered parents were covered, but public outcry compelled the government to change its policy in September 2008, thereby decoupling parents' coverage from that of their children. The government has a 2.5 per cent sales levy for the funding of health insurance in the country; other sources of funding include money from government-budget and donor contributions. Minimum benefits covered include general outpatient services, inpatient services, oral health, eye care, maternity care, and emergencies. Diseases covered include malaria, diarrhea, upper respiratory track infections, skin diseases, hypertension, asthma, diabetes, etc. The basic idea is to cover all common health issues. A handful of specialized services, such as HIV antiretroviral drugs, VIP accommodations, etc., are excluded from the health insurance benefit package.

Context

Effective solutions for problems of escalating healthcare costs and under-funding in poor African countries are elusive. In the immediate post-independence period, Ghana had a healthcare system that provided "free" medical services in public health institutions to all citizens. However, by the early 1980s, high costs, budgetary constraints, and massive emigration of health care practitioners forced the government to implement a cost recovery, or cash-and-carry, system of healthcare delivery. There are indications that the cash-and-carry system undermined access to health care in the country. For instance, studies suggest that many low-income households regularly postpone medical treatment, resort to self-treatment, or rely primarily on the services of traditional healers, spiritualists, and itinerant drug vendors. It is against this background that the National Health Insurance Scheme (NHIS) was established to help improve access to health care. Despite the financial protection offered by the NHIS against the uncertainties of illness, some Ghanaians are hesitant to enrol in it. However, without empirical evaluation, it is difficult to determine the reasons for non-enrolment or whether the NHIS is making health care accessible and affordable in the country.

Study Objective

The impact evaluation of the program was done with the following specific objectives:

1.To compare the health characteristics and outcomes of women (18-49 years) who are enrolled in the NHIS with those of women who are not;

2.To explore the differences in healthcare access and utilization between these two groups of women, and to understand why some women join the scheme and others do not;

3.To assess whether the scheme has been successful or not; and if it has, to explore the extent to which it could be replicated in other African countries.

Key Findings

The findings from the impact evaluation suggest that the NHIS has yielded some verifiable positive outcomes: Women who are enrolled are more likely to give birth in hospitals: 15.8 per cent more NHIS women are attended by trained health professionals at the time of delivery; 15 per cent more NHIS women receive prenatal

care, have fewer birth complications (2.1 per cent), and experience fewer infant deaths (1.8 per cent) than their non-NHIS counterparts. As to why some women join the scheme and others do not, it was found that the higher the respondent's level of education, the higher was the probability of enrolling in the NHIS. Availability of a television set in the household also improved the probability. As expected, nearness to a healthcare Center improved the likelihood of a woman joining the scheme. The major reason for non-enrolment was the inability to pay the premium.

Policy Implications

By eliminating huge costs and by enhancing access to health services, the NHIS is addressing a major challenge to better health outcomes, and thus promises to improve maternal health in the country. An effective way to improve health outcomes of women may, thus, be finding ways to extend the NHIS to those who are not currently enrolled. Since cost was found to be a major obstacle to enrolment, more effective methods for identifying the poor, and the core poor, for the purposes of premium exemption and discount are needed. Including outpatient care provided at primary health care facilities in NHIS benefits package may also increase enrolment among rural folks with limited financial resources. Availability of a health facility in a community is associated with higher likelihood of enrolment. Accordingly, extending geographical access is very important to any strategy for improving access to quality health care in the country. To the extent that the educational background of the household head is a strong determinant of NHIS enrolment, information on the NHIS has to be disseminated in ways that it reaches those who have little or no education to ensure that these segments of the population are not excluded from the NHIS.

Ultimately, though, health insurance alone can hardly be an effective tool for the improvement of health care, unless the health care system as a whole is enhanced with reliable infrastructure, well-located health care facilities; efficient health care providers, and competent and accountable administration. Finally, it is worth stressing that the impact of such social health insurance schemes on overall health indicators usually takes time to show up. However, changes in the practices that lead to better health, such as delivery in hospitals, proper pre- and post-natal care, early detection of diseases, etc., are more quickly observable. Hence, any evaluation of newly introduced schemes should focus more on these variables rather than on overall health indicators, which tend to be more important for long term impacts. ❖

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Impact Evaluation of the Health Services Extension Program (HSEP) in Ethiopia

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The Program

The HSEP is a community-based outreach intervention program. Its major focus is on prevention, promotion and selective cure services of diseases such as malaria and diarrhea, which are the major killers of children in rural Ethiopia. Launched in 2003, the program deploys two female Health Extension Workers (HEW) who work from a health post in every Kebele (village) to deliver primary health care services. Importantly, health extension workers are expected to spend 75 per cent of their time conducting door-to-door outreach services and community-level health education.

The two health extension workers usually belong to the same Kebele in which they work. They are at least 10th grade graduates and are trained for about a year on basic healthcare services. The HSEP aims at delivering accessible and equitable services on maternal and child health, immunization services, nutrition, adolescent reproductive health, water and sanitation, malaria prevention and control, and health education and communication. The program gives special attention to mothers. By the end of 2006 and early 2007, about 57 per cent of the 15,000 rural

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villages were already included in the program.

Costs include the salaries of the extension workers (HEWs), expenditure on drugs and medical supplies, and operational costs including supervision and maintenance. Funding comes from the government, international donors, and local communities. In some cases, it has been found that communities contribute about 50 per cent of the resources needed for the construction of the health post. Procuring and providing essential medicines and supplies is the main responsibility of the Federal Ministry of Health and Regional Health Bureaus and the Woreda (district) Health Offices.

Context

Prior to this initiative, provision of health care services was characterized by very few health facilities (hospitals, health centers, clinics) with inadequate number of physicians, nurses and other health workers. Moreover, most of the health infrastructure was mainly located in the urban areas, making it difficult for the rural population to access them. As a consequence, Ethiopia has experienced high MMR, IMR, and low rates of immunization, while preventable diseases such as malaria, tuberculosis and HIV/AIDS are common causes of morbidity and mortality in the country.

Objective

The main purpose of this study is to systematically evaluate and document the impact of the program on different health outcomes. In particular, the study analyzes the impact of the program on some selected short term measurable child and maternal health outcomes.

Key Findings

A number of outcome indicators for child health and maternal health were considered to evaluate the impact of the program. First, on the average, children in villages with the program were better immunized than those in villages without the program; the immunization results were strong in villages where the health posts were better equipped but not necessarily so where there were 2 instead of one extension worker. Second, pregnant women in villages with the program contacted health workers more than a month earlier than those in villages without the program. Third, larger proportion of children and of women in program village sleep under insecticide treated nets compared to those in the non-program villages. Fourth, there is also evidence suggesting that parents/care-givers practice sanitary disposal of faecal matter of babies in the program villages. There were many other positive indicators but they were not statistically significant to draw any firm conclusions.

Policy implications

Our analysis provides some evidences that HSEP is an important pro-poor intervention to improve health outcomes in low income settings. One major observation to be made is that health outcomes take a long time to manifest themselves. Consequently, it is difficult to identify impacts of preventive interventions on all health indicators within such a short period of time. In this respect, our findings should be interpreted only within the context where meaningful evaluation is limited to short term indicators of preventive interventions.

Since demand for health care services and individual health behavior are choices that are dependent on a number of factors, like culture, household demographic composition, quality of health provider, affordability, etc., the impact of health interventions is, often, not straight-forward. It is imperative to consider both demand- side and supply-side factors. Standard project evaluations done at periodic intervals are, therefore, fraught with problems. In particular, incidence of particular ailments may increase as more cases are brought to better health posts. ❖

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Provider-initiated HIV-Counseling and Testing in Thailand

Yot Teerawattananon and team

Introduction

The main aim of voluntary counseling and testing for HIV infection (VCT) is to make people aware of their HIV status. The hypothesis is that this could encourage people to modify their sexual behavior preventing further transmission of the disease. In addition, it could also promote an early uptake of appropriate services such as medical treatment, family planning, etc. Recognizing the role of the VCT as a starting point for all services related to HIV/AIDS, WHO and UNAIDS recommended the health care providers to initiate HIV testing and counseling to all patients irrespective of their HIV status. This intervention also ensured that providers made arrangements to provide appropriate treatment to patients detected to be HIV positive. Such a program can contribute significantly to disease-control efforts of the government.

The intervention

The program is an HIV counseling and testing intervention offered to patients aged between 13-64 years attending healthcare facilities in Thailand. It is unique as it is initiated by the health care provider as opposed to the current practice in which the HIV testing is provided upon the client's request. The process of the intervention is as follows:

1.Invitation cards are given to all eligible patients visiting the OPD. The card is to be used as a coupon for getting a free HIV test.

2.A seven minute TV program designed to represent pre-test HIV counseling is presented to the patients in the waiting room.

3.After consulting the doctor, patients volunteering to be part of the study can get tested for HIV free of cost by presenting the invitation card at the laboratory.

4.The patients with a positive test result are then referred to HIV clinics, where routine investigations, prophylaxis and treatment medicines are provided for free.

Sixteen district hospitals with high and low HIV prevalence were randomly assigned to either receiving the new intervention or the current practice with a 1:1 allocation ratio. The study was carried out over a period of sixteen weeks. For the first eight weeks no intervention was introduced. This was the baseline period. All sixteen hospitals collected information on the numbers of patients undergoing HIV counseling and testing and the number of new HIV infections detected. After eight weeks the intervention was introduced to the hospitals assigned to the experimental group. Data was collected from patients both in the treatment and the control clusters using pre-designed questionnaires.

The main outcome measures were the acceptance rate of HIV testing and HIV detection rate.

Objective of the impact evaluation:

The specific objectives include the following:

- To explore the characteristics of patients who accept and decline HIV testing, when the service is offered by health providers.

- To assess the factors associated with HIV infection among patients.

- To examine the costs and effectiveness of provider-initiated VCT, in comparison to the current practice where VCT is performed only on request by patients or physicians.

- To develop a decision-based analytic model for the assessment of the clinical and economic impact of provider-initiated VCT compared to current practice.

- To investigate the perceptions of key stakeholders concerning the introduction of provider-initiated VCT in district hospitals.

Key findings of the impact evaluation

During the first-eight week baseline period, there was no significant difference between the control and experimental clusters on the acceptance rate and HIV detection. However, after the 8-week intervention period, the acceptance rate and HIV detection rate in the experimental clusters

"...the impact evaluation clearly shows that provider-initiated VCT increases the rates of HIV detection… program may not be useful in areas of low prevalence of HIV, but is certainly cost-effective in areas of high prevalence."

Table 1 Number of eligible patients and number of HIV test, the corresponding HIV test acceptance rate and number of new HIV infection detected by clusters, HIV prevalence, and study periods

Hospitals	Time (period)	Eligible patients	Number of HIV test performed	% acceptance rate for HIV test	Number of new HIV infection detected
Low HIV prevalence					
Control	Pre-intervention	6,888	23	0.33 (0.19,0.39)	1
	Intervention	6,821	32	0.47 (0.27,0.56)	1
Experiment	Pre-intervention	10,202	39	0.38 (0.26,0.50)	3
	Intervention	6,127	544	8.88 (8.16,9.59)	9
High HIV prevalence					
Control	Pre-intervention	11,681	54	0.46 (0.34,0.59)	8
	Intervention	12,175	33	0.27 (0.18,0.36)	8
Experiment	Pre-intervention	15,670	48	0.31 (0.21,0.38)	8
	Intervention	13,818	486	3.52 (3.21,3.82)	12

Note: 95% confidence interval of the acceptance rates are shown in the parenthesis

was significantly higher than those of the control clusters (table 1).

The intervention tends to be more attractive to those with higher HIV risk behaviors i.e. having extramarital sex (odds ratio=4), not using condoms when having extra-marital sex (OR=3.6) or perceiving that his/her spouse was at risk (OR=16.7). Furthermore, those aged 20-40 years (OR=1.3), who were blue collar workers (OR=1.3), and married in the intervention group (OR=2.4) were of significantly increased likelihood to accept the HIV test than those in other groups.

The intervention costs in the experimental clusters were nearly three times the costs in the control clusters (Table 2). An additional twelve HIV infections were detected or 1.74 HIV infections averted due to the intervention. Hence, although the intervention

Table 2: Results of economic evaluation

		Including protocol inducted costs*	Excluding protocol inducted cost*
Costs	Experimental clusters	104,158	69,928
	Control clusters	39,795	20,235
HIV cases detected	Experimental clusters	21	
	Control clusters	9	
HIV infections averted	Experimental clusters	1.86	
	Control clusters	0.12	
Incremental cost		64,363	49,693
Incremental outcomes	HIV cases detected	12	
	HIV infections averted	1.74	
ICER (PPP USD per HIV case detected)		5,364	4,141
ICER (PPP USD per HIV infection averted)		36,979	28,551

*PPP USD = international US dollar

ICER = Incremental cost-effectiveness ratio

is costly, the consequent early detection leads to an overall reduction in the cost of treatment and care.

Conclusion and policy recommendations

Lessons learnt from the impact evaluation clearly show that provider-initiated VCT increases the rates of HIV detection. It is expected that once detected with HIV, the patient will take appropriate treatment and this will have a positive impact on morbidity and mortality associated with HIV. If it is indeed ascertained that awareness of HIV status can encourage good practice to reduce risky behavior and facilitate earlier uptake of appropriate prevention, treatment, care and support among HIV infected persons, provider-initiated VCT has a strong potential to reduce the burden of HIV/AIDS in Thailand. It can stimulate progress toward the MDG related to combating the infection, which has faltered in many settings in Asia and Sub-Saharan Africa. Given the costs, such a program may not be useful in areas of low prevalence of HIV, but is certainly cost-effective in areas of high prevalence. It is recommended that provider-initiated VCT should be implemented in settings where there are adequate infrastructure and workforces for counselling and HIV testing, availability of continuum of care e.g. prevention options, opportunistic infection prophylaxis, antiretroviral treatment for patients and their families, and political/community support. It is also necessary to ensure good quality pre- and post-test counseling and confidentiality of the process and HIV test results, as well as that the acceptance to obtain this intervention is on a voluntary basis. There are concerns about burdening the already overworked hospital staff and the additional requirements at the health facilities. However, this can be addressed by taking inputs from key stakeholders like policymakers at the national level, hospital administrators, healthcare workers, service recipients at OPD and civil society organizations. ❖

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Conditional Cash Transfers and Sexual Behavior: A Case Study from Malawi

Berk Ozler

Introduction

Conditional Cash Transfers (CCTs) can be an important component of social protection policy and there is "…considerable evidence that CCTs have improved the lives of poor people" (World Bank, 2009). Early CCT pilots such as Mexico's Progresa, Brazil's Bolsa Escola, and Nicaragua's Red de Protección have been popular and became national programs a few years later. As of 2007, "…29 developing countries had some type of CCT program in place (in some cases, more than one) and many other countries were planning one." (World Bank, 2009) It seems that CCT programs are here to stay – at least for the foreseeable future.

However, such programs have been largely evaluated on a small set of outcomes, which have more to do with the behavior that the program is being "conditioned" on (such as school enrolment), rather than, say, learning or labor market outcomes. Naturally, there is now an increased focus, from policy-makers and researchers alike, on examining a broader set of outcomes that might be plausibly affected by these programs and that are pertinent for policy design.

In sub-Saharan Africa (SSA), for example, very little is known about the possible effect of these programs on the sexual behavior of the target beneficiaries, including age of marriage and fertility decisions. The contribution of this study is to extend the analysis of CCT programs to a new context and a novel set of outcomes; namely their potential to prevent risky sexual behavior among school-age girls and young women in Sub-Saharan Africa. Given the close link between sexual behavior and HIV infection, and given the burden HIV poses on these economies, this is potentially a very important impact to document.

Education has been suggested as a "social vaccine" to change sexual behavior and prevent the spread of HIV (Jukes, Simmons, and Bundy, 2008), but, apart from one study, almost all of the evidence we have on this comes from cross-sectional studies.1 Girls who want to stay in school have an incentive to avoid pregnancy. Furthermore,

"...such programs have been largely evaluated on a small set of outcomes, which have more to do with the behavior that the program is being "conditioned" on (such as school enrolment), rather than, say, learning or labor market outcomes"

research suggests that schoolgirls may have smaller sexual networks.2 Cash transfers conditional on satisfactory school attendance may also have an 'income effect' on the sexual behavior of some young women by removing their need to rely on sexual partners for financial assistance or gifts.

This paper aims to provide new causal evidence on the effects of a CCT program (with only school attendance used as a condition to receive the transfers) on the self-reported sexual behavior of the young, female beneficiaries of the program. It does so by examining the one-year impacts of an ongoing two-year randomized intervention in Malawi that provides cash transfers to young women to stay in (or return to) school. Conditional cash transfers blend 'income' effects (through the transfers themselves) with 'price' effects (through the conditionality for satisfactory school attendance), and our study estimates the joint effect of these two policy parameters. As such, this paper provides the first experimental evidence on the impact of a CCT program for schooling on age at first marriage, childbearing, frequency of sexual activity, and risky sexual behaviors in Sub-Saharan Africa.

Study setting and the CCT intervention

The CCT intervention that is the subject of this paper takes place in one district of Malawi. Zomba district in southern Malawi was chosen as the site for this study for several reasons. First, it has a large enough population within a small enough geographic area rendering field work logistics easier and keeping transport costs lower. Second, characteristic of Southern Malawi, Zomba has a high rate of school dropouts and low educational attainment. Finally, HIV/AIDS rates of women aged 15-49 in Zomba are the highest in the country at 24.6% (NSO, 2005).

The Zomba Cash Transfer Program (ZCTP) is a randomized conditional cash transfer intervention targeting young women in Malawi that provides incentives (in the form of school fees and cash transfers) to current schoolgirls and young women, who have recently dropped out of school, to stay in or return to school. The study sample consists of 3,805 never-married, 13-22 year-old females living in 176 randomly selected enumeration areas in Zomba. Out of these 3,805 young women, 1,225 girls in 88 randomly selected EAs were sampled to be part of the CCT program. Treatment status was assigned at the EA level.

The average offer to the households consisted of $10/month –a total of $100 for the school year transferred in equal amounts for 10 months.3 $10/month represents roughly 15% of the total monthly household consumption in our sample households at baseline, which places this program in the middle-to-high end of the range of relative transfer sizes for Conditional Cash Transfer programs elsewhere. In addition to the transfers to the household, secondary school fees were paid directly to the schools upon confirmation of enrolment.4

The cash payments took place monthly at centrally located and well-known places, such as churches and schools. In between payment dates, attendance records for all the students in the program were collected to make sure that they were complying with the program requirements and attending school. Each household received the transfer only if the young woman attended school for at least 75% of the days that her school was in session in the previous month.

Findings

School attendance

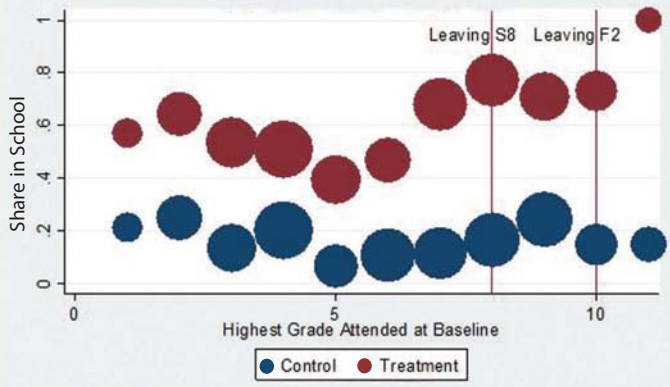
We start by demonstrating the impact of the program on self-reported schooling outcomes since we would be much less likely to find impacts on early marriage, fertility, and the sexual behavior of the young beneficiaries of the CCT program in the absence of any program impacts on school attendance and attainment. The simple act of attending school may be enough to cause sexual behavior change among the study beneficiaries – for example by raising the opportunity cost of pregnancy (Jukes, Bundy, and Simmons, 2008; Duflo et. al. 2006).

Figures 1 & 2 show that the program led to large increases in school enrolment, especially among those who were not in school at baseline. The percentage of initial dropouts who returned to school was 17.2% among the control group compared with 61.4% among the treatment group. Thus, this group of program beneficiaries was 3-4 times more likely to be in school at the end of the 2008 school year than the control group. Among those who were still in school at baseline, while the impact in absolute terms was smaller, the relative impact was still impressive. The dropout rate among program beneficiaries was 35% lower than those in the control group (10.9% among controls vs. 7% among treatments).

Marriage and Fertility

We find that over the one year that elapsed during baseline and follow-up, 27.7% of initial dropouts in the control group have got-

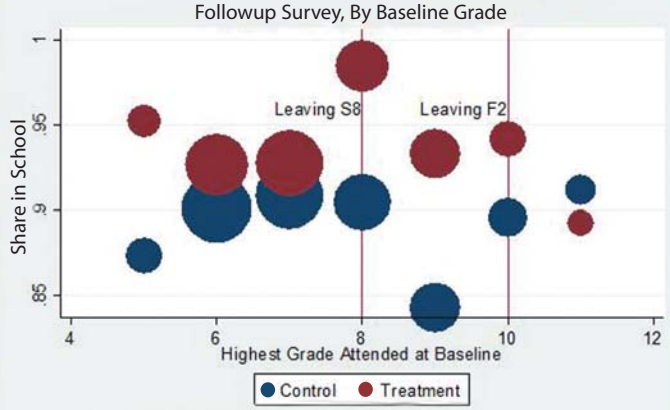
Figure 1: Schooling Rates for Baseline Dropouts
Followup Survey, By Baseline Grade



Size of dots proportional to weighted number of girls of each grade

Figure 2: Schooling Rates for Baseline Dropouts

Followup Survey, By Baseline Grade



Size of dots proportional to weighted number of girls of each grade

ten married, compared with only 16.4% of the same group in treatment. This is a reduction in the marriage rate of more than 40% among those who were not in school at baseline. However, we also note that the program had no effect on the propensity to get married among the baseline schoolgirls – 4.7% of whom got married both among the controls and treatments. Similarly, we find that baseline dropouts among the treatment group are 5.1 percentage points less likely to have become pregnant over the past year, a reduction of more than 30%. Again, as with marriage, the CCT program had no impact on the incidence of childbearing at follow-up for baseline schoolgirls.

Sexual Activity and Risk Behaviors:

Finally, we present impacts on self-reported sexual activity and risky behaviors. At baseline, 29.6% of initial dropouts and 79.4% of initial schoolgirls reported having never had sex. We find that the reduction in the onset of sexual activity between baseline and follow-up is 5.5 percentage points among initial dropouts (significant at the 1% level) and 2.5 percentage points among initial schoolgirls (p-value: 0.112), which represent reductions in the onset of sexual activity by 46.6% and 31.3%, respectively.

Conclusions

These findings are promising. After one year, the program led to large increases in self-reported school enrolment, as well as declines in early marriage, teenage pregnancy, sexual activity, and risky sexual behavior (not discussed here due to space constraints beyond the scope of this article). The evidence presented here suggests that as girls and young women returned to (or stayed in) school, they significantly delayed the onset (and, for those already sexually active, reduced the frequency) of their sexual activity. The program also delayed marriage – which is the main alternative for schooling for young women in Malawi – and reduced the likelihood of them getting pregnant. As the treatment/control differences in schooling become starker during the second year of the program, the treatment impacts on marriage, fertility, and risky sexual behavior are likely to become stronger.

Our findings also suggest that schooling CCTs for young women in the context of poor sub-Saharan countries with high HIV rates might be "win-win" programs, as they may not only increase schooling for young women, but also significantly reduce their risk of HIV infection. Furthermore, increases in age at first marriage and pregnancy, as well as improved educational attainment may lead to improved outcomes for the next generation, as there are a host of negative externalities for children that are associated with early marriage, such as higher child mortality rates or lower educational attainment (Morrison and Sabarwal, 2008). The evidence presented in this paper provides impetus for the expansion of CCT programs (which already cover much of Latin America) to Sub-Saharan Africa. ❖

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"...schooling CCTs for young women in the context of poor sub-Saharan countries with high HIV rates...may not only increase schooling for young women, but also significantly reduce their risk of HIV infection."

Performance-Based Financing in Rwanda: Incentives to Improve Health Care Delivery

Paulin Basinga, Paul J. Gertler, Jennifer R. Sturdy, Christel M.J. Vermeersch

Introduction

The Ministry of Health (MoH), Rwanda, has successfully implemented a Performance-Based Financing (PBF) scheme, which involves the transfer of conditional funds to public health care clinics to supply a package of basic health services to the population. Funds from the PBF can be used for any purpose at the discretion of the facility, including topping up staff salaries. The PBF payment has the potential to increase provider health by as much as 30 per cent if the facility meets all performance targets.

As a priority of the MoH is to improve maternal and child health, the performance indicators consist of the utilization of various types of service including curative care, prenatal care, family planning, institutional delivery, and child preventive services, which includes vaccination and growth monitoring. In addition to the utilization indicators, another set of indicators relate to the clinical content of the care provided during visits. They include the number of children who were fully vaccinated during preventive visits, the number of pregnant women who received tetanus vaccines during prenatal care, the number of at-risk pregnancies that were referred to hospitals for delivery during prenatal care, the number of severely malnourished children who were referred to treatment facilities during preventive visits with a proof of a counter reference at the facility level, and the number of general emergencies that were referred to the appropriate place for care.

The payments for performance are based on the quantity of outputs achieved (through case-based remuneration) conditional on the quality of services rendered. The outputs are measured monthly while the quality is measured quarterly through the use of an elaborate supervisory checklist. Health centers staff can increase their performance, and hence their earnings, by increasing the quantity of outputs, increasing the quality of services delivered or both. Earnings are highest when both quantity and quality increase.

The PBF scheme for general health services is fully transferred to the government's budget, and there is a direct link between service delivery, results, and payment. In order to monitor performance, the government created district level steering committees (Comités de Pilotage) to handle contract management, monitoring and data verification, and certification of meeting the targets that trigger the bonus payments with each health facility (Comités de Gestion). Each Comité de Pilotage is comprised of the local government's health authorities, care-provider representatives and NGO representatives. The Comité de Pilotage system is supplemented with a number of nationally managed auditing systems. The program was scaled up nationally in 2006 for 12 districts; 7 districts served as control and were incorporated into the program in 2008. The present analysis relied on this design.

Context

Motivating health workers and keeping them in the public sector is challenging, especially since many of them work under difficult conditions and in remote areas. Low utilization of available health services by the population within the catchment area of health facilities and the low quality of services provided by these health facilities in Rwanda are two factors that contribute to high maternal and child mortality. One of the key objectives of the PBF program is to improve not only the quantity of services, but also their quality. The quality of services delivered directly contributes to improvements in the health status of the population receiving those services It can be argued that if PBF increases the quality of health services, the utilization of services will increase in the catchment area of contracted facilities. Also, if PBF has contributed to an increase in the use of key maternal and child health services, there is reason to believe that PBF will have an impact on reducing maternal mortality in the long run.

Objective of the Impact Evaluation

This study assessed the impact of the health center-level PBF intervention on maternal and child health services in Rwanda. As a rigorous, prospective impact evaluation, the study provides strong evidence on the net effect of the PBF intervention on quantity of maternal and child health service utilization in poor-country settings.

Using the Health Management Information System (HMIS) data, a dummy time variable was created by aggregating times before the intervention starts (2001- 2006) and after the treatment start (2007-2008). The coefficient of the interaction of the time and treatment provides the impact of the program after controlling for trend over time. Several models were constructed to estimate the impact of PBF on different outcomes of interest.

Results

Maternal health

We find that PBF had a positive and statistically significant impact on the number of deliveries at the facility. For facilities receiving

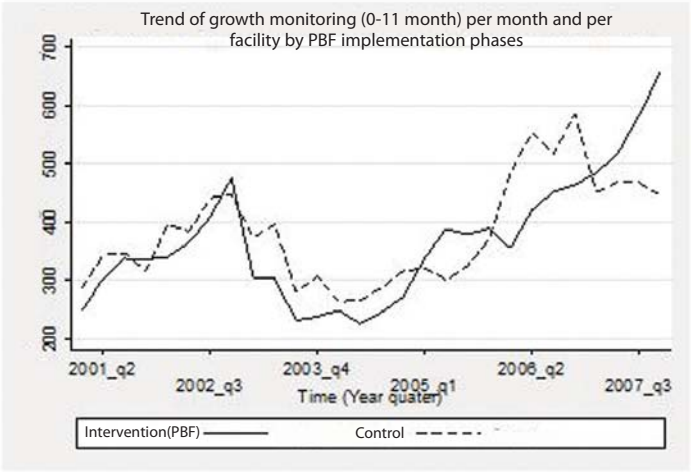
PBF intervention, we see an increased monthly mean of 4 on institutional delivery, which represents an 11 per cent increase from baseline each month. From before 2006 to 2008, facilities in our sample increased the mean of institutional deliveries by 15 regardless of PBF. There was also a modest but significant increase in the number of women referred to the hospital for obstetrical problem. Even though this indicator is paid by PBF at the same rate as delivery, we see that the magnitude of the increase due to PBF is not the same; facilities tend to have women deliver at their facilities and send away those who really need the transfer.

Child health

The average quarterly number of children monitored for growth increase by 14 in PBF facilities compared to the control facilities. While the average quarterly number of children who are lost to follow up for growth monitoring significantly decreased by 15 in PBF facilities compared to the control facilities. The present analysis found that PBF had an important impact on Vitamin A administration for kids aged 0-11 month (age when child visited the facility for vaccination). It appears that in the PBF facilities, the monthly mean of children receiving vitamin A per facility is higher (plus 13) than in the control facilities. We also find a significant but modest decrease in the number of the underweight newborn in favor of facilities receiving PBF intervention. We can explain this by the fact that PBF is paying for key interventions, such as the prevention and treatment of malaria among pregnant women, management of anemia during pregnancy, and treatment of sexually transmitted diseases which can significantly improve fetal outcomes and maternal health. The impact of PBF in those interventions is being evaluated in another paper.

Policy Implications

One of the major constraints to improved services is lack of incentives for the health care providers to carry out their responsibilities. These are fostered through sanctions and rewards. To make such incentive contracts effective, and even feasible, there has to be an easy, transparent reporting mechanism. The present study suggest that PBF has the potential to increase incentives to healthcare providers.



Programs like PBF should be a dynamic tool contributing to strengthen the health system where needed. It's important to get the prices of indicators right and evaluate the list of indicators annually or bi-annually to reflect changes in country-needs over time. Collaboration between health providers and community health workers seems to work informally. It will be interesting to give community health workers a financial incentive to detect pregnant women in the community and convince them to seek their first prenatal care visit during the first trimester and deliver at the health-centers. This has potential, as there is already a well-developed network of community health workers with which facilities have started to work to increase the number of institutional deliveries. ❖

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"One of the major constraints to improved services is lack of incentives. The health care providers must have incentives to carry out their responsibilities."

Improving Healthcare through Preventive Care: Brazil's Family Health program

Romero Rocha and Rodrigo R. Soares

Introduction

The Family Health Program (Programa Saúde da Família, PSF) is an ongoing project by the Ministry of Health, Brazil. Since its origins in the mid 1990s, the program has expanded in terms of the number of municipalities covered, reaching more than 90% by the late 2000s (see Figure 1). The PSF targets provision of basic health care through the use of professional teams consisting of a family doctor, a nurse, an assistant nurse, and six health community agents. Each team is assigned to about a 1,000 families of about 3,000 to 4,500 people in a defined geographic area. The main focus of the program is on improvement of basic health practices, prevention, early detection and coordination of large scale efforts.

The key points in the program are as follows:

- By focusing on preventive care the program reduces the occurrence of simpler health conditions and improves the management of other types of diseases that are endemic to certain areas.

- By interacting with communities on a regular basis health care professionals are able to detect early symptoms that may require a more specific type of care. This ensures arresting of the disease state before it progresses into a stage of complications. However, if required, patients are referred to hospitals or specialists. Thus only those patients in need of specialist care go to the higher level health facilities, thereby reducing the pressure on public hospitals.

- Once the network of PSF professionals is established in a specific area their help can be sought by the government to implement any type of health intervention that demands coordination across large areas or different agents (immunizations, campaigns against endemic conditions etc).

- By placing teams locally, basic health care can be extended to a group of people that in most cases had almost no access to primary health care.

- The exchange of information and experience across different teams and areas can lead to faster implementation of strategies leading to improved practices and health outcomes.

Context of the Intervention

Public hospitals are often overburdened, mainly because in most cases the primary health care aimed at prevention of disease and promotion of health is often inadequate or missing. This results in complicating even the simplest of illnesses that could have been treated at grassroot level, forcing the patient to seek care from a higher referral Center. This scenario also puts pressure on public hospitals, leading to a negative impact on the quality of care provided – overworked doctors, longer delays in getting an appointment, inefficient use of medical expertise, etc. This, in turn, sometimes forces poor patients to divert to private health care providers, thereby increasing their out-of-pocket expenditure. The strategy of the PSF program is to shift provision of basic health care from hospital and health clinics towards cheaper and supposedly more effective day-to-day preventive care. In the case of Brazil, this change represented a radical shift in health care provision from a centralized model structured around public hospitals in main urban areas to a decentralized one, where the first point of contact between population and the public health system is shifted to local communities. This type of intervention has the potential of being extremely relevant for poor developing countries, since community and family based approaches have long been identified as one of the key factors responsible for improvements in health under poor economic conditions.

Objective of the evaluation study

The goal of the study was to evaluate two dimensions of the impacts of the program:

- The direct impact on mortality outcomes.

- The indirect impact on household behavior related to fertility, school attendance of children, and labor supply of adults.

Key findings

The program was significantly associated with reductions in mortality before age 1, between ages 1 and 4, and between ages15 and 59. Its main impact has been on the IMR. The program has been particularly effective in the North and Northeast regions of Brazil, and also in municipalities with a higher fraction of rural population, and lower coverage of public health infrastructure (such as access to treated water and sewerage system). As an example, municipalities that have been in the program for three years experience a reduction in infant mortality of 1.5 per 1,000, when compared to similar municipalities not covered by the program. Taking the 1993 average infant mortality for Brazil (27 per 1,000), this corresponds to a 5.6% reduction in the infant mortality rate. For a municipality eight years

into the program, there is a reduction of 5.4 per 1,000 in infant mortality, corresponding to 20% of the 1993 national average. The reductions in mortality determined by the program are mostly associated with perinatal period conditions, infectious, endocrine, and respiratory diseases. Figure 2 displays the time profile of impact of the program – according to years of exposure – for mortality in the different age groups.

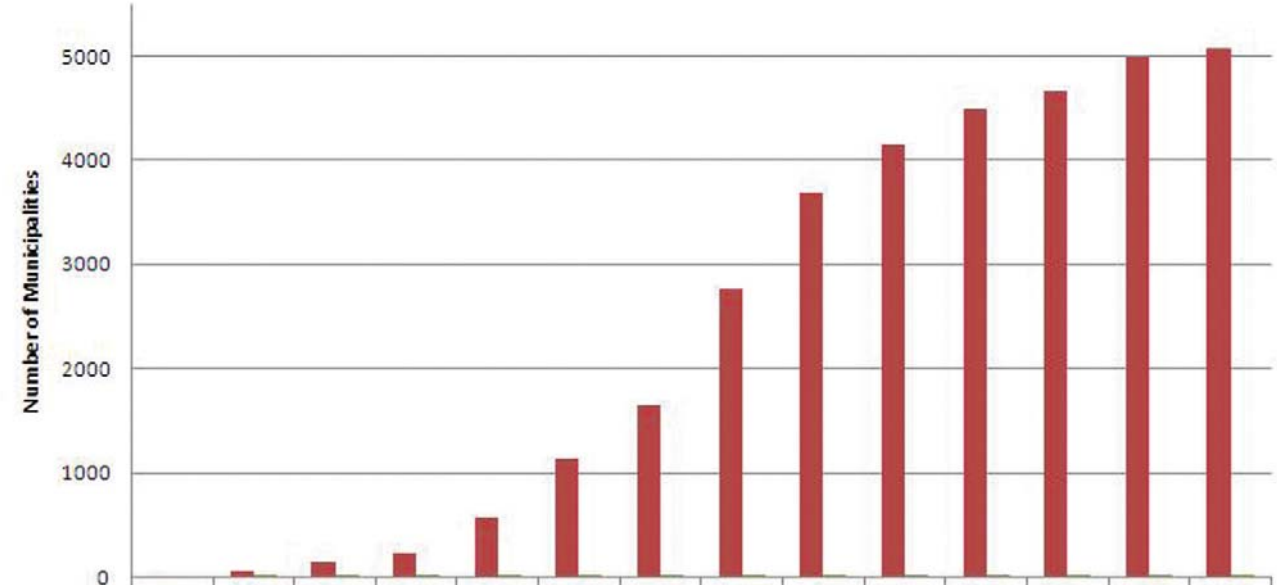
In the North and Northeast regions of the country, the program was significantly associated with reduced fertility, increased labor supply of adults, and increased school enrollment. The analysis of the two poorest regions of the country show that eight years of exposure to the program has been associated with a 6.8 percentage point increase in the Labor supply of adults between 18 and 55, a 4.5 percentage point increase in the school enrollment of children between 10 and 17, and a 4.6 percentage point reduction in the probability that women aged between 18 and 55 years experience a birth over a given 21month interval.

Policy implications

This intervention has the potential to improve access to basic health care to a large proportion of the poor population and at the same time reduce the burden on public hospitals. In principle, the setup and the techniques involved in the program are adaptable to any other developing country. Given the geographic, cultural and ethnic heterogeneity of Brazil, its experience can be seen as a laboratory to illustrate the potential outcomes that may be observed in other settings.

The actual feasibility of the program in terms of costs and logistics depends ultimately on the specific context. Costs are mainly driven by labor costs, so local level of wages and availability of doctors are an important aspect. Regarding logistics, the program does require some degree of institutional development, so that resources and training can be effectively distributed, and the full gains from coordination of efforts and exchange of experiences can be materialized.

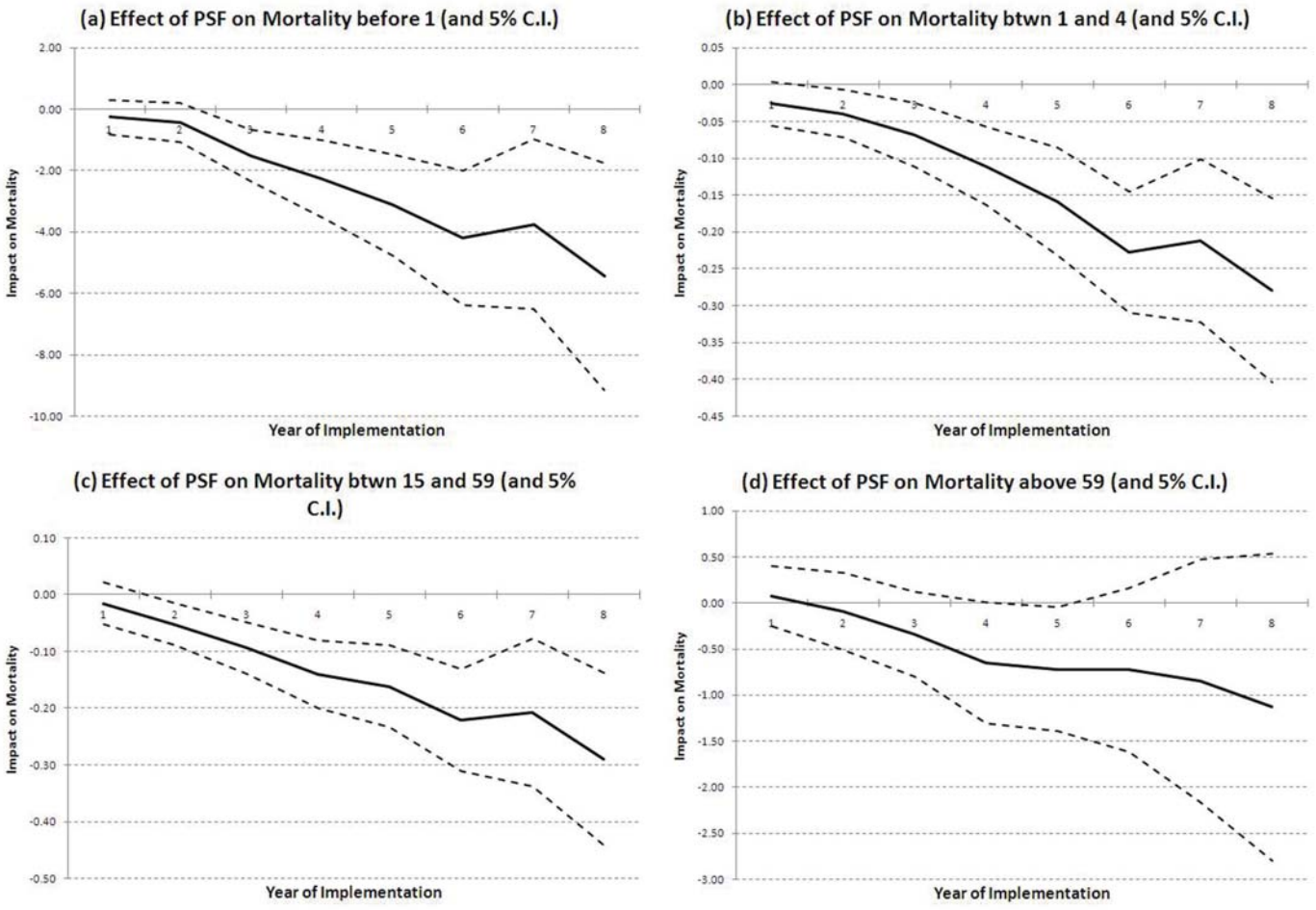
Figure 1: Municipality Coverage of the Family Health Program Brazil, 1993-2006



	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
N. Munic.	0	55	150	228	567	1134	1647	2766	3684	4161	4488	4664	4986	5087
% Munic.	0	0.0111	0.0302	0.0458	0.103	0.2059	0.2991	0.5023	0.669	0.7556	0.815	0.8469	0.9054	0.9237

"The results confirm the importance and effectiveness of family and community based health interventions as tools to improve health in economically disadvantaged areas."

Figure 2: Time Profile of the Impact of the Family Health Program



In the particular case of Brazil, cost-benefit analysis of the Family Health Program seems to be highly positive. Given the costs of implementation calculated elsewhere (the yearly cost of maintaining a team is supposed to be between US$ 110,000 and US$ 175,000), it is possible to perform an illustrative exercise. For example, a municipality with 100,000 inhabitants, subject to the average program coverage observed in the sample (40%), should be expected to spend between US$ 1,253,000 and US$ 1,982,000 yearly to run the program.

Assuming that such municipality had the same age distribution of the Brazilian population in 2000, the cumulative total of lives saved after five years of program implementation would be 57, and the similar number after eight years would be 150. Given the range of estimates available in the literature for the value of a statistical life, this back of the envelope calculation suggests that the Family Health Program is highly effective. If, on top of that, one considers the indirect effect on household behavior and the morbidity effects that are also likely to come into play, the figure would become even more positive.

In short, the results confirm the importance and effectiveness of family and community based health interventions as tools to improve health in economically disadvantaged areas. Nevertheless, replicability of this effort in other contexts requires a certain degree of institutional development to ensure the coordination of actions and monitoring of performance of heath teams. Similarly, labor costs, that constitute the highest fraction of costs of the Family Health Program, depend on specific labor market conditions and on the wage differentials required to convince medical doctors and health professionals to work in the relevant regions.

These aspects should be explicitly taken into account when considering the implementation of this type of interventions in poor areas of other developing countries. ❖

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