

# Controlling Fertility Through Broad Health Interventions: Evidence from Bangladesh

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## Extended Abstract

The past three decades have witnessed remarkable progress in many lower income nations toward reducing fertility rates in order to stabilize population size. However, in some instances this trend appears to be losing momentum, perhaps as we reach what might be the limits to the effectiveness of more narrowly focused population policies that target usage of modern contraception methods. This has led to suggestions that in some societies continued progress toward stable populations will require the pursuit of more comprehensive initiatives that address broadly the human resource circumstances of mothers and their children. The purpose of this paper is to evaluate the impact of an essential health services program in Bangladesh motivated by these considerations.

Researchers and policymakers have generally taken the view that parents in lower-income societies likely wish to have fewer children but are effectively constrained from doing so by a lack of effective, modern family planning options. Traditional, focused family planning policies (i.e. those more narrowly geared toward the promotion of modern family planning method adoption) motivated by this outlook in all likelihood played an important role in lowering the total fertility rate in many lower-income nations in recent decades. In Bangladesh this manifested itself particularly in programs designed to promote contraceptive use through doorstep delivery. However, by the 1990s total fertility appeared to have leveled off at around 3.3 (Cleland et al 1993, Itzkowitz 1998). The apparent limits to the focused doorstep delivery approach also brought its' comparative costliness into higher relief (Simmons, Balk and Faiz 1991, Janowitz and Bratt 1992, Janowitz et al 1996).

As policies such as doorstep delivery of modern contraception in Bangladesh began to reach what appeared to be this point of diminishing returns in terms of total fertility reduction (one that fell short of the level that would deliver population stability) it became increasingly apparent that further progress might require crafting alternatives that explicitly recognize other factors operating to influence fertility such as poor family health. Family, and especially child, health might operate to influence fertility through any number of channels. Children are often viewed to a certain degree as an investment (for instance, a source income security and care as parents grow older), and poor family health might alter fertility decisions by changing the nature of the investment problem confronting parents. Most obviously, higher child mortality likely induces higher fertility to insure a certain expected number of surviving children. More subtly, there is likely a strong feedback from health in early life to health in adulthood, and numerous authors have suggested a link between adult health and productivity (for example, Schultz and Tansel (1997) report significant wage effects associated with adult disability days in Cote d'Ivoire and Ghana). Intuitively, less healthy children might become less healthy adults who are individually less capable of supporting aging parents, requiring higher fertility to achieve a given level of old-age insurance.

In recognition of this more complex set of factors influencing fertility, in 1998 USAID inaugurated the National Integrated Population and Health Program (NIPHP), the rural component of which was initially referred to as the Rural Service Delivery Partnership

(RSDP). Though the program has been subject to an administrative restructuring since its inception (it is presently referred to as the NGO Service Delivery Program (NSDP)) its core design and motivation have remained the same, particularly in terms of actual operations at the consumer level: to provide, through a network of NGOs, wider access to an essential services package of maternal and child health inputs. The essential services package focused on a number of early life and prenatal interventions, including checkups, vaccinations, and curative care for various acute health threats. It also maintains the traditional commitment to providing modern family planning options.

Our paper provides evidence regarding the efficacy of this program over the medium term in terms of its proximate (enhancing demand for mother and child health related services) and ultimate (child morbidity and mortality, fertility) goals. It is important to emphasize that, in terms of policy implications, this is not simply a case study with relevance only to a rather unique program. The NIPHP/NSDP program is one among several currently being pursued that, by design or otherwise, might serve to reduce fertility through the provision of a wider essential services package. For instance, in Bangladesh the BPHC project<sup>1</sup> offers a comparable essential services package to women and young children and so might well serve to influence fertility in fashion similar to that envisioned by the policymakers who conceived the NIPHP/NSDP program.

Formally, we consider whether a community's participation in the project influenced health and family planning and health service utilization by residents. In terms of health, we are particularly concerned with that of infants and small children. We attempt to assess two key causal relationships:

- Whether the program influenced decisions to seek antenatal care, immunize children and use contraceptives.
- Whether that influence varied across demographic subgroups, with particular attention to the poor.

Let  $X$  represent characteristics of a woman or child and  $D$  be an indicator of program participation equaling 1 if a woman's community has access to project facilities and 0 otherwise. If  $Y$  is health or family planning service utilization (such as antenatal care utilization) or health outcomes (such as child morbidity), we are interested in the influence of  $X$  and, particularly,  $D$  on  $Y$ . Table 1 outlines the specific behavioral relationships we consider.

From a behavioral standpoint, our reduced-form models (as well as the program itself) are motivated by the following conceptual framework:

$$\begin{aligned} \text{Fertility} &= f(\text{Child Health, Use of Contraception, } X) \\ \text{Child Health} &= h(\text{Utilization of MCH services, } X) \\ \text{Use of Contraception} &= u(\text{Child Health, } D, X) \\ \text{Utilization of MCH Services} &= g(D, X) \end{aligned}$$

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<sup>1</sup> That project's goal is to deliver maternal health, child health, and family planning services to poor and underserved communities in Bangladesh. The service delivery model of BPHC-supported NGOs in providing ESP is very similar to the NIPHP/NSDP, save for the home-delivery of family planning methods.

where  $D$  and  $X$  are defined as above and MCH stands for ‘mother and child health’. Rather than actually try to recover the various pathways of this model (which would be very difficult to identify in a statistically credible manner) we instead focus on the ‘reduced form’ program effects:

$$\begin{aligned}\text{Fertility} &= f(D, X) \\ \text{Child Health} &= h(D, X) \\ \text{Use of Contraception} &= u(D, X) \\ \text{Utilization of MCH Services} &= g(D, X)\end{aligned}$$

These specifications will provide us with the overall net impact of the program on the outcome in question.

**Table 1.**

Effect	Description
$\frac{\Delta Y}{\Delta D}$	The impact of the program (at some point in time after implementation). It is the effect of enrolling in the program on health, health care and family planning utilization for residents of the randomly drawn community.
$\frac{\Delta^2 Y}{\Delta X \Delta D}$	The degree to which this program impact varied across demographic subgroups.

To evaluate the NIPHP/NSDP program, we rely on a unique and rich micro-level dataset from rural Bangladesh providing extensive information about the health and health care behavior of women and their children, as well as the fertility history and family planning choices of the former. A critical feature of our data set is that it contains randomly drawn samples from communities exposed to the NIPHP/NSDP program as well as from those not exposed to it. The controls are adjacent to project communities and were chosen to maintain as much similarity as possible. Moreover, for both types of community we have observations drawn from the outset of the program (in 1998), before it had become fully operational, and five years thereafter. The samples in 1998 and 2003 are drawn from the same communities.

This dataset allows us to pursue a number of estimation strategies motivated by the basic difference-in-difference (DID) approach to program evaluation. Our dataset also provides background information on factors such as maternal education and family wealth, allowing us to control as well for time-varying variables that might serve to influence fertility, health, family planning or health care demand. This is an important advantage since it mitigates somewhat concern over the most common pitfall of DID-motivated estimation strategies: failure of the parallel trend assumption (the assumption that, in the absence of the program, both intervention and comparison groups would have experienced changes of the same magnitude).

Our results suggest that the program had a mixed influence on investment in child health. It appears not to have impacted immunizations. However, children in project areas were significantly more likely to be given vitamin A supplements, to receive certain diarrhea treatments and to seek care for a respiratory infection. In terms of morbidity, program

participation reduced the likelihood that a child experienced cough or diarrhea. Women in project areas were more likely to use modern contraception, though we discovered an interesting pattern of substitution away from condoms and toward other modern methods. They were also more likely to use antenatal care. Women in project communities were less likely to be pregnant at the time of interview. Finally, using retrospective fertility history information available for the 2003 sample, we found a small but significant reduction in child mortality after 1 year (in other words, by 1999) associated with the program. Similarly, fertility was reduced by the program by a small but significant degree. Preliminary evidence from the evaluation of program effects across wealth levels suggests that these trends generally operated more strongly for the poor, though with some surprising exceptions suggesting that the program's impact interacted in complex ways with socioeconomic status. For instance, the program lowered the probability of being pregnant at the time of interview significantly more than it did the average woman but also appears to have been associated with a slight reduction in demand for some immunizations by the poor.

Our findings thus provide evidence for a modest but statistically significant program effect generally along the lines that its' designers intended. However, the modest magnitudes also suggest that provision of an essential services package designed to alter child and, more broadly, family health will not necessarily serve by itself to achieve further reductions in fertility on the scale necessary to achieve a stable population.

## Sources

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