Draft: Comments Welcomed

Family Planning as an Investment in Female Human Capital: Evaluating the Long Term Consequences in Matlab, Bangladesh*

Shareen Joshi
University of Chicago

T. Paul Schultz
Yale University

September 15, 2005

Abstract
The paper analyzes 141 villages in Matlab, Bangladesh from 1974 to 1996, in which half the villages received from 1977 to 1996 an outreach family planning and maternal-child health program. Village and individual data confirm a decline in fertility of about 15 percent in the program villages compared with the control villages, as others have noted. The consequences of the program on a series of long run family welfare outcomes are then estimated in addition to fertility : women's health, involvement in production other than childcare, household assets, participation in group activities outside of the family, use of preventive health inputs, and finally the inter-generational effects on the health and schooling of the woman's children. Many of these indicators of the women's welfare and that of their children improve significantly in conjunction with the program-induced decline in fertility, suggesting substantial social returns to this reproductive health program in rural South Asia..

***** Funding of this research is acknowledged from the MacArthur Foundation. Paul Schultz has also received support from a Rockefeller Foundation grant for training and research on the economics of the family in low-income countries. Participants in a workshop on Child Health in Developing Countries at University of Bristol on June 13-14, 2005 and the European Society of Population Economists annual meeting in Paris June 16-18, 2005 offered valuable comments on a preliminary version of this paper. <paul.schultz@yale.edu , shareen@uchicago.edu>

1. Introduction

How do population policies contribute to improve the welfare of women, their children and families, and their communities, and possibly foster economic development? Though women in various parts of the world have been provided with improved birth control technologies for the past fifty years, few studies have identified the impact of these policies on the fertility and health of women and on their lifetime productivity, consumption opportunities, savings, and asset accumulation. There is a common belief that women who avoid ill-timed or unwanted births due to a population program will also be likely to invest more in each of their children's human capital, reducing poverty in the next generation. But again, there is little evidence of this quantity-quality trade-off based on sources of variation in fertility which are independent of parent preferences and preconditions, with the exception of a few studies of twins, which do not seem to answer quite the same policy questions (Schultz, 2005).

To evaluate population policies, the program intervention should be designed to distinguish between well defined treatment and control populations, both of which are followed over an extended period of time. After the program starts, the cumulative repercussions for a cohort of women and any inter-generational effects on their children should be assessed. In Matlab Bangladesh, a family planning and maternal and child health (MCHFP) program along these lines was introduced in 1977. Field workers visited all women of childbearing age every two weeks with contraceptive services and supplies. Additional child and maternal health services were added over time. Neighboring villages are also recorded in censuses in 1974, 1978, and 1982, and sampled in a comprehensive socioeconomic survey in 1996. These policy interventions in combination with census and survey data provide an unusual opportunity to evaluate long-term welfare effects of family planning and health outreach efforts at the household level which could be informative as to the likely consequences of comparable family planning and health programs in other very low-income rural areas in the world.

Section 2 describes the Matlab data and the program intervention. Section 3 explores how fertility differed in the treatment and control areas before the program started and thereafter. It also examines other issues that could bias the observed differences in the 1996 survey outcomes between the treated and control villages and thus the effect of the program on the treated. Section 4 reviews a regression analysis of differences between treatment and comparison areas in 1996 for women and their families. Section 5 concludes with an interpretation of the empirical evidence. Because this research project is only in its early stages, we discuss problems and issues which are not yet analyzed to our satisfaction, and which will be investigated in future work by the authors.

2. The Matlab Family Planning and Health Program

Matlab is a field research station of the International Center for Diarrhoeal Disease Research, Bangladesh (ICDDR, B), located about 60 kilometers south-east of Dhaka (See maps in Appendix figures 1 and 2).. The area is a deltaic plain intersected by the tidal rivers Gumti and Meghna and their canals. Being flat and low-lying, the region is subject to frequent flooding, which may have contributed to its persistent poverty, sustained its high mortality, and slowed the introduction of even basic infrastructure. The area is relatively isolated and inaccessible to communication and transportation other than river transport. There are no major towns or cities except for the small Matlab bazaar.

Eighty-five per cent or more of the people in Matlab are Muslims and the others are Hindus. Despite a growing emphasis on education and increasing contact with urban areas, the society remains relatively traditional and religiously conservative (Fauveau, 1994). Infant mortality has fallen from 110 per thousand live births in 1983, to 75 in 1989, to 65 in 1995, while the total fertility rate has declined by half from more than 6 in 1976, to 3.2 by 1995 (Fauveau, 1994; ICDDR,B, 2005).

Matlab has been the site of numerous studies, starting with four cholera vaccine trials between 1963 and 1968. This involved a census of the entire area, assigning a census identification number to each individual. A Demographic Surveillance System (DSS) was established in 1966 to track on a monthly basis births, marriages, deaths, divorces, internal migration in and out of the area as well as movements within the area. In the mid 1970s the focus of the field station shifted from testing of vaccines to broader public health interventions. In October 1977 the ICDDR,B initiated an experimental maternal, child health and family planning (MCHFP) program in Matlab. The study area originally consisted of 149 villages with a total population of about 180,000 in 1977. Seventy of the villages in the study area (blocks A,B,C and D) received new family planning outreach services, while the remainder continued to receive only regular government health and family planning programs, which generally required that women visit her local health clinic.[1] The MCHFP project is noteworthy not only because of the poor rural conditions under which it was implemented, but also for its assignment design and its duration within a population for which vital events are accurately recorded. The project seemingly satisfies the definition of a formal experiment, with a well-defined "treatment" area where services are introduced and a “comparison” area where such services are absent, but geographical, social, economic, demographic, political and historical conditions are much the same.

In the initial stages of the MCHFP program, Community Health Workers (CHWs) made home visits to married women in the treatment villages about every two weeks, consulted them regarding their contraceptive needs, and encouraged them to adopt contraception. Women were offered a choice of pills, condoms, foam tablets, or injectable contraceptives (depo-medroxy-progesterone acetate), and later the copper T intra-uterine device was offered, and women wanting menstrual regulation or a tubectomy were referred to the local district clinic or hospital (Phillips et al.,1982). CHWs were women from generally influential families in the village, who were married, had eight or more years of education and were themselves users of contraception.

---

[1] Some of these villages had been the site of a two-year trial, called the Contraceptive Distribution Project (CDP) which was carried out between 1975 and 1977 in 150 villages of the Matlab are. An additional 84 villages had served as a comparison area at this time. The CDP aimed to distribute oral pills and condoms by Lady Village Workers, who were elderly, illiterate, and non-medically trained village midwives. They were assigned the task of supplying contraceptives. The project did not provide follow-up services to deal with side-effects or discontinuation of contraceptives. Fauveau and Chakraborty (1994: p.90) write that “Although in the first three months, the project was successful, raising levels of contraceptive use from a baseline one percent to 18 percent of married couples, it had virtually no demographic impact (Stinson et al., 1982)”.

Over time, however, additional services were added to the program. In 1982 block A and C villages (half of the treatment total) were offered additional maternal and child health (MCH) services, including the provision of maternal tetanus inoculation of all married women, measles immunizations to all children from the age of nine months to five years, training of traditional birth attendants and the distribution of safe delivery kits, oral rehydration therapy for diarrhoea and antenatal care (DeGraff et al., 1986; Phillips et al., 1988; Fauveau, 1994)). In the other blocks, B and D, the Community Health Workers continued to deliver the same services as in the preceding phase.

From 1986, there was a major thrust in the development of MCH services in all of the treatment region (blocks A-D). As often as possible, new services were implemented in phases in a controlled design. In 1986 all four blocks received the following services: a complete immunization against the 6 EPI diseases, child nutrition rehabilitation and the provision of vitamin A supplements. In 1987, services focused on maternity care (MCP). Professional midwives were posted to 39 of the treatment villages (assigned to blocks C and D), and the midwives with provided a referral network to assist women with delivery complications to transport them to the maternity clinic in Matlab, or if necessary to the district hospital in Chadpur (Fauveau et al., 1991; Maine et al., 1996). In 1988, the control of acute respiratory infection and dysentery, together with maternity care, was also assigned priority. By 1990, all four blocks of the treatment area received similar levels of MCHFP services.

Since 1966, the control villages of the Matlab area have been served by the Government of Bangladesh Health and Family Planning Programme, which has less coverage and required women to visit local health clinics for their contraceptives and maternal health and child health needs.

The Matlab Health and Socioeconomic Survey (MHSS) is a random survey of households in 141 villages in this area collected in 1996. [2] Several features of the data are helpful for examining the effects of the family-planning program. First, because all individuals in the area have permanent identification numbers, matching and merging information over time is relatively easy and presumably accurate, and prior exposure to policy interventions by village of residence is known, and potential long-run consequences of the policies treatments for the women, their families, homesteads (i.e., extended family compounds called Bari), and entire village communities.[3] Second, for each ever-married woman, the survey collected detailed information on maternity histories, contraceptive use, health, children's health and anthropometric outcomes, as well as numerous questions about the socioeconomic status of the woman and her household. Third, the MHSS also administered a community-level retrospective questionnaire about the local health care providers, schools, economic shocks to the area, industrial activity, government policies and natural disasters and weather.

[2] This survey is a collaborative effort of RAND, the Harvard School of Public Health, the University of Pennsylvania, the University of Colorado at Boulder, Brown University, Mitra and Associates and ICDDR,B. It was primarily funded by the national Institue on Aging with additional support from National Institute of Child Health and Development. It is distributed by the Inter-University Consortium for Political and Social Research (ICPSR) at the University of Michigan.

[3] We have found only a few investigations that compare the features of the treatment and comparison areas or populations before the program of 1977. Exceptions are Sinha (2003) and Chaudhuri (2005).

3. The Assignment of the Population to Treatment and Comparison Groups

Assignment of Villages to Treatment Regimes

To establish a causal connection between the family planning and health program and the 1996 observed characteristics of the population in the treatment and control villages researchers appear to assume that the half of the 141 villages in MHSS were randomly assigned to the program treatment. But the treatment and comparison villages were selected so as to be adjacent to each other in contiguous regions, perhaps to reduce spillover effects from the treatment to controls and to facilitate the delivery of the services (Cf. Freeman and Takeshita, 1969). The same problem arises in the assignment of the villages to the MCH and MCP. The treatment and control populations may differ in characteristics that are associated with fertility and well-being before or after the program started in 1977, which could bias intergroup comparisons as a basis for evaluating the effect of the population and health policies. The extensive literature on Matlab and its experimental programs does not appear to have analyzed potential bias due to nonrandom treatment assignment. Some studies compare fertility and a few other characteristics of the populations between the treatment and control areas before and after the program started (e.g., Phillips et al., 1988; Sinha, 2003; Fauveau et al., 1991), but the majority treat the assignment as if it were random.

Our first objective, therefore, is to link the 141 villages sampled in the 1996 MHSS to earlier Censuses to estimate fertility levels of women in the treatment and comparison villages. Those who completed their childbearing years before the program started can be readily compared to the fertility of younger women who could possibly benefit from the family planning program contraceptive subsidy. Figure 1 plots the number of children ever born per woman by five-year age intervals as reported in the 1996 MHSS and confirms that the average number of children ever born among women over the age of 55 in 1996 appears indistinguishable between the treatment and control villages. This is consistent with comparisons of age-specific birth rates in the treatment and control villages reported from 1974 to 1979, which led Phillips et al.(1982) to conclude there was little difference in total or general fertility rates between the treatment and comparison areas until the program had its impact in1978.

Although the number of children ever born to a woman is not reported in the 1974 Census, the age and sex of all residents is known in each village. The ratio of the number of children age 0 to 4 to the number of women of childbearing age 15 to 49 (C04/W) is a measure of period surviving fertility which is commonly consulted when birth registrations are incomplete and total fertility rates cannot be directly estimated (Bogue and Palmore, 1964;United Nations, 1967). The ratio of children age 5 to 9 per woman age 15-49 (C59/W) approximates the surviving fertility for a period five to nine years before the census. It should be noted that about a tenth of the children born in either five year period in Matlab do not survive to be enumerated in the subsequent census.

In the 141 villages sampled in the 1996 MHSS, the 1974 C04/W for the treatment areas are slightly larger than in the comparison areas, although the difference is not statistically significant. Based on 1978 Census, the treatment half of the villages report a lower C04/W, and this difference is statistically significant. The negative treatment effect is absolutely larger in magnitude in 1982 and 1996. These village observations on surviving fertility are likely to be noisier estimates of fertility for smaller villages than for larger villages. A generalized least squares procedure is therefore adopted which weights the village observation by the inverse of the square root of the number of women age 15 to 49 in the village. Using these weights does not change substantially the estimates reported in Table 1, although they tend to be somewhat more precise.

Pooling cross sections of villages from two years, in which the first year is collected before the program in 1974, and the second year after the program (i.e. 1978, 1982, or 1996), permits one to estimate a "difference in difference" effect of the program treatment, summarized by the coefficient on the added effect on fertility of being in a treatment village in the period after the program started. This double difference specification eliminates any time invariant village fixed effect and avoid possible bias if these village fixed effects were related to the village's assignment to the treatment. The coefficient on this "treatment*after" variable in top panel on Table 1 indicates that the C04/W is -.06 in 1978 compared with its value in 1974 (sample mean in 1974 of .82) . Since the program started in October 1977, it could only have affected fertility in the second half of 1978 and thus the estimated program effect in 1978 is no more than a half-year estimate. Indeed, by 1982 the Census data suggest the treatment villages report child-woman ratios -.14 lower than in 1974, and by 1996 the treatment villages report ratios -.13. The lower panel of Table 1 reports the regressions for C59/W for which the treatment and comparison areas do not differ in 1978 or 1982 compared with preprogram data from 1974, but as expected by 1996 the treatment areas show significantly lower surviving fertility, or -.14 from a sample mean in 1974 or .61.

These village level cross sectional time-difference estimates are consistent with the hypothesis that the program treatment was assigned to villages which exhibited very similar fertility levels before the program started. Regardless, it seems advisable to control for the village fertility levels in 1974 with difference in difference calculation as reported in Table 1. We then find the aggregate child woman ratios were slightly larger in treatment villages in 1974 and declined according to this cross sectional measure by about 16 percent (C04/W) by 1996 (i.e. -.13/.82= .16), roughly the same magnitude as observed in figure 1 based on comparing cohort completed fertility or children ever born among women age 45-49 in the 1996 MHSS.

Because the Census of 1974 did not collect good indicators of personal wealth and of different economic potential for growth of the treatment and comparison villages which could be matched to the 1996 MHSS, difference in difference methods can not be implemented to analyze other family welfare outcomes and their change over time. We assess the pre-program differences in the socio-economic status of treatment and control villages by restricting our attention to simple proxies for socioeconomic status: the average years of schooling of individuals over the age of 15 (we exclude religious education, since we do not know the duration of religious education), the proportion of individuals in the village who report they have had no schooling, the proportion of children between the ages of 9 and 15 who report they have had no schooling, the proportion of individuals in a village who live in houses whose roofs and walls were made of tin, and the average proportion of individuals in the village who are Muslims.[4] Measures of schooling and measures of

[4] Another set of questions in the village module of the 1996 MHSS report retrospectively when public facilities and services were first provided in each village, including the year of establishing primary and secondary schools, different health care providers, electrification, the timing and intensity of the last flood and other natural disasters. The community-level data also contain information on distance of the villages from towns, markets, and various providers of services. Village access to these and other forms of public and private services, infrastructure,and vulnerability to natural disasters may possibly account for differences in subsequent economic and demographic change across the groups of villages that might otherwise be mis-attributed to, or deducted from, the

residential housing quality have been have been used by Filmer and Pritchett (1999) to approximate the economic status of households in the Demographic Health Surveys. We examine the difference in religious composition of village populations mainly because Hindus and Muslims differ in sources of income, and in patterns of marriage and child-bearing (Fauveau, 1994).[5] Table 2, panel (a) presents estimates of weighted means and differences in the means of the above-mentioned variables between treatment and control areas.[6] The last column of Table 2 presents the coefficient from the weighted-regression of the variable on the variable "treatment area" and thus provides an estimates of the pre-program (1974 Census) between the two areas. There appears to be no statistically significant difference in the pre-program schooling of individuals older than 15 between the treatment and control areas. In fact, the fraction of individuals over the age of 15 who report they have never been to school is higher in the treatment villages. This is also true for the group 6 to 15. The weighted coefficient indicates that children in this age group who reside in treatment areas are 2.5 percent more likely to report that they have never been to school. The last row of the upper panel of Table 2 confirms that there are more Muslims in the treatment villages. The different proportions of Hindus and Muslims in the two regions has been documented in the past literature on Matlab areas (Fauveau, 1994).

To investigate the changes in these variables over the period that the family planning program was in operation, we use data from the 1996 MHSS to construct the same variables. Since the 1996 MHSS is a full socio-economic survey, we can examine whether our measures of education and housing quality are indeed a proxy for socioeconomic status.[7] The means of treatment and control areas, as well as the difference between them (again weighted by village populations) is presented in Panel (b) of Table 2. Compared to the estimates in panel (a) we now note a significant difference between treatment and control areas. In particular, the average years of schooling in the treatment area is higher by .6 years . Moreover, by 1996 individuals over the age of 15 in treatment areas were 2.6 percent more likely to have ever attended school and children 6 to 15 were 4.3 percent more likely to have attended school. The reversal of the difference in educational attainment between treatment and control areas has reversed between 1974 and 1996 is noteworthy.

A further analysis of the occupation structure and religious composition of treatment and control villages in 1974 and 1996 is needed to increase our confidence that the half of the 141 villages in the MHSS were indeed randomly assigned to the program treatment. If significant differences in the characteristics of the treated and control villages are discovered in 1974 and replicated in the censuses of 1978 and 1982, and these characteristics are associated with fertility and other family welfare outcomes of interest measured in the 1996 survey, a propensity score

estimated effect of a program treatment if these changing characteristics of the villages before and after 1977 were correlated with both their treatment status and subsequent demographic, health, and economic outcomes.

[5] Muslims are more involved in agricultural activities, while Hindus are more likely to be fishermen and skilled and craft occupations.

[6] As before, our weighs are the population of the village.

[7] The correlation coefficient of head's education with the number of rooms in a household is .21, with pucca (bricks or cement) roof and walls is .22, with electricity is .22, with a well to provide drinking water to the vari is .21, and with total household income (excluding the purchase of assets) for the year 1995 is .10, all of which correlations are statistically significant at the 5(???) percent level.

matching methodology may be implemented in the future to obtain alternative estimates of the program's effect on fertility and family long-term welfare outcomes (Heckman, Ichimura and Todd, 1997/1998). We have decided to include in the reduced form estimates of fertility and family outcomes interactions between the program treatment effects and the woman's age cohort, with Muslim, and with a three-way interactions between treatment, four age categories of women, and her years of schooling. Therefore, even if the programs implemented in Matlab were not assigned to a strictly random sample of villages, or the responses to the program were heterogeneous across these religious, schooling and age groups, we may capture these compositional variations in responses as they express themselves between the treatment and control villages.

Treatment Effects on Women's Migration and that of their Children

A second problem with interpreting the differences in outcomes observed in the 1996 MHSS survey between the treatment and control villages as evidence of program effects on the treated is that the program may have also affected the probability of migration from (and into) the registration areas, causing migration to differ between treatment and control villages from 1977 to 1996. This could in turn affect characteristics of the population blocks, and influence fertility and other program evaluation outcomes. [8] Evaluation of the effect of the program on a woman's children could also be biased if the program influenced when children leave their mother's home or affect the information reported on children who are not in residence.[9] The indicators of child health are only observed if the child is residing in their mother's household. To minimize any possible sample selection bias in the analysis of the child's health status, we therefore restrict the sample to children who are age 0 to 14 and consequently likely to still be residing in their mother's household if they survived.

4. Evaluation of the Effects of Family Planning and Reproductive Health Programs

Fertility of Women

---

[8] We plan to consider who has migrated out of the region based on known initial characteristics (limited to Census information), whereas it is expected that there was little net in-migration into this very poor region, except for women who married residents of the region, which may be approximately offset by women who married out of the DSS. For example, we might hypothesize that women, who were helped by the program to control their reproduction after 1978 and thereby have fewer children, were more likely than the average woman to migrate away from the Matlab region, because they would have incurred lower costs of migration with their smaller family sizes. It is possible, on the other hand, that the treated villages became more prosperous and accumulate the capital to provide more employment opportunities for their residents and, therefore, experienced lower net rates of out-migration. Estimates by ICDDR,B of age and sex survival rates will be used to forecast the survival of the 1974 Census population to the 1978 and 1982 Censuses, and then to compare the age and sex compositions of the population enumerated in the MHSS survey in 1996. The surplus in survived initial population compared with the final enumerated population is then a rough estimate of the net out-migration rate by age and sex in the treatment and control villages.

[9] For example, if women in the program treatment area are inclined to increase the schooling of their children, it is likely that their age of marriage would be delayed and thus a larger fraction of their children would be observed at a early school-attending age in the 1996 survey. But once these children's education is complete, their probability of out-migration is likely to increase if they have completed more schooling. The 1996 MHSS collected information on the completed schooling of *all* of a woman's children, including those who did not currently co-reside with their mother. But as we will discover, reporting of educational attainment for older children is more complete for boys than girls, suggesting that selective response bias could be present in the available information on the schooling of older children age 15 to 29, who will therefore be analyzed as a separate sample.

Women less than age 55 in 1996 who resided in the villages provided the program treatment reported fewer children than women residing in the comparison villages, as illustrated in Figure 1. However, many other characteristics of women are likely to differ across birth cohorts, potentially affecting fertility and other family outcomes, introducing omitted variable bias in this estimate of the program's effect on fertility or other outcomes. Estimating a more comprehensive "reduced form" specification of the age-specific effect of the program on fertility and family economic and demographic outcomes is thus the first stage in our analysis. The second stage in our analysis estimates the effect of fertility variation on these family outcomes, where the fertility is assumed to be endogenous to family economic and demographic decision-making, and the effects of fertility are identified by the program treatment and age interactions.

At a minimum, the program's effect on fertility should be expected to vary across birth cohorts of women. For those whose lifetime fertility was nearly complete in 1978, over age 40, the program effect on their fertility should be negligible. The program effect on fertility may increase for younger birth cohorts who were exposed to the program for an increasing share of their reproductive lives. The absolute magnitude of the program effect is likely to then diminish among the youngest women, unless the program alters substantially the timing of early births. In our view, the interrelationship between the woman's age in 1996 and the program's treatment effect on her fertility should be estimated flexibly to fit the data and not imposted by a more structured model. We allow the program treatment effect to vary freely across 11 five-year age groups of women, although semi-parametric methods may later be used to smooth these estimates or to select a more parsimonious parametrization of program effects across mothers of different ages.

What are the key environmental determinants of fertility which should be controlled in such a reduced form comparison? Schooling of women in surveys is often observed to be positively correlated with women's wage rates and with other indicators of their labor productivity. The monthly earnings of married women in the Matlab survey are weakly positively related to their schooling (Cf. Table 6 col.1). This empirical regularity suggests that women with more education will face a higher price for having a child, since the opportunity cost of the mother's time for child care is more valuable. This effect on the price of children may dominate the increased income effect, explaining why better educated women tend to have fewer children, other things being equal (Mincer, 1963; Schultz, 1981, 2002). A second reason better educated women have lower fertility is that they incur lower learning costs in evaluating and adopting new forms of birth control. The educated woman can more readily assess the benefits of new birth control technologies, and can more efficiently adopt these forms of behavior, if they view them as advantageous.

The home visits of the MCHFP field workers reduce the monetary costs (free) and the time costs of obtaining information and supplies to control births. If the demand for birth control were uniform across women, the monetary cost might represent less of a deterrent to the use of birth control by women with more schooling or those in higher income households. But the time costs might deter especially the better educated whose time is more valuable. Social stigma associated with changing traditional behavior related to family planning and the use of birth control could also impact differentially women in different strata of society. Due to the practice of Purdah in Matlab, women may be restricted in their movements outside of their homestead, and the design of the MCHFP program to visit all women in their homes (i.e. outreach) may have had the consequence of reducing the social stigma associated with coordinating with other family members to obtain birth control from the local clinic or from private providers. A woman in a village provided with the

MCHFP treatment is also informed that other women in her village are also being contacted by the field worker, and this knowledge may encourage her to discuss the options of family planning with her neighbors and local relatives and develop more quickly a social consensus in support of the adoption of this relatively new form of behavior which is facilitated by the use of new technological inputs (Cf. Munshi and Myaux, 2002).[10]

It has been hypothesized that a family planning program may thus reduce the information and learning costs of adopting a new form of birth control and thereby provide an economic substitute for the innovational advantages which better educated women already enjoy. These arguments lead to the expectation that both the education of women and their residence in program area would be associated with their reduced fertility. But if the interaction of the education and a program treatment variables is included among the fertility determinants, the interaction variable could exert a positive effect on fertility, if they operate as substitutes. In other words, when the demographic transition is well established in a population, and both more and less educated women want to reduce their fertility below the levels achieved by previous generations, the program treatment will tend to narrow the fertility gap between women of different educational strata. This has been noted in Colombia as of 1964, Taiwan in the late 1960s, and Thailand in the late 1970s (Schultz, 1980, 1984, 1988, 1992). However, if the demand for birth control is concentrated among the better educated women in Matlab, or the demand for birth control is price inelastic among the least educated, the more educated will benefit more from the family planning program subsidies, and the rate of adoption of birth control and decline in fertility in response to the program intervention may be greatest among the most educated (education and program are complements). To test whether access to the program and female education are substitutes or complements the interaction variable is included in the reduced-form specification of the fertility equation.[11]

Table 3 (a) contains a description of the outcome variables that we hypothesize the family planning program could affect over time. We consider measures of fertility, women's health status, women's income, employment, and participation in social groups, household assets, housing quality and sources of water, women's use of preventive health-inputs including prenatal care and various inoculation, and intergenerational human capital outcomes reflecting the health and schooling of the woman's children. These dependent variables are described as follows:

---

[10] Theories of social learning, that recognize that contraceptive behavior is socially regulated provide an additional explanation for the response to program intervention in Matlab (Munchi and Myaux, 2002). Individuals are shown to respond to contraceptive prevalence within their religious group in their village, but not the prevalence within the other religion group or those in other villages, presumably because social interactions which facilitate learning among women rarely occur across these separated groups. Theories of this form of social learning may be tested more widely with the Matlab data, to account for not only contraceptive behavior but also the adoption of preventive health measures (i.e. immunizations) which improve reproductive and child health outcomes, and are documented at both the household and village levels.

[11] In the case where the program complements the fertility reducing effect of women's education, we would expect, other things being equal, for fertility differentials by women's education to increase in successive generations, due to the program. Where program services offset or substitute for women's education, fertility differentials might be expected to diminish across generations due to the program (Schultz, 1984, 1988, 1992). More complex forms of this heterogeneity in response to the program treatment in Matlab may also clarify why the trend downward in fertility was initially pronounced in Bangladesh and then slowed (IPPF, 2005).

Measures of fertility: These include (I) the total number of children ever born (*TotalChildren)*, (ii) the total number of children alive (*TotalAlive)*; (iii) the fraction of a woman's children who died before the age of five (*FracDied5);* (iv) the age (in years) at which they had their first birth (*AgeFirstBirth)*; (v) the second birth interval (*SecondBirthInterval)*, which is the time (in years) between the birth of the first and second child; and (vi) the third birth interval (*ThirdBirthInterval)*, which is the time (in years) between the birth of the second and third child.

Measures of women's health: We consider (I) a subjective measure of current health (*CurrHealthy*), which is a dummy variable that takes value 1 if a woman's self-assessment of her health status as "Healthy" and 0 otherwise; (ii) The woman's weight in kilograms (*Weight); (iii)* The woman's height in centimeters (*Height);* (iv) The woman's body-mass-index in kg/m^2 (*BMI*); (v) a measure that tests whether an index based on responses for five activities of daily living (ADLs) is 0 or not *(ADLIndexEquals0)*.[12]

Measures of women's income, employment and participation in groups: To examine the effect of the family planning program on women's productive employment, we examine (I) a woman's reported income, in taka, for the year 1995, in her primary occupation (*PrimOccIncome),* (ii) the household's income, in taka, for the year 1995, from milk and egg sales (*MilkIncome* and *EggInccome* respectively),[13] (iii) a dummy variable indicating whether a woman owns productive assets (*OwnProdAssets)* and (iv) three dummy variables that indicate whether a woman participates in a group for the purpose of obtaining a loan (*GroupLoan),* employment (*GroupWork)* or savings (*GroupSaving).* Group-membership is mainly considered because of the wide range of group-related employment, credit and savings programs in rural Bangladesh at this time. We believe participation in such groups may be correlated with women's participation in income-generating activities and village enterprise.

Household assets, housing quality and sources of water: To explore the hypothesis that a family planning program may affect the socio-economic status of entire households, we also choose a set of dependent variables that reflects measures of wealth in the Matlab area. These include (I) a dummy variable indicating whether the household owns farmland (*HhdOwnFarmland*) and jewelry (*OwnJewelry*) and a pond or an orchard *(OwnPond).* (ii) A dummy variable that indicates whether the main room of the household has a tin roof as well as a tin wall (*TinRoofWall),* (iii) a dummy variable indicating whether the household obtains drinking water from a tubewell and this well is In the Bari

---

[12] *ADLIndex* is an index that measures a woman's ability to perform 5 activities of daily living: (a) walk for one mile; (b) carry a heavy load (like 10 seer of rice) for 20 meters; (c) draw a pail of water from a tube-well; (d) stand up from a sitting position without help; (e) use a ladder to climb to a storage place that is at least 5 feet in height. The responses to these questions were coded either as can perform the task easily (a value of 1), can do it with difficulty (a value of 2) and unable to perform the task (a value of 3). We combined the responses to the five ADL measures listed to create the following ADL index for person `i', which was developed for the RAND medical outcome study (Stewart et al., 1990): ADLIndex(i)= (Score(i) – Minimum score)/(Maximum score – Minimum Score); *ADLEq0 is a dependent variable that takes a value 1* if the individual can perform all the ADLs without difficulty and thus have an ADL Index equal to 0. For the justification for this normalization see Stewart, et al. 1990.

[13]These were included because raising poultry is mainly a woman's activity, and grazing animals is mainly a child's activity.

(DrWaterWellInBari), and (iv) Whether the household's main sources of water for cleaning and bathing is also in the Bari (*ClWellWater*).

Measures of women's use of preventive health measures: Since the MCHFP program directly provided maternal and child health services we expect to see effects of the program on women's use of preventive health inputs. As a measure of improvements in health, these inputs have the advantage that they measure the use of preventive and not curative health services used *before* health problems arise, and thus avoid the problems of sample selection bias in examining morbidities and treatments of diseases conditional on the individual being sick during a reference period. We consider the following measures of preventive health measures: (I) the fraction of a woman's pregnancies where she received a check-up (*PregCheckUps),* (ii) the mean number of ante-natal checks received in each pregnancy (*NumAnteNatalChecks*), (iii) the fraction of pregnancies where a woman received a tetanus inoculation (*ATSInject*), (iv) for the most recent child born in the past 5 years, did this child receive an inoculation against polio (*PolioVac*), Measles (*MeaslesVac*) and DPT (*DPTVac).*

Measures of children's health: Our measures of child health include z-scores of height, weight and body-mass-index (weight/height^2) for averaged over a woman's children aged 0–9 (*Zheight, Zweight* and *ZBMI* respectively). To calculate these z-scores, we use CDC growth tables and average them over a woman's children.[14,15] Z-scores have an important advantage over using just simple measures of height, weight and BMI: They are less sensitive to changes at the extreme of distributions of these variables, and they facilitate comparisons across measures that exhibit different variability in their units of measurement.[16]

Measures of children's educational attainment: To examine the effect of the family planning program on children's schooling attainment, we consider several measures of children's schooling attainment: (I) Fraction of a woman's boys and girls aged 9-14 who are currently enrolled in school (*CurrEnroll);* (ii) the average education Z-score for boys and girls aged 9-14 (*BoyEdZScore* and *GirlEdZScore),* and (iii) the average education Z-score for boys and girls aged 14-30 (*BoyEdZScore2* and *GirlEdZScore2).* The z-score for the education of the children of a woman is defined as the

---

[14] The Height-for-Age Z-score for example, measures the child's height according to age in relation to the median value of a standard reference population by sex.

[15] These charts, available at www.cdc.gov/growthcharts, are widely used as a clinical and research tool to assess the general health and well-being of children.

[16] The weight-for-height z-score reflects the cumulative effects of growth deficiency and is used to measure long-term malnutrition. It is associated with a number of factors including chronic insufficient food-intake, frequent infection, sustained incorrect feeding practices and low socio-economic family status. Children with low height-for-age are said to be stunted. The Weight-for-Age z-score measures the child's weight according to age in relation to the median value of a standard reference population. This indicator has been used to monitor the growth of children and is typically regarded as measure of short-term rather than long-term health. Children with low weight-for-age are said to be underweight and malnourished. In recent years, BMI-for-Age has become the most commonly used index of child health in empirical analyses of anthropometric outcomes, because it is highly correlated with survival in a very low income population, and relatively uncorrelated with height as a control for stunting. Low BMI-for-age is generally related to inadequate nutrition. Much evidence shows that those with low BMI-for-age have higher morbidity, a lower work capacity, limited social activity levels,and in the case of adults, a lower wage and income (Strauuss and Thomas, 1995).

average across her children of the difference between the child's observed years of schooling completed and the average educational attainment of other children in the MHSS sample of his/her age, divided by the standard deviation of the years of schooling of the group of individuals his/her age.

In addition to the program treatment variables interacted with the individual woman's characteristics, controls are included for the husband's education as a measure of household income, which are not expected to reduce fertility as much as the wife's education (Schultz, 1981). The husband's age is also included in quadratic form as a auxiliary indicator of household income.[17] A dummy is included if the woman is Muslim, although this religion variable captures many features of stratification in the society in addition to religion, which could affect the private incentives for fertility. Because Hindus in Matlab are frequently engaged in fishing and nonagricultural occupations, returns to child labor and larger sized families may be lower in these Hindu occupations than among Muslim farmers.

Previous work suggests that household structure may also play affect family welfare in Matlab. Joshi (2004) reports that there are two main types of female household heads in this region: widows (whom we refer to as Unmarried female heads), and married women (whom we refer to as married female heads), most of whom are the wives of migrants. These women differ not only in their incomes and assets, but also in their circumstances at the time of marriage: When compared to women residing in male-headed households, widows (married women) are poorer (wealthier), have poorer (wealthier) natal homes, are less (more) likely to have paid dowries to their husband's families and more (less) likely to have lost their father and/or mother before their marriage. These differences extend to children who reside in these households. Children belonging to households headed by married female-heads are more likely to have ever attended school, be currently enrolled in school and have completed two years of primary school. Children belonging to households headed by widows however, are more likely to work outside the home and appear to have a weaker schooling attainments compared to children in male-headed households.

Program Effects on Fertility

Table 4 column 1 reports estimates of the fertility (children every born) regression as specified in the previous paragraphs for all married women age 15 or older, with the program treatment variables interacted with the age of the woman, religion and age-schooling, plus other control variables. The program treatment is associated with 1.3 fewer children for women between the ages of 45 to 50, and about 1.0 fewer children between the ages of 30 and 45 and 0.9 fewer children between age 50 and 55. Each year of schooling a woman has completed is associated with a reduction in her fertility of .087 at age 30 to 40, and a reduction per year of schooling of .076 at age 20 and 30, and .15 for women at age 15 to 20, whereas the coefficient on the years of education of her husband is not significantly different from zero. Muslims have 0.21 more children than do Hindus, but this difference is not significant. The treatment effects on fertility interacted with the woman's years of schooling by four age categories are not statistically significant individually and nor is the treatment effects associated with being Muslim. At the bottom of the regression in column 1 is reported the joint F test for the statistical significance of the 11 variables interacted with treatment, and

[17] If the husband's education or birth-date is not reported, dummy variables are included to indicate these continuous variables are set to zero (HusEdMissing, HusAgeMissing =1).

conceptually more relevant joint test of the statistical significance of the program is restricted to the seven interactions for women between ages 15 to 55 who could potentially avoid unwanted births with the help of the program's access to and supplies of contraception. Both treatment Fs are significant at a confidence level of greater than 1 percent. The subsequent Fs for education jointly test the significance of the woman's 8 education variables, and the F for Muslim test the joint significance of the two Muslim variables. The sample size is 5336 married women, and the R squared is .57.

The demographic transition involves both the decline in child mortality and fertility, both of which may be affected by the program intervention, possibly in the same direction. It is important, therefore, to also estimate the determinants of the surviving number of children a woman has in column 2., whereas column 3 estimates the fraction of her children who have died before they reach their fifth birthday. This measure of child mortality is defined for only 5082 mothers who have had at least one child five years before the survey. As expected, the program is significantly associated with lower rates of child mortality among women age 30 to 40 and 45 to 60, and among women over age 65 who could not have directly benefitted from the program's provision of contraceptive or child health services. Column 4 shows that the program is not jointly or individually associated with the age at which the women have their first birth, but the program appears to begins to increase significantly the spacing of her births between second and third birth, as reported in column 6.[18] Apparently the outreach MCHFP program contributed to women adopting contraception not only to avoid unwanted births at the end of their reproductive period, but also to space their births more widely, as had been confirmed in previous studies (Koenig et al., 1992; DeGraaf, 1991).

The MCHFP program's effect on the number of surviving children per woman is absolutely smaller than the effect on children born, declining between -.8 and -.4 across the birth cohorts of women who stand to benefit most from the program treatment between the ages of 25 to 50. The effect of the woman's schooling on her number of surviving children is diminished by -.06 per year of her schooling among women age 40 or more, with the mother's schooling effect on surviving fertility increasing to -.08 among those age 20 to 30, and increasing further to -.15 among those less than age 20. Although husband's schooling is not associated with decreased fertility of his wife, it is associated with decreased child mortality before age five (column 3), and thus with an increase in surviving fertility in column 2. Over the last 25 years the educational attainment of children in Matlab area has increased rapidly, and enrollment rates are today similar between boys and girls (Sinha, 2003). But even with women's schooling increasing from 1.0 years to 3.1 years between mothers age 50 to 55 and those age 25 to 30, this substantial gain in women's schooling is associated with only a small reduction in fertility or surviving fertility, according to these cross sectional

---

[18] The burden on parents of providing a dowry for daughters to marry may increase as the young woman grows older and becomes a less desirable match, even if she is thereby able to thereby obtain more schooling. Observers interpret the early age of marriage for women in Bangladesh as a constraint on women's rights and a barrier to female secondary education (IPPF, 2005; Population Reference Bureau, 2005; Field, 2004). Further investigation is required to understand the determinants of the age at marriage and first birth in order to understand why women continue to marry early, even though completed fertility appears to have declined by half in Matlab. Our analysis finds the MCHFP appears not to have delayed ages at first birth in the treatment compared with the control areas.

estimates in Table 4 . The fertility and surviving fertility effects of the program are several times larger than those directly associated with women's increased education in this 25 year period.

The provision of the program services after 1977 appears to be associated with a substantial reduction in fertility after the program was introduced, but not before. This empirical regularity can be viewed as a specification check. We found no evidence that the provision of the Maternal Care Program after 1987 is associated with any additional declines in fertility as measured by the child woman ratios at the village level, or at the level of individual women's fertility in the 1996 Survey.

Consequences of Family Planning Program Intervention on Women and their Children

Family planning has been subsidized as a social welfare policy and a means to slow population growth and facilitate economic development. This widespread commitment to population programs was reevaluated after some 40 years in the 1994 Cairo International Conference on Population and Development. Our understanding is that this conference concluded family planning was insufficient and improved access to birth control should be only one facet of the package of reproductive health services for women, which would strengthen their reproductive rights, empowerment, lifetime opportunities and welfare. To our knowledge population program evaluation studies have been slow to quantify how helping women control their reproduction and improve their health status would lead to their improved well-being and that of their families.

In the balance of this paper we estimate how women exposed to the Matlab MCHFP program reduced their fertility and also improved their adult health, productivity, individual involvement in economic activities, and collective participation in groups beyond the family. Did the program increase a variety of preventive health measures, and enhance the health and schooling of the woman's children.[19]

Women's Health, Productivity, Status, and Empowerment

The program-related changes in fertility and health of women are expected to improve their lifetime productivity, as would human capital, by allowing women to reallocate their time between childbearing and other activities over their lifetime. Table 5 reports the reduced form regressions for the available woman's health indicators. First it may be noted that the health indicators are related to life cycle aging in the expected manner, declining with age for the subjective health assessment, weight, height, body mass index, and a normalized index of activities of daily living (ADL) which indicates being free of functional disabilities. The subjective health assessment is not regarded as a reliable survey indicator of health, but it tends to be somewhat higher for women age 35 to 40 in the treatment villages and the restricted F is significant at the 10 percent level. The ADL normalized index is also related at the 10 percent level to the treatment interactions from age 15 to 55, even

[19] Comparisons of maternal mortality between the MCP treatment and control villages reveal a significant impact of the program on these relatively rare events. Maternal deaths related to obstetric causes declined in the treatment areas from 4.4 to 1.4 per thousand live births between the three-year period before and three years after the MCP program started in 1987, whereas the decline was insignificant from 3.9 to 3.8 in the control area (Fauveau et al., 1991). But the mechanisms implicated in this reduction in maternal mortality are complicated, and studies suggest they are heavily affected (6/14 of the deaths reduced in the treatment area) are abortion related (Maine et al., 1996). Safer abortion or greater use of early pregnancy termination procedures may have reduced the need for unsafe abortions in treatment areas.

though ADLs are thought to be more discriminating indicators of health among the elderly. The association between the full set of treatment interaction variables and woman's weight is significant at the one percent level, but this is not due to the association between ages 15 and 50 when the program's effect should be more evident. The woman's height is presumably shaped by early childhood nutrition, and thus is unrelated to the program treatment. But the body mass index is significantly related in the relevant age groups, especially between age 30 and 55 when it increases as much as one unit in the treatment villages among women age 40 to 45. There is a tendency for most of the more responsive adult indicators of health to be better for mothers in the treatment villages. Unfortunately, we do not know of estimates which relate causally such improvements in maternal health status to the woman's economic productivity gains.

The reduced forms in Table 6 estimate the program's association with women's economic productivity and activities. The woman's primary occupational income is not generally associated with the program, but there does emerge a tendency for the better educated older women to have significantly higher incomes in treatment villages. Women over age 40 report a primary occupational income which is 952 taka larger for each year of schooling if they reside in a treatment village. Women traditionally specialize in certain forms of agricultural production, but the sale of eggs and milk do not appear to be the source of the increased income that better educated women in treatment villages report. Women's income from selling eggs is somewhat larger in many age groups, but income from selling milk is not significantly affected. Women are more likely to own their own productive assets at most ages in treatment villages, and in this case the joint treatment test is significant at the 6 percent level in the age groups 30 to 50 that should be most affected by the program. Women's participation outside of the family in groups is increased in all three designated activities for receiving a loan, for working as in coordinated handicrafts self employed businesses, and in investing savings. Bangladesh is known for the active role of microcredit institutions, such as the Grameen Bank, which have used joint liability group lending arrangements to provide poor women with credit to expand their self employed activities. Although the income and productivity effects are not clearly defined, the older women in treatment villages do evidence greater income and economic activity outside of their families than do the women residing in the comparison areas, including group credit arrangements.

Table 7 reports the reduced form regressions on household assets, which tend to be strongly differentiated between program treatment and comparison villages. Total household savings is difficult to access from the survey, because all assets of the household are not comparably valued at two points in time. But of the several assets distinguished in the MHSS survey, only jewelry is lower when fertility is lower, either when jewelry is reported in the household questionnaire or as an asset owned by the woman herself. We hypothesize that holding wealth in the form of jewelry is a joint decision with having more children, because the practices of exchanging dowries when children marry are often transacted by means of jewelry. Ownership of farm land and ponds are significantly more likely to occur in the treatment communities. There is evidence that households in the treatment villages report homes are more likely to be built using superior materials – tin for roofing and strengthening walls– although the village regressions reported in Table 3 do not suggest these types of residences are more common in treatment villages in 1996. The strongest evidence of differences between the treatment and comparison villages in the woman's access within the Bari to improved sources of water, from a tube well for drinking and other water sources for cleaning.

Having potable water and water for cleaning purposes within the Bari is not only a sign of greater household income and wealth, but also a means to save the time of women who tend to fetch water. The time of women which is not required for childcare and provision of water can be reallocated to other family productive activities, and probably also improve the health of family members. It is reassuring that in virtually all of these measures of household assets the partial association between the mother's schooling and her husbands schooling and the asset is positive.

Before considering the broader consequences of the program on the children, it is useful to examine how the program modifies the demand for preventive health inputs, which are not likely to be affected by being ill or in a poor health state. The added maternal and child health program initiatives in the treatment areas especially encouraged women to obtain for themselves and their children a variety of preventive health measures which were expected to improve the health of the women and their children. Table 8 reports the reduced form estimates for three indicators of the mothers health inputs and three indicators of child inoculations. The dependent variable in column 1 is the fraction of the woman's pregnancies during which she obtained prenatal care from a health professional, column 2 reports the number of visits she received on average in each of her births, and column 3 is the fraction of pregnancies she received a inoculation against tetanus, and the final three columns report whether the last child the woman had in the last five years received three vaccinations for polio, measles, and DPT. All six forms of preventive health care are significantly related to the village provision of the MCHFP program, with large positive impacts among women age less than 25 to 45. In the case of prenatal care for the woman and her tetanus shot, the program treatment is associated with nearly a doubling of the frequency of use as reported for the full sample (Cf. Table 3). In the case of the inoculations of the children, about two thirds of the recent births received the shorts and 20 to 30 percent more report having the vaccination in the treatment areas.

Investment in Children's Human Capital : Nutrition, Health, Schooling and Migration

It has been widely hypothesized by social scientists that parents who have fewer children commit more of their time and resources to each of their children (e.g. Becker, 1960, 1981; Becker and Lewis 1974; Zajonc, 1976; Blake, 1989). This inverse pattern between what is called the "quantity of children" and the "quality of children" might suggest that a population policy that helps parents avoid unwanted births would also contribute to the parents allocating more resources to the nutrition, health, schooling, and migration of their children. But these potential inter-generational consequences of family planning and reproductive health programs have not generally been empirically estimated in a manner that avoids omitted variable bias. In other words, parent preferences and unobserved constraints on their household that could affect both fertility and many of these other family-coordinated choices and outcomes analyzed here could be responsible for the inverse relationship between quantity and quality of children, and the relationship would not represent a causal connection through which population policy would necessarily operate. One reason society might decide to subsidize the diffusion and use of birth control is the belief that better timing of births and fewer births will allow women to invest more in themselves and in each of their children, and thereby increase the likelihood that the woman and her children will escape poverty and achieve more in their lifetimes. The MCHFP program in Matlab appears to have induced a decline in fertility which is reasonably assumed to be independent of parent preferences and unobserved constraints on families, allowing us to estimate the cross effects of the program-induced decline in fertility on the welfare of children, as measured by their schooling, nutrition and health. There will clearly be multiple avenues by which the MCHFP program could have affected children, but the effect through fertility might be a substantial share of the program's initial impact.

The samples of children are separately considered for boys and girls, because there has historically been greater schooling among males than females, and health and nutrition differentials between the boys and girls might also exist and respond to different household conditions and program benefits. Rather than structure the analysis by child, we have decided to retain the woman as our observational unit in the regressions which follow, and we average the child human capital indicator across a woman's children, and then weight her observation by the number of children observed for a woman. The weighting scheme recognizes that the child human capital observation should be less variable and thus less subject to stochastic and measurement errors for women with more children.[20] Although our measurement of child nutrition and health and schooling by means of z scores, which should account for age and sex variation in levels and dispersion, there may still be some systematic variations in outcomes by the child's age. Consequently we include the child's age in years as an additional control variable in the child regressions and interact that age with the program treatment dummy, expecting for there to be a secularly growing effect of the program on schooling as a child's parents are exposed to the program for a longer period of time and thus able to reallocate family resources from more children to more investments in this specific child. If the woman has more than one child in the sample, this child age variable is averaged for her children.

Columns 1 and 3 of Table 9 contain the reduced form regressions of the average enrollment rate among boys and girls age 9 to 14, respectively. Though the full set of treatment variables are jointly significant, the significance of the coefficients for *TrXAge30to35* and *TrXAge35to40* indicate that the program has a positive and significant effect on the schooling enrollments of sons of women in the 30 to 40 age-group, the program effects on girl's enrollment are not statistically significant. Results for the average z-scores of boys and girls' years of completed schooling are presented in columns 2 and 4. These are significant for boys and girls, although the restricted test for girls of only the women age 15 to 55 interactions are not significant by conventional standards (p<.16) . The estimated magnitudes of the treatment effects by age of the mother are stronger for boys than for girls, though they both take their maximum value (1.34 for boys and 0.47 for girls) for mothers who are aged 45 to 50. This is noteworthy given that these women were on average aged 25 to 30 at the time of the implementation of the MCHFP program, and thus received maximum exposure to the program. The R squared for schooling z-scores also indicates a stronger relationship of all the covariates than for enrollment rates. The R-squared for schooling z-scores is .26 for boys and 0.30 for girls. For enrollment rates, the corresponding R-squared values are 0.09 and 0.13 for boys and girls

[20] Estimates are also obtained without weighting the women differentially and by using the child as the unit of analysis as did Sinha (2003). In the case of relying on the child observations, it is then necessary to weight the observations down for women with more children in the sample in order to not overweight the outcomes for the high fertility women, which is a key form of behavior in our study. As one might expect with only about a quarter of the women with more than one child of one sex in a health or schooling sample, the alternative sampling and weighting methods yield similar estimates. Weighting to refocus the analysis of the program on women and their families, tends to move the estimates back toward the women observation based estimates as reported here.

respectively. Older children have somewhat more schooling in the comparison areas, but the treatment interaction is negative as expected and statistically significant at the 5 percent level. There are also significant effects of the mother's education on the educational Z score for girls of mothers or all ages, and for boys of mothers age 30 and older, but oddly not on the enrollment rate for boys or girls. The schooling of the father is associated with enrollment and years completed for boys and girls. In our judgement, the lack of treatment effect on the survey reported level of enrollment (sample mean is 92 percent in Table 3) may account for Sinha's (2003) finding no program effect on children's enrollment.

Among older children age 14 to 29 the Z scores for completed schooling are significantly associated with treatment for both boys and girls. The set of all treatment variables are jointly significant at the 5% level, and the limited set of treatment variables is jointly significant at the 1% level. The effects of the program are again to increase schooling by about a half of a standard deviation among women less than age 50. However, it should be observed that parents report educational attainments among their older children more frequently for boys than for girls, i.e. samples of responses are 2216 vs.1700 . This may introduce some sample selection bias into these educational estimates for older children. Therefore, we report separately the children samples of different ages, where schooling attainment for children age 9 to 14 is viewed as more reliable, although it is broadly consistent with the estimates obtained from reports on older children of whom most of the girls will have left their parental households. In both age groups Muslims report more years of schooling than do the Hindus for their children in the comparison areas, but in the treatment areas this educational disadvantage of Hindu girls and boys is largely eliminated, controlling for the various reduced form variables and in particular the schooling of both parents.[21]

Another result from Table 9 is that sons and daughters of unmarried female household-heads (in most cases, widows) have worse schooling outcomes compared to children living with both parents. This is true for both the 9–14 and 14–30 age groups, though the coefficients are significant only for sons between the ages of 9–14 and daughters between the ages of 14–30. Sons and daughters of married women who head their own households (in most cases, the wives of migrants), however, have schooling outcomes which are better than children living with both their parents. Both these findings are consistent with previous work (Joshi, 2004) which reports that these women differ from wives of male household-heads not only in their current socio-economic circumstances, but also in their circumstances prior to marriage. Widows have poorer (wealthier) natal homes, are less (more) likely to have paid dowries, and are more (less) likely to have lost a parent before marriage. These socioeconomic differences extend to children who reside in these households. Children belonging to households headed by married female-heads are less likely to work outside the home and have stronger educational attainment: they are more likely to have ever attended school, be currently enrolled in school and have completed two years of primary school. Children belonging to

[21] Foster and Roy (1997) found evidence of the MCHFP effect increasing the schooling of some earlier born children, whereas Sinha (2003) analyzing enrollment rates in the MHSS found no significant program effect, although she considered a different sample, and her instrumental variable estimate for fertility did not allow for heterogeneous program effects by five year birth cohort of women, religion, or women's schooling within age groups.

households headed by widows, however, are more likely to work outside the home and appear to have attained less schooling compared to children in male-headed households.

Table 10 reports the reduced form estimates for the program treatment effects on the nutrition and health status of girls and boys under age 10 in which the samples are relatively small for the analysis of child physical stature and health (Strauss and Thomas, 1995). The weight, height, and body mass index (i.e. weight in Kg./ height in meters squared) are expressed as deviations from the medians for the same age and sex group in a reference population (CDC) and divided by the standard deviation of these deviations for the reference age and sex group. The z score for weight as an indicator of wasting is significantly associated at the 14 percent level with the treatment interaction variables for girls, but not for boys. The boy's height z scores are significantly associated with the full set of treatment variables for boys, but not for girl's height. The body mass index z scores are significantly associated with the treatment villages for the full set of interactions at the 5 percent level for boys and 10 percent confidence level for girls. Even though child mortality and preventive care are strongly linked to the program villages, the program effects are relatively weak when measured int terms of physical growth and stature. Mother's schooling is associated with the height of their boys and girls, and also more weakly with the weight of their girls and boys, but not evident in the BMI variable. In contrast with the children's schooling, the father's schooling has no clear effect on the children's anthropometric indicator of the child's physical growth and nutrition.

Heterogeneity in Individual Response to the Program and Program Design

The design of reproductive health programs might be improved if we understood more about the driving forces behind the demographic transition and how different groups responds to a program of family planning, child health preventive care, and maternal and reproductive health services, such as provided under the MCHFP. Competing conceptual frameworks advanced by demographers, economists and others for the fertility transition have not been subjected to widely accepted validating tests. Equally puzzling are the occasions when the decline in fertility after the onset of the transition peters out or even reverses its course for a time, as may be occurring now in Bangladesh. This pause is unexpected by demographers who view fertility as determined by a gradual diffusion of cultural ideas establishing new normative modes in acceptable reproductive behavior (National Academy of Sciences, 2000). Some economists think that a cause for the decline in fertility is the increasing educational attainment of women, which tends to raise the opportunity cost to couples of having additional children (Schultz, 1981). Reducing the gender gap in education is associated in most countries with more equal employment opportunities outside of the family for women relative to men. Although these trends are rarely reversed as a country develops, some economic models for fertility assume couples make choices among competing uses of their resources, and as the number of desired births declines, the biological space for the timing of births increases. Thus, fertility rates in the short run can become more volatile as the demographic transition progresses, if economic and social conditions deviate from what people expect. Nonetheless, the estimated effects of women's schooling as reported in Table 4 would seem likely to account for only a fourth of a child reduction in fertility (i.e. 2 years more of women's schooling has been achieved in the last 25 years), whereas the actual decline in the country as a whole has been about three children, from more than six to nearly three children (IPPF, 2005).

In evaluating the program's effect on fertility, the initial working assumption is that this effect is constant across groups in the population (Schultz, 1984). In this investigation we recognized in the specification of the reduced form equation that the program treatment effect will vary because the program would impact women at different periods in their reproductive lives. In addition the program is allowed to impact the family differently for women of different education levels, where education may have been an endowment of women which was had increasing specialization effects on her family roles in more recent birth cohorts. Since fertility may differ between the dominant majority religious and ethnic group in Bangladesh, Muslims, and the small minority, the Hindus, we allow the program treatment to differ for these two groups (Munshi and Myaux, 2002). We found some evidence that Muslims tend to have somewhat larger surviving family sizes, but this is as much due to increased fertility as to decreased mortality among the Muslims than the Hindus. The heterogeneity in program response that we could identify with regard to women's education and religion was of limited general importance in so far as demographic targeting of the program (Schultz, 1992).

Because the analyzed preventive health inputs are used somewhat more often by better educated women, it is interesting to note that the program's effect is more beneficial for less educated women, and thus the program reduces the gap in preventive care between women with more and less education, but does not significantly reduce the fraction of child deaths more among the less educated (Table 4 column 3). The advantage enjoyed by Muslims in the comparison villages in terms of child survival, is offset in the treatment villages, presumably by the program outreach activities. Muslim women are less likely to receive a polio vaccination for their children in the comparison areas, but the program treatment eliminates this gap between these ethnic groups (Table 8 column 4).

Instrumental Variable Estimates of Program Welfare Effect Operating through Fertility

The reduced- form estimation methods employed in the previous sections make no assumptions about the actual mechanisms through which the treatment program affects the welfare of women and their children. There are several possible pathways through which the MCHFP program could have led to the improvements in well being that are documented in the previous section: avoiding ill timed and unwanted births, improving maternal health, and improving child health status. We explore one particular pathway of influence by making the restrictive assumption that the MCHFP program's effect on family well being in the treatment areas operates only through the reduction of women's number of children ever born alive. This is an unrealistic assumption because it neglects the other elements of the program which were given increasing emphasis in the later years of the program, say after 1986. We have been unable to identify as a separate channel of influence the maternal and child health programs begun in different communities in the later years of the program, while controlling for the overall family planning treatment exposure begun in 1977.

In Table 11 the full set of 11 variables interacted with residence in a program treatment village that are included in Table 4 column 1 are assumed to affect the long term family outcome variables only through their impact on fertility. Otherwise, the control variables in the second stage IV regressions remain the same as in the reduced form regressions. Column 2 of Table 11 presents the estimated coefficients on endogenous fertility from the IV regressions, identified as noted by the exclusion of the treatment interactions from the equations determining the family outcome variables. For the purpose of comparison, estimates of the OLS coefficient on fertility are presented in column

3, which depend on the assumption that fertility is exogenous to the various family outcomes. In most cases the IV and OLS coefficients differ significantly, and the Wu-Hausman specification test generally supports the hypothesis that fertility is endogenous, and consequently the OLS estimates are biased and IV estimates are preferred. The full F tests reported in tables 4 to 10 indicate that in most family outcomes, the exclusion restriction has significant power to define the IV estimates. In three out of 22 cases the Sargan over-identification test rejects that the heterogeneity of the response to the treatment captured by the treatment interaction variables do not map into the same IV estimates of fertility's effect, specifically with regard to household jewelry and housing with tin roof and walls, which are rejected at the 1 percent level, and the woman's participation in a savings group, which are rejected at the 5 percent level.

The instrumental variable estimates imply that if the program affected child mortality only through its reduction of a woman's fertility, one fewer birth caused by the program treatment is associated with a 0.035 reduction in the proportion of children who died before the age of five. This is a relatively large decline of one quarter from the sample mean (Table 3). The IV estimates indicate that one less child is associated with an increase in a woman's weight (by 1.4 kg) and BMI (by 0.76 kg/m^2), both of which are typically associated with an improvement in her health status. Women's primary occupational income is 1223 taka larger per year, if she is expected to have reduced her fertility by one birth due to the program, which represents a doubling of this source of income in the sample. However, some secondary sources of income, such as from such traditional activities of women as selling milk, evidenced a decline of 151 taka according to the IV estimates. She is 3.3 percent more likely to own productive assets, and about 8 percent more likely to be a member of a credit or savings group in the community. Household assets are generally greater, with a 11 percent improvement in the probability that her household owns farmland, a 9 percent increase in the probability that her household owns a pond or orchard, a 11 percent increase in the probability that the household draws drinking water from a well that is located within the bari, and 12 percent more likely to derive its water for cleaning utensils and bathing from a source located within the bari.

The intergenerational effects of the program operating through a fertility decline are statistically significant for the z scores for children age 9 to 14, but not significant among older children at age 14 to 30. The effect of a program induced reduction of one child is associated with boys receiving .24 standard deviations more years of schooling, and for girls age 9 to 14 receiving .17 standard deviation more schooling. Only in the case of girls age 0 to 9 is the instrumental variable effect of fertility significantly associated with the child nutrition and health indicators, in which case the girl's z score of weight for age is increased by .13 standard deviations when the mother has one fewer births due to the program treatment.

Since the impact of the program in the first decade from 1977 to 1986 is likely to have been predominantly due to its provision of birth control services and supplies as part of the initial program design, future analysis plans to estimate the IV effects of fertility on family outcomes among women of different ages. We anticipate that the IV estimates of the impact of program induced declines in fertility among older women, who are age 40 to 55, will be primarily due to the program's effect on their fertility, whereas the program effect on the fertility of younger women is more likely to be due to the combined impacts of family planning services *and* maternal and child health initiatives introduced into the program in the later years (Fauveau, 1994). Alternatively, the program treatment may be disaggregated into distinct components , and it will prove possible to estimate how the various components of the program impacts on fertility, on women's health (e.g. BMI), and on the health of her children(e.g. survival), and perhaps evaluate how these three program outcomes operate individually and as a group on the key family welfare outcomes.

Unresolved Issues for Further Investigation

In future work we propose to analyze in more detail the effects of migration on the estimates of the program on the treated. First, women may migrate over their reproductive lives and may not have lived since marriage in the village they are observed to reside in at the time of the 1996 survey. Married women may have their origin villages in the demographic surveillance areas (SSA) and they may be distinguished as either having been exposed to the MCHFP program before they were married or not. If they moved into the SSA this should also be inferred from the migration module in the MHSS, and can be included in the program analysis of their years of exposure to the program treatment after some threshold age of menarche, or age 15.

The second effect of migration is to modify the unobserved characteristics of the resident populations sampled in the 1996 MHSS. The program could affect the probability of migration and thereby cause differential patterns of migration in the treatment and control areas. We will attempt to estimate the rates of in- and out-migration of populations of the treatment and comparison villages. In particular we will need to take account of the differential fertility and family outcomes for those migrating, and how their movement affects the program treatment effects estimated here.

The third effect of migration is the effect of the program on the migration of children, which may be as important as health and education as a form of lifetime human capital investment made by the youth of Matlab. It will be important to assess how the program has influenced out-migration of youth, and possibly affected who migrates into the Matlab district as well.

5. Conclusions

This paper examines how Matlab district of Bangladesh has evolved 19 years after an intensive family planning program was launched in 1977 to visit every two weeks women of childbearing age in one half of the district's villages, while recording births, deaths, and migration for the entire area**.** No evidence was found of fertility differences between the treatment and comparison areas in 1974 before the program started, but fertility by 1978 was falling more rapidly in the treatment than in the comparison areas, and has remained lower since that date. Other indicators of economic development potential and individual endowments, such as education, which could possibly influence fertility and family welfare were also not found to be strongly related to the assignment of villages between the program and the comparisons areas.

The program associated fertility declines in the 70 treatment villages are shown to be linked to women's health, their economic activities outside of the household, and their household assets and water facilities. The survey in 1996 found women who benefitted from the program in their village report greater weight and BMI , and fewer limitations on their physical capacity to engage in activities of daily living. The households of women in the treatment villages are more likely to own land and ponds and the women to have their own productive assets and savings. The women in treatment villages engage in more group activities**,** including those which support their own occupational specialization, such as groups for getting a loan, coordinating handicraft production, and saving money. Perhaps because of the difficult of measuring the full range of women's work we were less successful in isolating the productive contributions of women which may have followed from the decline in fertility and improvements in household health and assets. The primary occupational incomes of better educated older women's increase in treatment areas, but how the productivity may have changed for women without such monetized incomes cannot be assessed in the survey. It is our hypothesis that the family planning and health program has improved women's productive capacities, and a next step may be to analyze expenditures and home produced consumption as a more comprehensive measure of household income to which women may be expected to contribute more as their fertility declines and their health improves.

Finally, the inter-generational consequences of the family planning outreach program in Matlab are consistent with the quantity-quality hypothesis, which anticipates that parent will invest more in the human capital of each of their children when they are able to avoid unwanted births. Women who fortuitously reside in a village where contraceptives are delivered by MCHFP to their home without private cost, in a convenient and socially acceptable form, we observe fertility is reduced by about one child, and today the total fertility rate in the comparison set of villages is on the order of 3.5 children per woman. The years of schooling completed by boys age 9 to 14 increases significantly in the treatment areas , whereas the effects for girls schooling are not statistically significant, their magnitude is about half as large in terms of z scores. Among older children age 14 to 30, the male schooling effects of the program continue to be statistically significant although somewhat smaller in terms of their impact on z scores than at the younger ages, whereas those for older females are now significant two thirds the size as those for males.

Reeferences

Becker, G.S., 1960, "An Economic Analysis of Fertility", in Demographic and Economic change in Developed Countries, Princeton NJ: Princeton University Press and NBER

Becker, G. S., 1981, A Treatise on The Family, Cambridge: Harvard University Press.

Becker, G. S. and H. G. Lewis, 1974, "Interaction between Quantity and Quality of Children", in T. W. Schultz (ed.) The Economics of the Family, Chicago: University of Chicago Press.
Blake, Judith, 1989, Family Size and Achievement, Berkeley and Los Angeles: University of California Press.
Chaudhuri, Anoshua, 2005, "Intra-Household Spillover Effects of a Maternal and Child Health Program," processed San Francisco State University, California.
DeGraff, D. S., 1991, "Increasing Contraceptive Use in Bangladesh: the Role of Demand and Supply Factors", Demography, 28(1):65-81.
Fauveau, Vincent (ed.), 1994, Women, Children and Health, ICDDR ,B Special Publication No. 35, International Centre for Diarrhoeal Disease Research, Bangladesh, Dhaka.
Fauveau, V., Steart, K., Khan S.A., Chakraborty, J., 1991, "Effect on Mortality of Community Based Maternity Care Programs Rural Bangladesh," Lancet, 338:1183-86.
Field, Erica, 2004, "Consequences of Early Marriage for women in Bangladesh", draft, October, <efield@latte.harvard.edu>.
Filmer, Deon, and L. Pritchett, 1999, "The Effect of Household Wealth on Educational Attainment: Evidence from 35 Countries," Population and Development Review, 25(1):85-120.
Fogel, R. W., 2004, The Escape from Hunger and Premature Death, 1700-2100, Cambridge University Press, Cambridge UK.
Foster, A..D. and N. Roy, 1997, "The Dynamics of education and fertility: evidence from a family planning experiment", processed, Brown University, Providence RI.
Freedman, R. and J. Y. Takeshita, 1969, Family Planning in Taiwan: An Experiment in Social Change, Princeton NJ: Princeton University Press.
Frankenberg, E., W. Suriatini, and D. Thomas, 2005, "Can Expanding Access to Basic Health Care Improve Children's Health Status? Lessons from Indonesia's 'Midwife in the Village Program'", Population Studies, 59(1):5-19.
Frankenberg, E. and D. Thomas, 2001, "Women's Health and Pregnancy Outcomes: Do Services Make a Difference", Demography, 38(2):253-265.
Heckman, J. J., Hidehiko Ichimura, and Petra Todd, 1997/1998, "Matching as an Econometric Evaluation Estimator: Evidence from Evaluating a Job Training Program," Review of Economic Studies, 64(4)605-654; 65(2):261-294.
IPPF, Bangladesh Country Profile, 2005, International Planned Parenthood Federation, www.ippf.org
Joshi, Shareen, 2005, "Raising Children in Rural Bangladesh: The Role of Mothers, Fathers and Other Family Members," unpublished Ph.D. dissertation, Yale University, New Haven, CT.
Koenig, M.A., U. Rob, M.A. Kahn, J. Chakraborty, and V. Fauveau, 1992, "Contraceptive use in Matlab. Bangladesh in 1990: levels, trends and explanations", Studies in Family Planning, 23(6): 352-364.
Maine, Deborah, M.Z. Akalin, J. Chakraborty, Andres de Francisco, and M. Strong, 1996, "Why Did Maternal Mortality Decline in Matlab?" Studies in Family Planning, 27(4):179-187.
Mincer, J., 1963,"Market Prices, Opportunity Costs and Income Effects" in Measurement in Economics, (eds.) C. Christ, et al. Stanford CA: Stanford University Press.
Munshi, K. and J. Myaux, 2002, "Development as a Process of Social Change: An application to the fertility transition", processed, Brown University (forthcoming) Journal of Development Economics.
National Research Council, 2000, Beyond Six Billion, Washington D.C.: National Academy Press.

Phillips, J. F., W. Stinson, S. Bhatia, M. Rahman, and J. Chakraborty, 1982, "The Demographic impact of Family Planning - Health Services Project in Matlab, Bangladesh, Studies in Family Planning, 13(5): 131-140.

Phillips, J. F., R. Simmons, M. A. Koenig, and J. Chakraborty, 1988, "Determinants of Reproductive Change in a Traditional Society: Evidence from Matlab, Bangladesh", Studies in Family Planning, 19(6): 313-334.

Population Reference Bureau, 1999, "Bangladesh and Family Planning: An Overview," www.prb.org.

Rosenzweig, M. R. and T. P. Schultz, 1983, "Estimating a Household Production Function: Heterogeneity, the Demand for Health Inputs, and their Effects on Birth Weight", Journal of Political Economy, 91:5, 723-746.

Rahman, O., J. Menken, A. Foster and P. Gertler, 1999, Matlab [Bangladesh] Health and Socioeconomic Survey (MHSS), 1996, Inter-university Consortium for Political and Social Research, Ann Arbor, Michigan.(ICPSR 2705).

Schultz, T. P., 1980, "An Interpretation of the Decline in Fertility in a Rapidly Developing Country", (ed.) R. A. Easterlin, Population and Economic Change in Developing Countries, Chicago: University of Chicago Press.

Schultz, T. P., 1981, Economics of Population, Reading, MA: Addison-Wesley Publishers.

Schultz, T. P., 1982, "Notes on the Estimation of Migration Functions", in Migration and the Labor Market in Developing Countries, (ed.) R. H. Sabot, Boulder, CO: Westview Press.

Schultz, T. P., 1984, "Studying the Impact of Household Economic and Community Variables on Child Mortality," Population and Development Review, IO Supplement: 215-235.

Schultz, T. P., 1988, Population Programs: Measuring Their Impact on Fertility and the Personal Distribution of Their Effects," Journal of Policy Modeling, 10(1):113-139.

Schultz, T. P., 1992, "Assessing Family Planning Cost-Effectiveness" in Family Planning Programmes and Fertility, J. F. Phillips and J. A. Press, New York: Oxford University Press, 78-105.

Schultz, T. P., 2002, "Fertility Transition: Economic Explanations", International Encyclopedia of the Social and Behavioral Sciences, (eds.) N. J. Smelser and P. B. Baltes, Pergamon, Oxford, pp 5578-5584.

Schultz, T. P., 2005, "Effects of Fertility Decline on Family Well-Being: Evaluation of Population Programs, "draft for MacArthur Foundation Consultation meeting, Philadelphia, PA. April 2, 2005.

Sinha, Nistha, 2003, "Fertility, Child Work, and Schooling Consequences of Family Planning Programs", Economic Growth Center Discussion Paper No. 867, Yale University, New Haven, CT.(forthcoming) Economic Development and Cultural Change.

Stewart, A., J. Ware, R. Brook, and A. Davies-Avery, et al., 1990, *Measurement of Adult Health Status: Physical Health In Terms of Functional Status*, Cambridge: Harvard University Press.

Stinson, Et al., 1982,

Strauss, J. And D. Thomas, 1995, "Human Resources : Empirical Modeling of Household and Family Decisions", in Handbook of Development Economics, vol IIIA, (eds.) J. Behrman and T,N, Srinivasan, Amsterdam: Elsevier, Chapter 34.

United Nations (Ansley J. Coale and Paul Demeny), 1967, Methods of Estimating Basic Demographic Measures from Incomplete Data, Manual IV, ST/SOA/Series A/42, New York

Zajonc, R.B., 1976, "Family Configuration and Intelligence", Science, vol 192, No. 4236: 227-236.

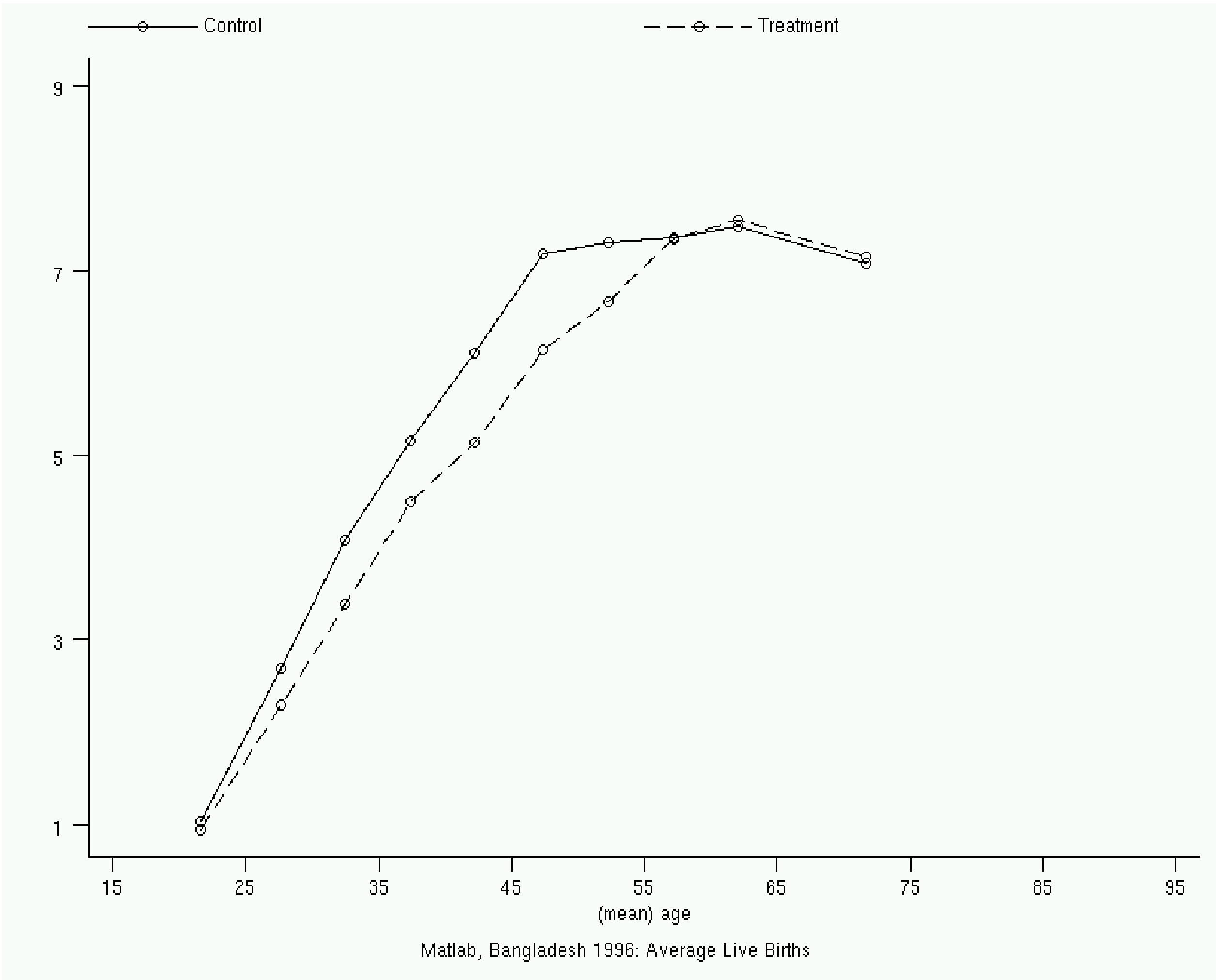

Figure 1: Number of Children Ever Born per Ever Married Woman by Five Year Age Groups in Matlab Health and Socioeconomic Survey 1996, by resident in Treatment and Control Villages

Table 1: Regressions of Child-Woman Ratios in 141 Villages on Program Treatment Before and After the Program

Dependent and Independent Variables	1978 and 1974	1982 and 1974	1996 and 1974
Children 0—4/Women aged 15—49			
Treatment Villages	0.0215	0.0215	0.0215
	(1.30)	(1.58)	(2.14)*
Treatment after programs	-0.0614	-0.143	-0.127
	(2.62)**	(7.777)**	(4.92)**
Final Year after program	0.154	-0.064	-0.314
	(9.09)**	(4.80)**	(16.90)**
Intercept	0.810	0.810	0.810
	(67.7)**	(82.2)**	(112.0)**
R-squared	0.294	0.541	0.760
Children 5—9/Women aged 15—49			
Treatment Villages	0.0103	0.0103	0.0103
	(0.84)	(0.93)	(0.96)
Treatment after programs	-0.0252	-0.0113	-0.142
	(1.46)	(0.76)	(5.19)**
Final Year after program	-0.136	-0.0125	-0.0004
	(10.9)**	(1.16)	(0.02)
Intercept	0.617	0.617	0.617
	(70.0)**	(77.4)**	(80.4)**
R-squared	0.520	0.025	0.168

Table 1: Regression results of child-woman ratios in 141 villages on program treatment, both before and after the program. Notes: (i) Regression estimates are weighted by the number of women aged 15—49 in each village population in the census or 1996 survey (in STATA8, this is the "aweight" option); (ii) The estimates are obtained from a GLS regression where the village mean child woman ratio is assumed to have a variance that is inversely proportional to the square of the denominator in the child woman ratio. (iii) The sample size for each of the two pooled cross sections is 282 (since there are 141 villages) (iv) Absolute values of the t-statistics are presented in parentheses below the weighted coefficients; ** indicates 1% significance level, * indicates a 5% significance level.s.

Table 2: Summary Statistics for Differences between Treatment and Comparison Areas.

Variable	Obs	Weighted Mean	Standard Error of weighted mean	Obs	Weighted Mean	Standard Error of weighted mean	Difference using weighted regression
	Treatment=0			Treatment=1			
Panel (a): 1974 DATA							
Average years of schooling (for individuals older than 15, excluding religious education)	30259	1.737	.018	37217	1.729	0.016	-.008 (0.35)
Individuals older than 15 report no schooling	77047	.546	.002	84472	.599	.002	.052 (21.31)**
Individuals aged 6 to 15 report no schooling	21689	.317	.003	23813	.342	0.003	.025 (5.74)**
Individual lived in a household with a tin roof and wall	76268	.164	.001	83757	.197	.001	.033 (17.01)**
Individual reported religion as muslim	77047	.881	.001	84472	.851	.001	-.030 (17.64)**
Panel (b): 1996 DATA							
Average years of schooling (for individuals older than 15, excluding religious education)	10590	3.028	.032	10444	3.620	.0366	.592 (11.99)**
Individuals older than 15 report no schooling	10590	.385	.004	10444	.357	.004	-.026 (4.00)**
Individuals aged 6 to 15 report no schooling	3372	.256	.002	2842	.213	.001	-.043 (3.97)**
Individual lived in a household that had a tin roof and wall	12847	.466	.004	12360	.465	.004	-.001 (0.19)
Individual reported religion as muslim	12847	.958	.001	12360	.881	.002	-0.077 (22.41)**

Table 2: Summary statistics for dependent variables and difference in mean values between treatment and control areas. Notes: (i) Though the 1974 census was carried out over 149 villages, we restrict our attention to the 141 villages that were in the 1996 MHSS. Regression estimates are weighted by the population of each village population in the census or 1996 survey (in STATA8, this is the "aweight" option) (ii) In the 1974 data, the average years of schooling excludes religious education because there was no information on the years of religious schooling; (iii) t-statistics of the differences between treatment and control areas are in parentheses; (iv) * indicates 1% significance level, ** indicates a 5% significance level and * indicates a 10% significance level.**

Table 3: Descriptions and Summary Statistics of Dependent Variables

Variable	Description of variable	Obs	Mean	St. Dev.	Min	Max
Fertility, Age at First Birth, BirthIntervals:						
TotalChildren	Total number of children ever born	5337	4.984	2.903	0	17
TotalAlive	Total number of children alive	5337	3.953	2.224	0	12
FracDied5	Fraction of children under the age of 5 who died	5082	0.137	0.183	0	1
AgeAtFirstBirth	Age at which the woman had her first child	5033	23.101	4.813	11.25	50
SecondInterval	Yrs to the birth of the first and second child	4561	3.257	2.098	.083	19.5
ThirdInterval	Yrs to the birth of the second and third child	4045	3.185	1.928	.0833	28.166
Woman's Health:						
CurrHealthy	Dummy variable indicating whether woman's self-reported health status is "Healthy"	5329	0.751	0.432	0	1
Weight	Woman's Weight (in kg)	4660	41.433	6.600	20	70
Height	Woman's Height (in cm)	4660	148.864	6.016	109	175
BMI	Woman's BMI	4660	18.665	2.566	11.253	27.971
ADLIndexEquals0	Dummy variable indicating whether the woman's ADL Index is equal to 0	5331	0.624	0.484	0	1
Women's income, employment and participation in groups:						
PrimOccIncome	Income from woman's primary occupation	5331	1035.006	8267.094	0	300200
EggInc	Woman's total income from selling eggs	5331	153.6297	531.9552	0	18000
DairyInc	Household income from selling milk	5331	363.9409	2231.285	0	120000
OwnProdAssets	Woman owns productive assets	5331	0.152	0.359	0	1
GroupLoan	Woman participates in a group for getting credit	5331	0.128	0.334	0	1
GroupWork	Woman participates in a group for getting employment	5331	0.055	0.227	0	1
Group Saving	Woman participates in a group for saving	5331	.146	.353		
Household assets, housing quality and sources of water:						
HhdOwnFarmland	Household owns farmland	5320	.669	.470	0	1
OwnJewelry	Household owns jewelry	5331	.528	.499	0	1
HhdOwnPond	Household owns a pond/orchard	5320	.564	.496	0	1
TinRoofWall	Main room of the household has a tin roof and wall	5337	.467	.499	0	1
DrWaterWellInBari	Household's source of drinking water is a well on the bari	5337	.589	.492	0	1
ClWellWater	Household's bathing/cleaning water comes from a well	5337	.463	.498	0	1
Pre-natal care and innoculations:						
PregCheckUps	Prenatal care in the last pregnancy	5109	0.128	0.217	0	1
NumAnteNatalChecks	Tetnus vaccine administered during last pregnancy	5109	0.905	1.414	0	19

ATSInject	Number of antenatal checks in the last pregnancy	5109	0.168	0.268	0	2
PolioVac	Polio vaccination for child born in the past 5 years	1764	0.766	0.423	0	1
MeaslesVac	Measles vaccination for child born in the past 5 yrs	1764	0.622	0.485	0	1
DPTVac	DPT vaccination for child born in the past 5 years	1765	0.724	0.447	0	1
Heights and weights of children (Ages 0 to 14):						
GZWeight2	Average weight z-score for girls	1692	-2.436	.917	-5.643	2.485
GZHeight2	Average height z-score for girls	1692	-2.689	1.302	6.996	5.430
GZBMI2	Average for BMI z-score for girls	1692	-1.359	.959	-5.834	2.820
BZWeight2	Average weight z-score for boys	1714	-2.444	.921	5.580	3.45
BZHeight2	Average height z-score for boys	1714	-2.575	1.226	5.978	5.278
BZBMI2	Average for BMI z-score for boys	1714	-1.425	1.106	5.949	5.644
Child Educational Outcomes						
BCurrEnroll	Fraction of boys aged 9—14 currently enrolled in school	1436	.912	.268	0	1
BoyEdZScore	Fraction of girls aged 9—14 currently enrolled in school	1426	-.019	.949	-1.833	3.465
GCurrEnroll	Average education Z-score for boys aged 9—14	1340	.932	.242	0	1
GirlEdZScore	Average education Z-score for girls aged 9—14	1340	-.022	.973	-2.128	7.599
BoyEdZScore2	Average education z-score for boys aged 9—30	2216	-.132	.951	-1.673	2.850
GirlEdZScore2	Average education Z-score for girls aged 9—30	1700	-.093	1.008	-2.041	2.429

Table 3a: Descriptions, Means, standard deviations, minimum values and maximum values of dependent variables used in the analysis.

Variable	Description of variable	Obs	Mean	Std. Dev.	Min	Max
TrXAgeUnder25	(Woman resides in Treatment area) XAgeUnder25	5337	.0477797	.2133197	0	1
TrXAge25to30	(Woman resides in Treatment area X(25≤Age<30)	5337	.0620199	.2412142	0	1
TrXAge30to35	(Woman resides in Treatment area X(30≤Age<35)	5337	.0771969	.2669287	0	1
TrXAge35to40	(Woman resides in Treatment area X(35≤Age<40)	5337	.0657673	.2478981	0	1
TrXAge40to45	(Woman resides in Treatment area X(40≤Age<45)	5337	.050965	.2199468	0	1
TrXAge45to50	(Woman resides in Treatment area X(45≤Age<50)	5337	.0455312	.2084856	0	1
TrXAge50to55	(Woman resides in Treatment area X(50≤Age<55)	5337	.0468428	.2113218	0	1
TrXAge55to60	(Woman resides in Treatment area X(25≤Age<30)	5337	.0370995	.1890233	0	1
TrXAge60to65	(Woman resides in Treatment area X(60≤Age<65)	5337	.0286678	.1668867	0	1
TrXAge65Over	(Woman resides in Treatment area X(AgeOver65)	5337	.0406595	.1975188	0	1
TrXSchXAge15to20	(Woman resides in treatment area) X (Years of schooling) X (15≤Age<20)	5336	.0440405	.5585915	0	11
TrXSchXAge20to30	(Woman resides in treatment area) X (Years of schooling) X (20≤Age<30)	5336	.3412669	1.465348	0	12
TrXSchXAge30to40	(Woman resides in treatment area) X (Years of schooling) X (30≤Age<40)	5336	.375937	1.495753	0	12

TrXSchXAgeOver40	(Woman resides in treatment area) X (Years of schooling) X (AgeOver40)	5336	.3476387	1.341161	0	12
TrXMuslim	(Woman resides in treatment area) X Muslim	5337	.4198988	.4935883	0	1
Muslim	Muslim	5337	.89095	.3117312	0	1
Age25to30	The woman is aged to 25 to 30, i.e. 25≤Age<30	5337	.123665	.3292298	0	1
Age30to35	The woman is aged to 30 to 35, i.e. 30≤Age<35	5337	.1476485	.3547844	0	1
Age35to40	The woman is aged to 35 to 40, i.e. 25≤Age<30	5337	.1279745	.3340927	0	1
Age40to45	The woman is aged to 40 to 45, i.e. 30≤Age<35	5337	.0976204	.2968285	0	1
Age45to50	The woman is aged to 45 to 50, i.e. 35≤Age<40	5337	.0901255	.2863884	0	1
Age50to55	The woman is aged to 50 to 55, i.e. 40≤Age<45	5337	.0944351	.2924605	0	1
Age55to60	The woman is aged to 55 to 60, i.e. 45≤Age<50	5337	.0723253	.25905	0	1
Age60to65	The woman is aged to 60 to 65, i.e. 60≤Age<65	5337	.0623946	.2418935	0	1
Age65Over	The woman is aged over 65, i.e. Age>65	5337	.0839423	.2773272	0	1
YrsSch	Years of schooling	5336	2.085366	2.869402	0	12
SchXAge15to20	Years of schooling X (15≤Age<20)	5336	.1143178	.8641855	0	11
SchXAge20to30	Years of schooling X (20≤Age<30)	5336	.6711019	1.990596	0	12
SchXAge30to40	Years of schooling X (30≤Age<40)	5336	.6842204	1.924874	0	12
SchXAgeOver40	Years of schooling X (Age>40)	5336	.6175037	1.693049	0	12
HusAge	Age of husband	5337	35.74544	23.6497	0	95
HusAgeSq	Age of husband squared	5337	18.3694	16.36344	0	90.25
HusYrsSch	Husband's years of schooling	5337	3.01499	3.837957	0	17
UnmarriedFH	Woman is unmarried and heads her own household	5337	.0706389	.2562448	0	1
MarriedFH	Woman is married and heads her own household	5337	.0507776	.2195638	0	1
HusAbsentNH	Husband is absent and woman does not head of her own household	5337	.1169196	.3213546	0	1
HusAgeMissing	Husband's age is missing	5337	.1928049	.3945382	0	1
HusEdMissing	Husband's years of schooling is missing	5337	.0697021	.2546681	0	1

Table 3b: Descriptions, Means, standard deviations, minimum values and maximum values of independent variables used in the analysis.

Table 4: Reduced form results for total fertility, number of children alive, below 5 mortality, age at first birth and birth intervals

	(1) Total Children	(2) Total Alive	(3) FracDied5	(4) AgeAtFirst Birth	(5) Second Interval	(6) Third Interval
TrXAgeUnder25	-0.541	-0.296	-0.063	0.541	0.535	0.696
	(2.60)**	(1.69)	(1.93)	(0.98)	(1.31)	(1.01)
TrXAge25to30	-0.639	-0.452	-0.020	0.532	0.461	0.945
	(3.17)**	(2.64)**	(0.74)	(1.04)	(1.56)	(3.14)**
TrXAge30to35	-1.028	-0.580	-0.061	0.411	0.307	1.093
	(4.56)**	(3.15)**	(2.59)**	(0.78)	(1.10)	(4.51)**
TrXAge35to40	-0.930	-0.401	-0.071	0.369	-0.023	0.705
	(3.85)**	(2.03)*	(2.79)**	(0.67)	(0.08)	(2.80)**
TrXAge40to45	-1.136	-0.812	-0.040	-0.461	0.138	0.432
	(4.15)**	(3.54)**	(1.57)	(0.80)	(0.44)	(1.62)
TrXAge45to50	-1.306	-0.626	-0.071	0.108	0.070	0.718
	(4.65)**	(2.68)**	(2.90)**	(0.19)	(0.23)	(2.57)*
TrXAge50to55	-0.927	-0.211	-0.072	0.119	0.015	0.845
	(3.33)**	(0.92)	(2.94)**	(0.22)	(0.05)	(2.68)**
TrXAge55to60	-0.206	0.171	-0.053	0.245	-0.138	0.761
	(0.66)	(0.67)	(2.08)*	(0.42)	(0.42)	(2.56)*
TrXAge60to65	-0.290	-0.134	-0.026	0.295	-0.070	0.172
	(0.85)	(0.46)	(0.94)	(0.45)	(0.22)	(0.63)
TrXAge65Over	-0.175	0.333	-0.073	-0.899	-0.035	0.779
	(0.58)	(1.26)	(2.78)**	(1.36)	(0.12)	(2.76)**
TrXSchXAge15to20	0.049	0.045	-0.004	0.003	-0.287	
	(1.84)	(1.85)	(0.27)	(0.03)	(2.02)*	
TrXSchXAge20to30	0.014	0.012	0.002	-0.066	-0.001	0.018
	(0.76)	(0.73)	(0.46)	(0.96)	(0.01)	(0.26)
TrXSchXAge30to40	0.023	-0.002	0.002	-0.046	0.015	0.022
	(0.82)	(0.08)	(0.49)	(0.59)	(0.39)	(0.55)
TrXSchXAgeOver40	-0.033	-0.028	-0.000	-0.012	0.007	0.001
	(0.85)	(0.83)	(0.00)	(0.16)	(0.19)	(0.02)
TrXMuslim	0.354	0.141	0.034	-0.215	0.085	-0.502
	(1.77)	(0.84)	(1.66)	(0.50)	(0.37)	(2.31)*
Muslim	0.209	0.301	-0.029	0.079	0.019	0.128
	(1.16)	(2.02)*	(1.57)	(0.21)	(0.09)	(0.82)
Age25to30	1.264	1.159	-0.028	0.528	0.674	0.426
	(13.24)**	(13.77)**	(1.31)	(1.77)	(2.89)**	(1.71)
Age30to35	2.644	2.132	0.018	0.197	0.663	0.210
	(19.78)**	(19.14)**	(0.79)	(0.51)	(2.45)*	(0.81)
Age35to40	3.623	2.873	0.031	-0.771	0.742	0.280
	(23.96)**	(22.83)**	(1.33)	(1.91)	(2.75)**	(1.02)
Age40to45	4.404	3.477	0.033	-1.335	0.837	0.724
	(23.97)**	(22.56)**	(1.35)	(3.18)**	(2.89)**	(2.52)*
Age45to50	5.602	4.074	0.069	-2.730	0.703	0.474
	(29.67)**	(25.27)**	(2.84)**	(5.80)**	(2.47)*	(1.66)
Age50to55	5.911	4.216	0.065	-3.202	0.694	0.445
	(28.51)**	(24.64)**	(2.53)*	(6.81)**	(2.29)*	(1.57)
Age55to60	6.044	4.164	0.073	-3.741	0.805	0.264
	(25.00)**	(20.69)**	(2.63)**	(7.14)**	(2.44)*	(0.88)
Age60to65	6.489	4.610	0.063	-3.694	0.607	0.507
	(24.95)**	(20.92)**	(2.10)*	(6.40)**	(1.81)	(1.59)
Age65Over	6.483	4.194	0.082	-3.210	0.600	0.461
	(28.12)**	(20.85)**	(2.72)**	(5.30)**	(1.82)	(1.52)
SchXAge15to20	-0.156	-0.152	0.003	-0.155	0.058	

	(7.28)**	(8.01)**	(0.30)	(2.13)*	(0.62)	
SchXAge20to30	-0.076	-0.078	-0.002	0.215	0.045	0.008
	(4.59)**	(5.34)**	(0.83)	(3.98)**	(1.21)	(0.20)
SchXAge30to40	-0.087	-0.063	-0.003	0.099	0.014	0.061
	(3.66)**	(3.16)**	(1.04)	(1.48)	(0.45)	(2.03)*
SchXAgeOver40	-0.013	0.045	-0.007	0.072	-0.043	-0.025
	(0.38)	(1.64)	(3.22)**	(1.26)	(1.47)	(0.94)
HusAge	0.040	0.038	-0.000	-0.066	-0.005	-0.000
	(7.03)**	(7.73)**	(0.58)	(4.29)**	(0.58)	(0.03)
HusAgeSq	-0.040	-0.040	0.001	0.027	0.004	-0.004
	(4.69)**	(5.52)**	(1.19)	(1.33)	(0.33)	(0.44)
HusYrsSch	-0.006	0.016	-0.002	0.007	0.002	0.001
	(0.58)	(1.80)	(2.06)*	(0.29)	(0.17)	(0.05)
UnmarriedFH	-0.439	-0.570	0.069	-1.683	0.486	-0.555
	(1.87)	(2.80)**	(1.91)	(1.97)*	(1.51)	(1.49)
MarriedFH	0.074	0.203	-0.012	-1.255	0.058	0.231
	(0.66)	(2.05)*	(1.01)	(3.92)**	(0.37)	(1.33)
HusAbsentNH	-1.075	-1.056	0.065	-2.132	0.607	-0.642
	(4.81)**	(5.40)**	(1.75)	(2.42)*	(1.77)	(1.71)
HusAgeMissing	0.462	0.550	-0.032	-0.997	-0.679	0.349
	(2.28)*	(3.05)**	(0.89)	(1.34)	(2.26)*	(0.92)
HusEdMissing	-0.017	0.067	-0.011	-0.482	0.167	0.041
	(0.17)	(0.76)	(1.04)	(1.88)	(1.11)	(0.30)
Constant	0.671	0.406	0.143	26.888	2.587	2.607
	(3.14)**	(2.25)*	(4.73)**	(52.20)**	(7.62)**	(7.77)**
Observations	5336	5336	5082	5033	4561	4045
R-squared	0.57	0.49	0.08	0.25	0.01	0.03
All Treatment F	**8.01**	**5.97**	**2.57**	**0.76**	**1.66**	**3.84**
p-value	0.00	0.00	0.00	0.73	0.05	0.00
Treatment F	**5.59**	**3.14**	**2.29**	**0.76**	**0.89**	**3.94**
p-value	0.00	0.00	0.03	0.60	0.49	0.00
Education F	**9.44**	**13.96**	**2.56**	**8.03**	**1.73**	**2.60**
p-value	0.00	0.00	0.00	0.00	0.05	0.02
Muslim F	**20.64**	**18.53**	**1.39**	**0.21**	**0.41**	**3.37**
p-value	0.00	0.00	0.25	0.81	0.66	0.03

Table 4: Reduced form results for total fertility, number of children alive, below 5 mortality, age at first birth and birth intervals. Notes: (i) The dependent variables are as follows: *TotalChildren* measures the total number of live births for each woman; *TotalAlive* measures the number of children that are still alive; *FracDied5* measures the fraction of a woman's children below the age of 5 who died; *AgeAtFirstBirth* measures the age at which a woman had her first child; *SecondInterval* measures the years between the birth of the first and second child; *ThirdInterval* measures the years between the birth of the second and third child; (ii) Robust t statistics in parentheses below regression coefficients; (iii) Robust standard errors used to calculate the t-statisics are clustered at the bari-level; (iv) * significant at 5%; ** significant at 1%; (v) "All Treatment F" tests the joint-significance of the variables *TrXAgeUnder25, TrXAge25to30, TrXAge30to35, TrXAge35to40, TrXAge40to45, TrXAge45to50, TrXAge50to55, TrXAge55to60, TrXAge60to65, TrXAge65Over, TrXSchXAge15to20, TrXSchXAge20to30, TrXSchXAge30to40, TrXSchXAgeOver40 and TrXMuslim;* (vi) "Treatment F" tests the joint-significance of *TrXAgeUnder25, TrXAge25to30, TrXAge30to35, TrXAge35to40, TrXAge40to45, TrXAge45to50;* (vii) "Education F" tests the joint-significance of *TrXSchXAge15to20, TrXSchXAge20to30, TrXSchXAge30to40, TrXSchXAgeOver40, SchXAge15to20, SchXAge20to30, SchXAge30to40 and SchXAgeOver40;* (viiI) "Muslim F" tests the joint-significance of the variables *TrXMuslim* and *Muslim.*

Table 5: Reduced form regression results for women's health.

	(1)	(2)	(3)	(4)	(5)
	Curr Healthy	**Weight**	**Height**	**BMI**	**ADLIndex Equals0**
TrXAgeUnder25	0.039	-0.414	-1.832	0.313	0.001
	(0.85)	(0.48)	(2.01)*	(0.88)	(0.01)
TrXAge25to30	0.028	0.505	-2.091	0.769	0.077
	(0.59)	(0.64)	(2.55)*	(2.39)*	(1.73)
TrXAge30to35	0.079	1.061	-1.015	0.740	0.077
	(1.59)	(1.35)	(1.20)	(2.27)*	(1.70)
TrXAge35to40	0.144	1.182	-1.549	0.896	0.083
	(2.87)**	(1.41)	(1.83)	(2.68)**	(1.69)
TrXAge40to45	0.027	1.573	-1.410	1.075	0.114
	(0.49)	(1.72)	(1.59)	(2.89)**	(2.02)*
TrXAge45to50	0.078	1.643	-0.530	0.852	0.049
	(1.36)	(1.81)	(0.61)	(2.29)*	(0.83)
TrXAge50to55	0.050	0.992	-1.203	0.748	0.179
	(0.89)	(1.14)	(1.44)	(2.04)*	(3.17)**
TrXAge55to60	0.024	0.607	-1.392	0.632	0.116
	(0.38)	(0.63)	(1.59)	(1.59)	(1.97)*
TrXAge60to65	0.044	1.044	-0.028	0.493	0.064
	(0.64)	(1.05)	(0.03)	(1.21)	(1.22)
TrXAge65Over	-0.019	0.562	-2.015	0.767	0.040
	(0.31)	(0.61)	(2.07)*	(2.06)*	(0.93)
TrXSchXAge15to20	-0.002	0.217	0.300	0.013	0.012
	(0.16)	(1.08)	(1.18)	(0.16)	(1.56)
TrXSchXAge20to30	0.005	0.148	0.199	0.012	0.007
	(1.04)	(1.39)	(1.87)	(0.27)	(1.31)
TrXSchXAge30to40	-0.019	0.167	0.143	0.042	-0.001
	(3.05)**	(1.35)	(1.30)	(0.84)	(0.13)
TrXSchXAgeOver40	-0.000	0.226	0.080	0.078	-0.006
	(0.06)	(1.66)	(0.73)	(1.42)	(0.67)
TrXMuslim	-0.058	-0.535	0.665	-0.416	-0.077
	(1.39)	(0.79)	(0.94)	(1.47)	(1.98)*
Muslim	0.014	0.433	1.258	-0.120	0.001
	(0.39)	(0.79)	(1.98)*	(0.53)	(0.02)
Age25to30	-0.057	0.065	0.630	-0.127	-0.077
	(2.21)*	(0.13)	(1.26)	(0.68)	(3.41)**
Age30to35	-0.108	-0.512	-0.074	-0.201	-0.119
	(3.41)**	(0.94)	(0.12)	(0.92)	(4.44)**
Age35to40	-0.157	0.181	0.848	-0.109	-0.195
	(4.58)**	(0.32)	(1.36)	(0.48)	(5.99)**
Age40to45	-0.150	-1.089	-0.772	-0.308	-0.279
	(4.05)**	(1.64)	(1.17)	(1.19)	(7.60)**
Age45to50	-0.218	-1.948	-2.048	-0.374	-0.388
	(5.12)**	(2.92)**	(3.00)**	(1.41)	(9.41)**
Age50to55	-0.281	-3.272	-2.227	-0.933	-0.606
	(6.54)**	(4.88)**	(3.11)**	(3.44)**	(15.34)**
Age55to60	-0.289	-3.215	-2.443	-0.872	-0.656
	(5.95)**	(4.23)**	(3.20)**	(2.99)**	(15.19)**
Age60to65	-0.372	-4.663	-3.948	-1.165	-0.793
	(7.18)**	(6.00)**	(4.43)**	(3.92)**	(20.42)**
Age65Over	-0.426	-4.943	-3.741	-1.385	-0.856
	(8.63)**	(6.39)**	(4.31)**	(4.78)**	(23.06)**
SchXAge15to20	-0.002	0.156	0.079	0.051	-0.007
	(0.34)	(1.13)	(0.55)	(0.88)	(1.31)

SchXAge20to30	-0.005	0.078	0.081	0.012	-0.007
	(1.14)	(1.05)	(1.00)	(0.41)	(1.63)
SchXAge30to40	0.010	0.142	-0.029	0.063	0.003
	(2.07)*	(1.46)	(0.31)	(1.62)	(0.60)
SchXAgeOver40	0.008	0.324	0.223	0.093	-0.001
	(1.19)	(3.13)**	(2.62)**	(2.24)*	(0.08)
HusAge	-0.002	0.015	0.032	0.000	-0.001
	(1.25)	(0.61)	(1.30)	(0.01)	(0.79)
HusAgeSq	0.001	-0.029	-0.037	-0.006	-0.000
	(0.67)	(1.01)	(1.26)	(0.52)	(0.13)
HusYrsSch	0.003	0.224	0.054	0.088	0.003
	(1.17)	(6.24)**	(1.67)	(6.02)**	(1.63)
UnmarriedFH	-0.022	0.733	1.786	-0.128	-0.053
	(0.41)	(0.89)	(2.24)*	(0.40)	(1.05)
MarriedFH	-0.026	0.483	0.412	0.121	-0.026
	(0.93)	(0.97)	(0.83)	(0.64)	(0.87)
HusAbsentNH	-0.066	0.443	1.260	-0.145	-0.080
	(1.23)	(0.53)	(1.55)	(0.45)	(1.67)
HusAgeMissing	-0.034	-0.749	-0.814	-0.089	0.015
	(0.64)	(0.92)	(1.05)	(0.28)	(0.32)
HusEdMissing	0.021	0.080	0.110	0.021	0.030
	(0.94)	(0.22)	(0.31)	(0.15)	(1.36)
Constant	0.958	41.091	148.010	18.720	0.995
	(21.63)**	(51.13)**	(168.12)**	(59.25)**	(23.69)**
Observations	5328	4659	4659	4659	5330
R-squared	0.12	0.17	0.10	0.12	0.37
All Treatment F	**1.29**	**2.04**	**1.41**	**3.28**	**1.45**
p-value	0.20	0.01	0.13	0.00	0.12
Treatment F	**1.83**	**1.38**	**1.57**	**2.21**	**1.86**
p-value	0.09	0.22	0.15	0.04	0.08
Education F	**1.86**	**5.59**	**3.31**	**3.34**	**0.84**
p-value	0.06	0.00	0.00	0.00	0.57
Muslim F	**2.21**	**0.34**	**20.37**	**5.33**	**7.40**
p-value	0.11	0.71	0.00	0.00	0.00

Table 5: Reduced form regression results for women's health. Notes: (i) The dependent variables are as follows: *CurrHealthy* is a dummy variable that takes value 1 if the woman reports that she is currently healthy; *Weight* measures her weight in kilograms; *Height* measures her height in centimers; *BMI* is a measure of her body-mass-index in kilograms per square meter; *ADLIndex* is an index that measures a woman's ability to perform 5 activities of daily living: (a) walk for one mile; (b) carry a heavy load (like 10 seer of rice) for 20 meters; (c) draw a pail of water from a tube-well; (d) stand up from a sitting position without help; (e) use a ladder to climb to a storage place that is at least 5 feet in height. The responses to these questions were coded either as can perform the task easily (a value of 1), can do it with difficulty (a value of 2) and unable to perform the task (a value of 3). We combined the responses to the five ADL measures listed to create the following ADL index for person `i':
ADLIndex(i)= (Score(i) – Minimum score)/(Maximum score – Minimum Score); *ADLEq0 is a dependent variable that takes a value 1* if the individual can perform all the ADLs without difficulty and thus have an ADLIndex equal to 0; Notes (ii)–(viii) of Table 4 apply.

Table 6: Reduced form regression results for women's income, household income from female-employment sources and women's participation in groups.

	(1) PrimOcc Income	(2) EggInc	(3) MilkInc	(4) OwnProd Assets	(5) GroupLoan	(6) GroupWork	(7) GroupSaving
TrXAgeUnder25	1,522.951	84.404	-53.240	0.072	-0.035	-0.034	-0.116
	(1.02)	(2.01)*	(0.36)	(1.86)	(0.79)	(1.07)	(2.16)*
TrXAge25to30	221.595	64.368	62.059	0.085	0.051	0.030	-0.017
	(0.24)	(1.40)	(0.54)	(2.28)*	(1.05)	(0.97)	(0.31)
TrXAge30to35	-432.935	68.601	51.601	0.101	0.084	0.059	0.002
	(0.59)	(1.49)	(0.32)	(2.55)*	(1.74)	(2.03)*	(0.04)
TrXAge35to40	-271.312	139.963	263.244	0.068	0.106	0.059	0.042
	(0.22)	(2.03)*	(1.69)	(1.70)	(2.13)*	(1.80)	(0.79)
TrXAge40to45	942.071	116.141	581.189	0.119	0.032	0.013	0.007
	(0.81)	(2.43)*	(1.76)	(2.68)**	(0.65)	(0.40)	(0.13)
TrXAge45to50	464.026	40.181	420.203	0.060	0.034	-0.012	-0.009
	(0.42)	(0.41)	(1.65)	(1.41)	(0.70)	(0.39)	(0.17)
TrXAge50to55	-433.459	58.324	291.142	0.047	0.054	0.033	-0.021
	(0.53)	(1.33)	(1.31)	(1.16)	(1.20)	(1.27)	(0.42)
TrXAge55to60	-142.161	127.497	-373.821	0.102	0.045	0.051	0.033
	(0.18)	(3.01)**	(0.75)	(2.50)*	(1.03)	(1.88)	(0.63)
TrXAge60to65	198.026	136.011	345.739	0.123	0.014	-0.000	-0.045
	(0.27)	(2.62)**	(1.55)	(2.62)**	(0.31)	(0.01)	(0.94)
TrXAge65Over	5.145	93.020	323.560	0.071	-0.011	0.010	-0.065
	(0.01)	(1.97)*	(1.74)	(2.23)*	(0.28)	(0.42)	(1.48)
TrXSchXAge15to20	-126.957	-34.684	-22.526	0.005	-0.002	0.003	0.001
	(0.68)	(1.19)	(0.30)	(0.55)	(0.16)	(0.38)	(0.10)
TrXSchXAge20to30	-225.071	0.836	23.524	-0.008	0.006	0.003	0.014
	(0.61)	(0.16)	(1.06)	(1.34)	(0.97)	(0.69)	(2.16)*
TrXSchXAge30to40	699.110	1.767	-18.190	-0.011	-0.007	-0.011	0.000
	(1.81)	(0.19)	(0.63)	(1.61)	(1.02)	(2.03)*	(0.02)
TrXSchXAgeOver40	951.985	-9.884	-136.983	-0.012	0.007	0.003	0.009
	(2.53)*	(0.71)	(0.85)	(1.73)	(1.32)	(1.05)	(1.59)
TrXMuslim	-764.598	-74.870	-320.761	-0.038	-0.004	-0.009	0.054
	(1.15)	(1.93)	(3.30)**	(1.39)	(0.09)	(0.39)	(1.24)
Muslim	-375.801	61.349	408.790	0.077	-0.012	-0.002	-0.065
	(0.80)	(2.43)*	(5.21)**	(3.84)**	(0.39)	(0.13)	(1.71)
Age25to30	1,339.080	46.042	-87.514	0.040	0.061	0.001	0.060
	(1.10)	(1.36)	(0.60)	(1.53)	(2.32)*	(0.02)	(1.99)*
Age30to35	702.025	61.691	133.335	0.068	0.058	-0.034	0.028
	(0.47)	(1.94)	(0.74)	(2.14)*	(1.87)	(1.31)	(0.79)

Age35to40	643.776	63.762	53.666	0.067	0.054	-0.016	0.042
	(0.39)	(1.81)	(0.30)	(2.10)*	(1.63)	(0.58)	(1.14)
Age40to45	1,365.031	34.524	-239.941	0.048	0.054	-0.006	-0.006
	(0.80)	(0.77)	(0.76)	(1.36)	(1.56)	(0.21)	(0.17)
Age45to50	862.283	150.514	-251.698	0.031	0.041	-0.005	0.003
	(0.51)	(2.16)*	(1.04)	(0.84)	(1.22)	(0.19)	(0.07)
Age50to55	972.686	68.423	-63.455	0.036	-0.001	-0.055	-0.034
	(0.57)	(1.50)	(0.28)	(0.99)	(0.02)	(2.08)*	(0.91)
Age55to60	710.612	3.733	501.495	-0.031	-0.018	-0.058	-0.055
	(0.43)	(0.08)	(0.97)	(0.82)	(0.55)	(2.15)*	(1.45)
Age60to65	326.057	45.053	-274.688	-0.013	-0.009	-0.035	-0.057
	(0.20)	(0.83)	(1.27)	(0.34)	(0.28)	(1.19)	(1.48)
Age65Over	242.108	54.749	-335.227	-0.075	-0.014	-0.050	-0.051
	(0.15)	(1.09)	(1.13)	(2.10)*	(0.39)	(1.74)	(1.33)
SchXAge15to20	80.132	31.740	35.397	-0.011	0.008	0.003	0.005
	(0.56)	(1.10)	(0.47)	(2.60)**	(1.05)	(0.39)	(0.51)
SchXAge20to30	323.484	-2.158	-4.913	-0.002	-0.001	-0.002	-0.007
	(0.95)	(0.52)	(0.24)	(0.53)	(0.32)	(0.52)	(1.41)
SchXAge30to40	392.007	0.095	-18.177	0.001	0.008	0.009	0.004
	(2.99)**	(0.02)	(0.62)	(0.18)	(1.55)	(2.06)*	(0.71)
SchXAgeOver40	77.984	3.005	128.160	0.011	-0.003	-0.002	-0.002
	(0.90)	(0.22)	(0.84)	(1.82)	(0.71)	(0.86)	(0.45)
HusAge	-37.272	1.726	10.154	0.002	0.004	0.002	0.003
	(0.60)	(1.19)	(2.09)*	(1.82)	(4.21)**	(2.19)*	(2.11)*
HusAgeSq	32.497	-2.754	-11.779	-0.001	-0.005	-0.002	-0.003
	(0.58)	(1.14)	(2.02)*	(0.63)	(3.71)**	(1.88)	(2.11)*
HusYrsSch	-28.820	3.469	15.655	0.004	-0.003	-0.001	-0.000
	(0.77)	(1.72)	(1.20)	(1.77)	(1.71)	(0.58)	(0.04)
UnmarriedFH	329.215	-34.646	-252.242	0.096	0.010	-0.000	0.022
	(0.33)	(1.19)	(1.82)	(2.24)*	(0.26)	(0.01)	(0.47)
MarriedFH	-88.060	-16.685	-190.925	0.097	-0.012	0.002	0.034
	(0.09)	(0.66)	(2.64)**	(3.31)**	(0.45)	(0.12)	(1.10)
HusAbsentNH	32.637	34.807	298.986	0.073	-0.010	0.005	0.006
	(0.03)	(1.15)	(1.35)	(1.77)	(0.26)	(0.16)	(0.13)
HusAgeMissing	-537.481	-20.116	231.032	0.009	0.039	0.017	-0.009
	(0.38)	(0.76)	(1.67)	(0.21)	(1.04)	(0.58)	(0.20)
HusEdMissing	-1,225.135	4.785	55.908	0.040	0.017	0.022	0.036
	(3.58)**	(0.19)	(0.71)	(1.76)	(0.78)	(1.36)	(1.60)
Constant	796.306	11.724	-184.01	-0.056	0.022	0.035	0.139
	(1.22)	(0.37)	(1.16)	(1.58)	(0.53)	(1.08)	(2.73)**
Observations	5330	5330	5330	5330	5330	5330	5330
R-squared	0.06	0.01	0.02	0.03	0.05	0.02	0.05
All Treatment F	**1.36**	**1.40**	**1.54**	**1.82**	**2.24**	**1.82**	**3.17**

p-value	0.16	0.14	0.08	0.03	0.00	0.03	0.00
Treatment F	**0.77**	**1.24**	**0.97**	**2.00**	**2.17**	**2.25**	**1.85**
p-value	0.60	0.28	0.45	0.06	0.04	0.04	0.09
Education F	**4.06**	**0.50**	**0.98**	**2.66**	**0.85**	**1.01**	**1.14**
p-value	0.00	0.86	0.45	0.00	0.55	0.43	0.33
Muslim F	**3.14**	**3.06**	**13.90**	**9.67**	**0.35**	**0.30**	**1.56**
p-value	0.04	0.05	0.00	0.00	0.70	0.74	0.21

Table 6: Reduced form regression results for women's income, household income from female-employment sources and women's participation in groups. Notes: (i) The dependent variables are as follows: *PrimOccIncome* measures women's earnings from a primary occupation in the year preceding the survey (input costs are not subtracted), *TotalIncome* measures women's total income (from primary and secondary occupations) in the year preceding the survey; *DairyIncome* measures household income from the sale of eggs or milk; *OwnProdAssets* is a dummy variable that takes value 1 if the woman owns a productive asset and 0 otherwise; *GroupLoan and GroupEmp are* dummy variables that measure whether the woman has ever participated in groups for the purpose of credit or employment; Notes (ii)–(viii) of Table 4 apply.

Table 7: Reduced form regression results for household ownership of assets, housing quality and sources of drinking water.

	(1)	(2)	(3)	(4)	(5)	(6)
	HhdOwnFarmland	**Own Jewelry**	**HhdOwn Pond**	**HhdHasTin Roof&Wall**	**DrWell WaterBari**	**ClWater InBari**
TrXAgeUnder25	0.076	-0.140	0.223	0.131	0.139	0.212
	(0.95)	(2.08)*	(2.59)**	(1.75)	(1.65)	(2.70)**
TrXAge25to30	0.113	-0.146	0.110	0.072	0.134	0.216
	(1.52)	(2.34)*	(1.39)	(0.99)	(1.73)	(2.96)**
TrXAge30to35	0.100	-0.180	0.064	0.028	0.157	0.208
	(1.37)	(3.01)**	(0.80)	(0.39)	(2.05)*	(2.85)**
TrXAge35to40	0.182	-0.139	0.133	0.069	0.209	0.225
	(2.48)*	(2.27)*	(1.69)	(0.95)	(2.69)**	(3.05)**
TrXAge40to45	0.208	-0.159	0.178	0.148	0.176	0.289
	(2.77)**	(2.54)*	(2.17)*	(1.98)*	(2.22)*	(3.88)**
TrXAge45to50	0.136	-0.109	0.127	-0.050	0.213	0.245
	(1.81)	(1.73)	(1.54)	(0.65)	(2.68)**	(3.22)**
TrXAge50to55	0.100	-0.097	0.073	0.051	0.161	0.273
	(1.36)	(1.63)	(0.91)	(0.69)	(2.10)*	(3.77)**
TrXAge55to60	0.064	-0.144	0.067	-0.054	0.124	0.252
	(0.84)	(2.28)*	(0.80)	(0.70)	(1.54)	(3.24)**
TrXAge60to65	0.086	-0.228	0.074	0.038	0.153	0.180
	(1.10)	(3.46)**	(0.84)	(0.47)	(1.83)	(2.22)*
TrXAge65Over	0.110	-0.123	0.026	0.130	0.161	0.332
	(1.47)	(2.29)*	(0.32)	(1.66)	(2.05)*	(4.36)**
TrXSchXAge15to20	-0.011	0.019	-0.022	-0.019	0.026	0.011
	(0.77)	(1.54)	(1.71)	(1.45)	(1.54)	(0.72)
TrXSchXAge20to30	-0.018	-0.004	-0.025	-0.009	-0.015	0.001
	(2.33)*	(0.57)	(2.86)**	(1.11)	(1.88)	(0.16)
TrXSchXAge30to40	-0.009	0.019	-0.006	-0.008	-0.007	0.001
	(1.19)	(2.52)*	(0.75)	(1.08)	(0.91)	(0.10)
TrXSchXAgeOver40	-0.017	-0.002	-0.018	-0.015	-0.013	-0.008
	(2.23)*	(0.19)	(2.11)*	(1.72)	(1.70)	(0.98)
TrXMuslim	-0.028	0.074	-0.023	-0.003	-0.083	-0.160
	(0.43)	(1.56)	(0.33)	(0.04)	(1.21)	(2.51)*
Muslim	0.197	-0.085	0.096	0.050	0.140	0.137
	(3.46)**	(2.11)*	(1.52)	(0.89)	(2.35)*	(2.56)*
Age25to30	-0.061	-0.047	0.026	0.042	0.013	0.036
	(1.55)	(1.29)	(0.63)	(1.14)	(0.31)	(0.88)
Age30to35	-0.011	-0.073	0.092	0.086	0.015	0.041
	(0.23)	(1.58)	(1.86)	(2.01)*	(0.31)	(0.85)
Age35to40	-0.030	-0.136	0.087	0.155	-0.011	0.041
	(0.61)	(2.89)**	(1.73)	(3.53)**	(0.22)	(0.83)
Age40to45	0.040	-0.122	0.100	0.122	0.005	0.006
	(0.80)	(2.40)*	(1.90)	(2.68)**	(0.10)	(0.12)
Age45to50	0.098	-0.169	0.148	0.285	0.040	0.091
	(1.96)	(3.26)**	(2.80)**	(5.97)**	(0.74)	(1.74)
Age50to55	0.132	-0.168	0.185	0.271	0.041	0.044
	(2.62)**	(3.22)**	(3.43)**	(5.37)**	(0.74)	(0.82)
Age55to60	0.101	-0.141	0.160	0.349	0.098	0.064
	(1.85)	(2.48)*	(2.74)**	(6.17)**	(1.67)	(1.11)
Age60to65	0.170	-0.054	0.152	0.362	0.122	0.135
	(2.97)**	(0.91)	(2.48)*	(6.34)**	(1.95)	(2.22)*
Age65Over	0.154	-0.193	0.218	0.350	0.129	0.100
	(2.71)**	(3.63)**	(3.63)**	(6.26)**	(2.07)*	(1.65)
SchXAge15to20	0.027	0.006	0.051	0.058	0.007	0.030
	(2.63)**	(0.68)	(5.15)**	(5.98)**	(0.59)	(2.48)*

SchXAge20to30	0.038	0.022	0.030	0.046	0.036	0.022
	(6.75)**	(3.91)**	(4.67)**	(7.45)**	(5.93)**	(3.13)**
SchXAge30to40	0.024	0.008	0.022	0.034	0.030	0.025
	(3.56)**	(1.18)	(3.21)**	(5.47)**	(4.71)**	(3.66)**
SchXAgeOver40	0.021	0.020	0.024	0.034	0.036	0.033
	(3.47)**	(2.94)**	(3.50)**	(5.01)**	(5.48)**	(4.57)**
HusAge	-0.002	-0.000	-0.002	-0.003	0.000	0.000
	(1.13)	(0.13)	(0.93)	(1.74)	(0.04)	(0.23)
HusAgeSq	0.004	0.001	0.003	0.003	0.001	0.001
	(2.34)*	(0.51)	(1.59)	(1.48)	(0.48)	(0.36)
HusYrsSch	0.018	0.017	0.015	0.022	0.014	0.012
	(7.41)**	(6.48)**	(5.53)**	(8.62)**	(5.31)**	(4.46)**
UnmarriedFH	-0.202	-0.148	-0.207	-0.168	-0.092	-0.084
	(3.31)**	(2.25)*	(3.20)**	(2.49)*	(1.46)	(1.32)
MarriedFH	-0.060	0.061	-0.093	0.027	0.045	0.062
	(1.74)	(1.61)	(2.38)*	(0.71)	(1.19)	(1.60)
HusAbsentNH	-0.011	-0.243	-0.059	-0.123	-0.033	-0.068
	(0.18)	(3.67)**	(0.91)	(1.82)	(0.52)	(1.06)
HusAgeMissing	0.072	-0.138	0.117	0.025	0.090	0.130
	(1.23)	(2.16)*	(1.86)	(0.38)	(1.50)	(2.05)*
HusEdMissing	-0.002	0.004	-0.079	-0.016	-0.015	-0.042
	(0.06)	(0.15)	(2.72)**	(0.56)	(0.52)	(1.42)
Constant	0.295	0.715	0.248	0.147	0.254	0.122
	(4.21)**	(11.62)**	(3.13)**	(2.10)*	(3.32)**	(1.70)
Observations	5319	5313	5319	5319	5319	5319
R-squared	0.10	0.20	0.07	0.12	0.07	0.06
All Treatment F	**3.00**	**2.80**	**2.11**	**2.11**	**2.17**	**2.75**
p-value	0.00	0.00	0.00	0.01	0.01	0.00
Treatment F	**3.57**	**2.25**	**2.18**	**2.01**	**2.43**	**1.84**
p-value	0.00	0.01	0.02	0.03	0.01	0.05
Education F	**7.94**	**5.75**	**6.80**	**14.57**	**10.02**	**7.29**
p-value	0.00	0.00	0.00	0.00	0.00	0.00
Muslim F	**18.82**	**2.33**	**3.44**	**1.53**	**4.14**	**3.50**
p-value	0.00	0.09	0.03	0.22	0.00	0.03

Table 7: Reduced form regression results for household ownership of assets, housing quality and sources of drinking water. Notes: (i) The dependent variables are as follows: *Farmland*, *Jewelry* and *OwnPond* measure whether the household in which a woman resides owns farmland, jewelry or a pond or orchard respectively; *TinRoofWall* is dummy variables that take a value 1 if the roof and wall of the main room of the house in which a woman resides are constructed of tin respectively, and 0 otherwise; *DrWellWateBari is* a dummy variables that takes value 1 if the household in which a woman resides drink well water and the well is on the bari, and 0 otherwise; *ClWaterInBari* is a dummy variables that take value 1 if the source of water for cleaning is on the bari, and 0 otherwise; <u>Notes (ii)–(viii) of Table 4 apply.</u>

Table 8: Reduced form regression results for women's utilization average use of pre-natal care, ante-natal care, tetanus inoculations for all past births, and polio, measles and DPT inoculations for a child born in the last 5 years.

	(1)	(2)	(3)	(4)	(5)	(6)
	PregCheckUp	NumAnte NatChecks	ATSInject	PolioVac	MeaslesVac	DPTVac
TrXAgeUnder25	0.076	0.779	0.012	0.159	0.307	0.273
	(1.88)	(3.90)**	(0.27)	(2.00)*	(3.09)**	(3.05)**
TrXAge25to30	0.147	0.931	0.087	0.178	0.289	0.285
	(4.83)**	(5.40)**	(2.39)*	(2.51)*	(3.34)**	(3.54)**
TrXAge30to35	0.127	0.796	0.105	0.239	0.334	0.306
	(4.75)**	(5.31)**	(3.12)**	(3.32)**	(3.65)**	(3.72)**
TrXAge35to40	0.103	0.822	0.173	0.211	0.257	0.269
	(4.14)**	(4.86)**	(5.33)**	(2.70)**	(2.58)*	(3.01)**
TrXAge40to45	0.022	0.443	0.059	0.197	0.254	0.192
	(1.03)	(2.91)**	(1.82)	(1.96)*	(1.95)	(1.66)
TrXAge45to50	-0.028	0.183	0.045	0.266	0.391	0.239
	(1.41)	(1.31)	(1.50)	(1.94)	(2.59)**	(1.23)
TrXAgeOver50	-0.035	0.042	-0.011	-0.802	0.496	0.252
	(1.89)	(0.39)	(0.45)	(8.36)**	(4.33)**	(2.40)*
TrXSchXAge15to20	-0.025	0.171	-0.039	-0.014	-0.076	-0.028
	(1.48)	(1.40)	(2.65)**	(0.49)	(2.66)**	(0.91)
TrXSchXAge20to30	-0.016	-0.016	-0.016	-0.006	-0.016	-0.019
	(2.98)**	(0.53)	(2.72)**	(0.74)	(1.59)	(2.01)*
TrXSchXAge30to40	-0.006	0.040	-0.011	-0.034	-0.025	-0.034
	(1.75)	(1.61)	(2.35)*	(3.58)**	(2.28)*	(3.37)**
TrXSchXAgeOver40	0.003	0.005	0.001	-0.037	-0.006	-0.004
	(1.86)	(0.22)	(0.19)	(1.57)	(0.19)	(0.13)
TrXMuslim	0.047	0.024	0.034	0.184	0.109	0.128
	(2.35)*	(0.21)	(1.37)	(2.77)**	(1.29)	(1.69)
Muslim	-0.047	-0.047	-0.021	-0.167	-0.081	-0.107
	(2.73)**	(0.55)	(0.98)	(2.73)**	(1.10)	(1.54)
Age25to30	-0.099	-0.209	-0.054	0.003	0.058	-0.002
	(3.59)**	(1.52)	(1.75)	(0.05)	(1.17)	(0.05)
Age30to35	-0.144	-0.369	-0.078	-0.027	0.022	-0.015
	(4.56)**	(2.55)*	(2.14)*	(0.44)	(0.36)	(0.25)
Age35to40	-0.209	-0.633	-0.180	-0.007	0.105	0.014
	(6.90)**	(4.25)**	(5.26)**	(0.11)	(1.49)	(0.20)
Age40to45	-0.229	-0.736	-0.194	-0.042	0.049	-0.018
	(7.72)**	(4.81)**	(5.47)**	(0.47)	(0.53)	(0.20)
Age45to50	-0.230	-0.910	-0.235	-0.060	0.072	-0.174
	(7.71)**	(5.81)**	(6.92)**	(0.45)	(0.51)	(1.27)
AgeOver50	-0.222	-0.975	-0.238			
	(7.38)**	(6.76)**	(7.09)**			
SchXAge15to20	0.023	0.032	0.016	-0.011	-0.004	-0.004
	(1.89)	(0.71)	(1.25)	(0.56)	(0.20)	(0.17)
SchXAge20to30	0.013	0.051	0.010	0.000	0.008	0.010
	(3.10)**	(2.50)*	(1.97)*	(0.06)	(0.99)	(1.24)
SchXAge30to40	0.008	0.039	0.007	0.016	0.020	0.020
	(2.73)**	(2.33)*	(1.74)	(1.69)	(1.99)*	(2.09)*
SchXAgeOver40	0.002	0.020	0.001	0.023	0.011	0.016
	(1.33)	(1.11)	(0.37)	(1.19)	(0.47)	(0.73)
HusAge	-0.001	0.002	-0.000	-0.002	-0.001	-0.003
	(0.90)	(0.37)	(0.03)	(0.64)	(0.22)	(0.89)
HusAgeSq	-0.001	-0.011	-0.002	0.005	0.004	0.008
	(1.19)	(2.36)*	(2.33)*	(1.04)	(0.68)	(1.69)
HusYrsSch	-0.000	0.009	-0.001	0.011	0.008	0.008

	(0.36)	(1.33)	(0.64)	(3.18)**	(1.91)	(2.25)*
UnmarriedFH	-0.082	-0.264	-0.098	0.051	0.066	0.129
	(2.83)**	(1.50)	(2.59)**	(0.45)	(0.46)	(1.08)
MarriedFH	-0.055	-0.016	-0.033	0.036	0.065	0.071
	(3.45)**	(0.15)	(1.52)	(0.93)	(1.34)	(1.64)
HusAbsentNH	-0.088	-0.312	-0.100	-0.064	-0.045	-0.066
	(3.02)**	(1.77)	(2.65)**	(0.48)	(0.30)	(0.46)
HusAgeMissing	-0.020	-0.163	-0.024	0.050	0.059	0.032
	(0.65)	(0.91)	(0.60)	(0.67)	(0.64)	(0.37)
HusEdMissing	-0.021	-0.008	0.002	0.007	-0.011	-0.008
	(1.79)	(0.10)	(0.14)	(0.18)	(0.25)	(0.21)
Constant	0.368	1.447	0.372	0.720	0.401	0.582
	(10.47)**	(8.43)**	(9.30)**	(8.40)**	(4.14)**	(6.20)**
Observations	5109	5109	5109	1764	1764	1765
R-squared	0.39	0.32	0.29	0.17	0.16	0.17
All Treatment F	**24.72**	**22.76**	**14.38**	**36.84**	**23.20**	**25.33**
p-value	0.00	0.00	0.00	0.00	0.00	0.00
Treatment F	**19.54**	**9.02**	**5.90**	**1.96**	**2.66**	**2.64**
p-value	0.00	0.00	0.00	0.07	0.01	0.02
Education F	**2.98**	**3.41**	**2.63**	**2.83**	**2.87**	**2.37**
p-value	0.00	0.00	0.01	0.00	0.00	0.02
Muslim F	**3.74**	**0.20**	**1.02**	**3.94**	**0.83**	**1.44**
p-value	0.02	0.82	0.36	0.00	0.44	0.23

Table 8: Reduced form regression results for women's utilization average use of pre-natal care, ante-natal care, tetnus inoculations for all past births (maximum 9 past births), and polio, measles and DPT inoculations for a child born in the last 5 years. Notes: (i) The dependent variables are as follows: *PregCheckUp* measures the fraction of the woman's births (maximum of 9), where the woman had a pre-natal check up; *ATSInject* measures the fraction of the woman's births (maximum of 9), where the woman was vaccinated against tetnus; *NumAnteNatalChecks* measures the average of the number of ante-natal checks for each child born (maximum of 9); *PolioVac, MeaslesVac and DPT Vac* are dummies that take a value of 1 if the last child born in the past 5 years was inoculated against Polio, Measles and tuberculosis respectively; <u>Notes (ii)–(viii) of Table 4 apply.</u>

Table 9: Reduced form regression results for education of individuals aged 9—14 and 14—30.

	(1)	(2)	(3)	(4)		(5)	(6)
	Boys aged 9–14		Girls aged 9–14			Males aged 14–30	Females aged 14–30
	CurrEnroll	EdZScore	CurrEnroll	EdZScore		EdZScore2	EdZScore2
ChildAvAge	-0.004	0.034	-0.002	-0.021	ChildAvAge	-0.006	-0.002
	(0.45)	(1.60)	(0.36)	(1.03)		(0.61)	(0.23)
TrXChildAvAge	-0.021	-0.057	-0.000	0.002	TrXChildAvAge	-0.011	-0.004
	(2.00)*	(1.81)	(0.04)	(0.08)		(0.85)	(0.25)
TrXAgeUnder30	0.267	0.513	0.087	0.773	TrXAgeUnder35	0.706	0.604
	(1.94)	(1.23)	(0.61)	(1.72)		(2.41)*	(1.67)
TrXAge30to35	0.287	1.155	0.143	0.278	TrXAge35to40	0.827	0.547
	(2.00)*	(2.80)**	(1.16)	(0.72)		(2.91)**	(1.55)
TrXAge35to40	0.296	1.091	0.109	0.426	TrXAge40to45	0.763	0.584
	(2.03)*	(2.58)**	(0.86)	(1.04)		(2.51)*	(1.63)
TrXAge40to45	0.285	1.241	0.069	0.434	TrXAge45to50	0.733	0.530
	(1.92)	(2.90)**	(0.53)	(1.04)		(2.27)*	(1.37)
TrXAge45to50	0.325	1.342	0.071	0.472	TrXAge50to55	0.700	0.306
	(2.16)*	(3.02)**	(0.52)	(1.12)		(2.09)*	(0.77)
TrXAge50to55	0.209	0.913	-0.019	0.332	TrXAge55to60	0.598	0.484
	(1.24)	(1.97)*	(0.13)	(0.74)		(1.70)	(1.14)
TrXAgeOver55	0.656	1.379	-0.017	-0.088	TrXAgeOver60	0.880	0.230
	(2.86)**	(2.23)*	(0.10)	(0.14)		(2.37)*	(0.50)
TrXSchXAgeUnder30	-0.000	0.048	0.016	-0.029	TrXSchXAge30to40	-0.002	0.050
	(0.01)	(0.83)	(1.38)	(0.56)		(0.09)	(1.54)
TrXSchXAge30to40	-0.001	-0.008	0.004	0.022	TrXSchXAgeOver40	-0.018	0.010
	(0.22)	(0.38)	(0.79)	(1.03)		(1.05)	(0.58)
TrXSchXAgeOver40	0.008	0.037	0.013	0.032			
	(1.00)	(1.24)	(1.91)	(0.98)			
TrXMuslim	-0.061	-0.367	-0.140	-0.387	TrXMuslim	-0.507	-0.476
	(0.87)	(1.90)	(1.75)	(2.01)*		(3.82)**	(2.58)**
Muslim	0.100	0.112	0.262	0.512	Muslim	0.487	0.538
	(1.63)	(0.70)	(3.77)**	(3.22)**		(4.49)**	(3.38)**
AgeUnder30	0.031	0.243	0.032	-0.019	AgeUnder35	0.075	-0.014
	(0.65)	(1.45)	(0.83)	(0.13)		(0.57)	(0.09)
Age35to40	-0.056	-0.152	0.018	-0.106	Age40to45	-0.086	-0.192
	(2.51)*	(1.87)	(0.83)	(1.27)		(0.85)	(1.66)
Age40to45	-0.067	-0.272	0.030	-0.295	Age45to50	-0.005	-0.088
	(1.91)	(2.55)*	(0.95)	(2.77)**		(0.05)	(0.72)
Age45to50	-0.026	-0.173	0.036	-0.128	Age50to55	0.041	0.102
	(0.68)	(1.30)	(1.01)	(1.06)		(0.36)	(0.77)
Age50to55	-0.022	-0.003	0.055	-0.013	Age55to60	0.182	0.034
	(0.42)	(0.01)	(1.42)	(0.09)		(1.37)	(0.21)

AgeOver55	-0.326	-0.619	0.117	0.487	AgeOver60	0.286	0.364
	(2.07)*	(1.83)	(2.35)*	(1.45)		(1.98)*	(2.04)*
SchXAge20to30	-0.015	0.042	-0.006	0.084	SchXAge20to30		
	(1.01)	(0.94)	(1.07)	(2.41)*			
SchXAge30to40	0.003	0.092	0.003	0.094	SchXAge30to40	0.096	0.061
	(0.93)	(5.20)**	(0.88)	(5.29)**		(5.63)**	(2.16)*
SchXAgeOver40	0.006	0.093	-0.001	0.103	SchXAgeOver40	0.096	0.114
	(1.05)	(4.17)**	(0.38)	(4.09)**		(6.24)**	(7.89)**
HusAge	-0.001	-0.015	-0.000	-0.015	HusAge	-0.003	-0.012
	(0.36)	(1.99)*	(0.13)	(2.21)*		(0.42)	(1.78)
HusAgeSq	0.000	0.020	-0.000	0.017	HusAgeSq	0.002	0.010
	(0.15)	(1.99)*	(0.01)	(1.93)		(0.30)	(1.26)
HusYrsSch	0.011	0.055	0.008	0.055	HusYrsSch	0.069	0.077
	(5.12)**	(6.65)**	(4.51)**	(6.99)**		(9.75)**	(10.64)**
UnmarriedFH	-0.193	-0.752	-0.046	-0.357	UnmarriedFH	-0.220	-0.582
	(2.36)*	(2.50)*	(0.54)	(1.28)		(0.85)	(2.15)*
MarriedFH	0.023	0.090	0.025	0.217	MarriedFH	0.299	0.130
	(1.00)	(0.65)	(1.55)	(1.94)		(2.64)**	(1.13)
HusAbsentNH	-0.135	-0.328	-0.344	-0.867	HusAbsentNH	-0.491	-0.622
	(1.40)	(0.87)	(2.10)*	(2.16)*		(1.86)	(2.18)*
HusAgeMissing	0.121	0.437	-0.057	0.073	HusAgeMissing	0.132	0.158
	(2.01)*	(1.55)	(0.77)	(0.27)		(0.48)	(0.61)
HusEdMissing	0.041	0.045	0.022	0.069	HusEdMissing	0.090	-0.034
	(1.51)	(0.48)	(0.96)	(0.76)		(0.92)	(0.32)
Constant	0.870	-0.662	0.682	-0.360	Constant	-0.808	-0.654
	(7.62)**	(2.06)*	(7.22)**	(1.20)		(3.02)**	(2.18)*
Observations	1402	1402	1321	1321	Observations	2216	1700
R-squared	0.09	0.26	0.13	0.30	R-squared	0.26	0.32
All Treatment F	**1.16**	**2.03**	**1.82**	**1.23**	**All Treatment F**	**2.24**	**2.31**
p-value	0.31	0.02	0.05	0.26	p-value	0.01	0.03
Treatment F	**0.83**	**3.00**	**0.81**	**1.56**	**Treatment F**	**3.33**	**2.34**
p-value	0.54	0.01	0.56	0.16	p-value	0.00	0.00
Education F	**2.41**	**10.65**	**2.03**	**16.56**	**Education F**	**19.14**	**32.44**
p-value	0.03	0.00	0.06	0.00	p-value	0.00	0.00
Muslim F	**2.01**	**3.05**	**11.63**	**5.84**	**Muslim F**	**10.10**	**5.92**
p-value	0.13	0.05	0.00	0.00	p-value	0.00	0.01

Table 9: Reduced form regression results for education of individuals aged 9—14 and 14—30. Note: (i) Regression estimates are weighted by the number of girls and boys per woman that are in each age category. (ii) *BoyEdZScore and GirlEdZScore* are defined as the difference between the observed years of schooling of a boy or girl and the average educational attainment of other individuals in his/her age, divided by the std deviation of the years of schooling of the reference group; (iii) The variables *MoAge30to35, MoAge35to40, MoAge40to45, MoAge45to50, MoAge50to55, MoAgeOver55,* the interactions of these variables with the dummy "TreatmentArea" (abbreviated as Tr), *MoUnmarriedFH, MoMarriedFH, MoHusAbsentNH* are defined as in previous regressions except that here they all refer to the age of the child's mother; Similarly the variables *FaAge, FaAgeSq* and *FaYrsSch* refer to the child's father; Notes (ii)–(viii) of Table 4 apply.

Table 10: Reduced form regression results for anthropometric Z-scores for boys and girls aged 0–14 in the MHSS.

	(1)	(2)	(3)	(4)	(5)	(6)
	Boys aged 0–9			Girls aged 0–9		
	ZWeight	**ZHeight**	**ZBMI**	**ZWeight**	**ZHeight**	**ZBMI**
TrXChildAge	0.004	-0.007	0.005	0.021	-0.018	-0.049
	(0.13)	(0.18)	(0.10)	(0.91)	(0.57)	(1.76)
ChildAvAge	0.008	-0.008	-0.062	0.002	-0.058	0.051
	(0.39)	(0.26)	(2.10)*	(0.06)	(1.28)	(1.37)
TrXAgeUnder30	-0.058	0.552	-0.546	0.430	0.279	0.366
	(0.21)	(1.48)	(1.29)	(1.47)	(0.60)	(1.08)
TrXAge30to35	0.109	0.639	-0.288	0.429	0.481	0.220
	(0.37)	(1.60)	(0.65)	(1.40)	(1.01)	(0.61)
TrXAge35to40	-0.122	0.484	-0.502	0.451	0.506	0.229
	(0.39)	(1.15)	(1.06)	(1.43)	(1.01)	(0.60)
TrXAge40to45	0.230	0.754	-0.250	0.088	0.418	-0.144
	(0.62)	(1.54)	(0.48)	(0.23)	(0.72)	(0.32)
TrXAge45to50	-0.156	0.487	-0.557	0.433	0.298	0.473
	(0.35)	(0.97)	(0.97)	(1.03)	(0.48)	(1.01)
TrXAge50to55	-0.246	-0.046	-0.204	0.951	0.823	0.801
	(0.45)	(0.08)	(0.30)	(1.74)	(1.27)	(1.39)
TrXAgeOver55	0.099	1.911	-1.542	1.480	1.899	0.589
	(0.26)	(4.27)**	(2.85)**	(2.25)*	(2.44)*	(0.93)
TrXSchXAgeUnder30	0.002	-0.015	0.028	0.008	-0.007	0.034
	(0.05)	(0.33)	(0.56)	(0.22)	(0.15)	(0.95)
TrXSchXAge30to40	-0.012	-0.054	0.037	-0.025	-0.022	-0.011
	(0.43)	(1.43)	(1.09)	(0.88)	(0.56)	(0.35)
TrXSchXAgeOver40	0.018	-0.033	0.071	0.071	0.100	0.005
	(0.27)	(0.51)	(0.84)	(0.88)	(0.99)	(0.07)
TrXMuslim	0.092	-0.347	0.393	-0.298	0.077	-0.535
	(0.43)	(1.28)	(1.22)	(1.36)	(0.21)	(2.00)*
Muslim	-0.119	0.238	-0.356	0.176	0.018	0.244
	(0.66)	(1.02)	(1.26)	(0.93)	(0.05)	(1.07)
AgeUnder30	0.114	0.159	0.101	0.126	0.175	0.114
	(0.87)	(0.87)	(0.54)	(0.94)	(0.94)	(0.72)
Age35to40	0.214	0.251	0.109	0.045	0.002	0.103
	(1.67)	(1.37)	(0.65)	(0.35)	(0.01)	(0.68)
Age40to45	-0.069	-0.042	-0.075	0.034	-0.018	0.070
	(0.38)	(0.17)	(0.33)	(0.19)	(0.07)	(0.35)
Age45to50	0.108	0.068	0.120	-0.250	0.085	-0.425
	(0.35)	(0.22)	(0.37)	(1.35)	(0.29)	(1.73)

Age50to55	-0.075	0.467	-0.481	-0.418	-0.181	-0.519
	(0.18)	(1.72)	(0.92)	(1.21)	(0.44)	(1.69)
AgeOver55				-0.855	-1.594	0.033
				(1.84)	(3.38)**	(0.07)
SchXAge20to30	0.064	0.098	-0.008	0.053	0.112	-0.029
	(2.64)**	(2.56)*	(0.19)	(2.09)*	(3.45)**	(1.01)
SchXAge30to40	0.033	0.076	-0.020	0.090	0.111	0.038
	(1.55)	(2.37)*	(0.79)	(3.85)**	(3.29)**	(1.33)
SchXAgeOver40	0.034	0.108	-0.051	0.070	0.024	0.093
	(0.63)	(2.30)*	(0.65)	(1.72)	(0.42)	(1.73)
HusAge	-0.013	-0.009	-0.010	-0.016	-0.028	0.000
	(1.14)	(0.65)	(0.72)	(1.58)	(1.97)*	(0.03)
HusAgeSq	0.021	0.012	0.018	0.029	0.043	0.008
	(1.26)	(0.56)	(0.92)	(2.12)*	(2.17)*	(0.56)
HusYrsSch	0.002	-0.010	0.012	-0.012	-0.008	-0.012
	(0.19)	(0.69)	(0.94)	(1.09)	(0.49)	(0.88)
UnmarriedFH	0.268	0.063	0.398	-0.081	-0.394	0.222
	(1.07)	(0.23)	(1.20)	(0.25)	(1.12)	(0.51)
MarriedFH	-0.014	0.173	-0.186	-0.051	-0.218	0.158
	(0.09)	(0.83)	(1.03)	(0.32)	(1.00)	(1.02)
HusAbsentNH	0.553	0.593	0.300	-0.047	0.112	-0.097
	(1.57)	(1.24)	(0.85)	(0.15)	(0.26)	(0.25)
HusAgeMissing	-0.240	-0.234	-0.136	0.018	-0.031	0.071
	(1.04)	(0.80)	(0.51)	(0.07)	(0.10)	(0.21)
HusEdMissing	-0.000	-0.184	0.228	-0.010	0.069	-0.106
	(0.00)	(1.21)	(1.37)	(0.09)	(0.44)	(0.80)
Constant	-2.322	-2.753	-0.605	-2.757	-2.386	-1.454
	(7.54)**	(6.52)**	(1.44)	(8.79)**	(4.99)**	(4.27)**
Observations	1071	1071	1071	1065	1065	1065
R-squared	0.04	0.04	0.02	0.06	0.07	0.04
All Treatment F	**0.59**	**2.95**	**1.87**	**1.45**	**1.09**	**1.60**
p-value	0.84	0.00	0.04	0.14	0.37	0.09
Treatment F	**0.63**	**0.85**	**0.58**	**1.01**	**0.39**	**1.67**
p-value	0.70	0.53	0.74	0.41	0.89	0.12
Education F	**2.20**	**2.89**	**0.41**	**4.14**	**4.12**	**1.62**
p-value	0.04	0.01	0.87	0.00	0.00	0.13
Muslim F	**0.24**	**0.82**	**0.82**	**1.03**	**0.19**	**2.73**
p-value	0.78	0.44	0.44	0.35	0.82	0.09

Table 10: Reduced form regression results for the Z-scores of heights, weights and BMIs of boys and girls aged 0--14 in the MHSS. Note: (i) The variable ZHeight for boys for example, is defined as the difference between the observed height of boy or girl and the average height f other boys his age, divided by the standard deviation of the height of the boys who are his age; Notes (ii)–(viii) of Table 4 apply.

Table 11: Instrumental Variable regression results for dependent variables in Tables 3–10.

Dependent variables	Mean value	Sample size	Coefficients for "Children Ever Born"		
			Instrumental Variables		*OLS*
			Coefficient	Chi-square statistic (from overid test)	Coefficient
Women's fertility information					
Fraction of children under the age of 5 who died	.137	5082	0.035 (4.39)**	20.101 Pval=.1269	0.021 (13.58)**
Woman's health information:					
Woman self-reported health status is "Healthy"	.751	5329	-0.012 (0.60)	18.707 Pval=.1764	-0.005 (1.61)
Woman's Weight (in kg)	41.433	4660	-1.430 (4.25)**	11.029 Pval=.6837	-0.055 (1.09)
Woman's Height (in cm)	148.864	4660	0.501 (1.70)	17.971 Pval=.2081	0.046 (0.96)
Woman's BMI	18.665	4660	-0.756 (5.26)**	9.768 Pval=.7789	-0.034 (1.67)
Woman's ADL Index is 0	.624	5331	-0.027 (1.27)	19.474 Pval=.1476	-0.009 (3.11)**
Household assets, housing quality, and sources of water:					
Household owns farmland	.669	5314	-0.114 (4.29)**	20.143 Pval=.1256	0.005 (1.48)
Household owns jewelry	.528	5314	0.080 (3.19)**	32.354 Pval=.0035	0.002 (0.78)
Household owns a pond/orchard	.564	5314	-0.092 (3.27)**	18.943 Pval=.1671	0.007 (2.04)*
Main room of the household has a tin roof and wall	.466	5314	-0.029 (1.20)	30.055 Pval=.0075	0.007 (2.08)*
Household's drinking water comes from a well on the bari	.589	5314	-0.107 (3.83)**	18.585 Pval=.1814	0.003 (0.76)
Household's bathing/cleaning water is on the bari	.479	5314	-0.121 (4.35)**	22.665 Pval=.0659	0.003 (0.98)
Women's employment information:					
Income from woman's primary occupation	1036.171	5331	-1223.442 (2.98)**	17.082 Pval=.2518	-208.467 (4.11)**
Household's income from selling eggs	153.629	5331	-11.211 (0.33)	19.146 Pval=.1594	6.499 (1.56)
Household's income from selling milk	363.941	5331	150.766 (1.77)	21.366 Pval=.0926	28.203 (1.86)

Woman owns productive assets	.152	5331	-.0327	21.560	.0039
			(1.77)	Pval=.0881	(1.44)
Woman belongs to a credit group	.128	5331	-.0755	14.564	-.0027
			(3.92)**	Pval=.4086	(1.29)
Woman belongs to an employment group	.054	5331	-.0196	22.806	-.0015
			(1.62)	Pval=.0635	(1.12)
Woman belongs to a savings group	.146	5331	-.077	26.364	-.0024
			(3.86)**	Pval=.0232	(1.08)
Children's anthropometric outcomes					
Average weight z-score for girls	-2.436	1692	-.133	17.551	-.0144
			(2.15)**	Pval=0.092	(1.04)
Average height z-score for girls	-2.689	1692	-.135	12.012	-.0642
			(1.55)	Pval=0.362	(3.27)**
Average for BMI z-score for girls	-1.359	1692	-.0570	16.717	.0236
			(0.91)	Pval=0.116	(1.56)
Average weight z-score for boys	-2.444	1714	-.1311	8.486	-.0307
			(1.90)	Pval=.669	(2.23)
Average height z-score for boys	-2.575	1714	-.1339	5.616	-.0500
			(1.46)	Pval=.897	(2.37)
Average for BMI z-score for boys	-1.425	1714	-.114	3.947	.0042
			(1.34)	Pval= .971	(0.26)
Children's educational outcomes					
BCurrEnroll	.912	1436	.008	19.287	-.007
			(0.36)	Pval=.0561	(1.44)
BoyEdZScore	-.019	1426	-.256	15.554	-.0703
			(3.59)***	Pval=.158	(5.12)***
GCurrEnroll	.932	1340	.0154	18.706	-.0034
			(0.59)	Pval=.066	(0.35)
GirlEdZScore	-.022	1340	-.1549	10.225	-.0645
			(2.20)***	Pval=.511	(4.85)***
BoyEdZScore2	-.132	2216	-.0319	18.006	-.0165
			(0.69)	Pval=.054	(1.88)
GirlEdZScore2	-.093	1700	-.0817	19.052	-.0164
			(1.21)	Pval=.0396	(1.51)

Table 11: IV and OLS estimates of the effect of the treatment program on the dependent variables considered in tables 4---10; Notes: (i) The endogenous variable is "TotalChildren". (ii) Instruments are *TrXAgeUnder25, TrXAge25to30, TrXAge30to35, TrXAge35to40, TrXAge40to45, TrXAge45to50, TrXAge50to55, TrXAge55to60, TrXAge60to65, TrXAge65Over, TrXSchXAge15to20, TrXSchXAge20to30, TrXSchXAge30to40, TrXSchXAgeOver40 and TrXMuslim;* (iii) Control variables are *Muslim, AgeUnder30, Age35to40, Age40to45, Age45to50, Age50to55, AgeOver55, SchXAge20to30, SchXAge30to40, SchXAgeOver40, HusAge, HusAgeSq, HusYrsSch, UnmarriedFH, MarriedFH, HusAbsentNH, HusAgeMissing, HusEdMissing*; (iv) The Hansen-Sargan test is a test of overidentifying restrictions. The joint null hypothesis is that the instruments are valid instruments, i.e., uncorrelated with the error term, and that the excluded instruments are correctly excluded from the estimated equation. Under the null, the test statistic is distributed as chi-squared in the number of overidentifying restrictions. A rejection casts doubt on the validity of the instruments. P-values for the overidenfication test are in parenthesis in column (4) ; Notes (ii)–(viii) of Table 4 apply.

APPENDIX

Table A: Summary Statistics for Differences between Treatment and Comparison Areas in the 1996 MHSS

Variable	Obs	Mean	Standard Deviation	Obs	Mean	Standard Deviation	Difference
	Treatment=0			Treatment=1			
TotalChildren	2655	5.237	2.972	2682	4.734	2.811	-0.503 (0.079)***
TotalAlive	2655	4.079	2.262	2682	3.827	2.179	-0.252 (0.061)***
FracDied5	2520	0.150	0.187	2562	0.125	0.178	-0.025 (0.005)***
AgeAtFirstBirth	2505	23.111	4.819	2528	23.091	4.808	-0.019 (0.136)
SecondInterval	2273	3.154	2.051	2288	3.360	2.139	0.207 (0.062)***
ThirdInterval	2066	3.021	1.682	1979	3.356	2.142	0.335 (0.060)***
CurrHealthy	2650	0.751	0.433	2679	0.752	0.432	0.001 (0.012)
Weight	2338	40.945	6.263	2322	41.924	6.889	0.979 (0.193)***
Height	2338	149.134	6.092	2322	148.592	5.927	-0.542 (0.176)***
BMI	2338	18.380	2.401	2322	18.952	2.691	0.572 (0.075)***
ADLIndexEquals0	2652	0.610	0.488	2679	0.638	0.481	0.028 (0.013)*
PregCheckUps	2531	0.088	0.187	2578	0.168	0.234	0.025 (0.011)*
NumAnteNatChecks	2531	.621	1.204	2578	1.184	1.543	0.190 (0.062)**
ATSInject	2531	0.131	0.253	2578	0.204	0.276	-0.057 (0.012)**
PolioVac	922	0.613	0.487	842	0.935	0.247	0.322 (0.019)***
MeaslesVac	922	0.458	0.498	842	0.803	0.398	0.345 (0.022)***
DPTVac	922	0.563	0.496	843	0.899	0.301	0.336 (0.020)***
PrimOccIncome	2655	700.770	6652.923	2682	1365.877	9591.199	665.106 (226.167)***
TotalIncome	2655	895.069	7217.794	2682	1476.180	9954.174	581.112 (238.212)**
DairyInc	2647	611.268	3010.618	2673	427.813	1307.526	-183.455 (63.535)**
OwnProdAssets	2652	0.137	0.344	2679	0.166	0.372	0.028 (0.010)**
GroupLoan	2652	0.105	0.306	2679	0.151	0.358	0.046

							(0.009)***
GroupWork	2652	0.047	0.212	2679	0.062	0.241	0.015 (0.006)***
HhdOwnFarmland	2647	0.643	0.479	2673	0.697	0.460	0.054 (0.013)***
OwnJewelry	2652	0.553	0.497	2679	0.503	0.500	-0.050 (0.014)***
HhdOwnPond	2647	0.537	0.499	2673	0.591	0.492	0.054 (0.014)***
TinRoofWall	2655	0.446	0.497	2682	0.487	0.499	0.040 (0.013)**
DrWellWater	2655	0.927	0.260	2682	0.941	0.236	0.014 (0.007)*
DrWaterInBari	2655	0.560	0.496	2682	0.644	0.479	0.083 (0.013)***
ClWellWater	2655	0.205	0.404	2682	0.202	0.402	-0.003 (0.011)
ClWaterInBari	2655	0.428	0.495	2681	0.529	0.499	0.101 (0.014)***
GZWeight2	753	-2.321	0.979	688	-2.141	0.970	0.180 (0.051)**
GZHeight2	754	-2.495	1.331	687	-2.356	1.301	0.138 (0.069)*
GZBMI2	753	-1.247	1.104	687	-1.109	0.915	0.138 (0.054)*
BZWeight2	789	-2.443	0.967	773	-2.414	0.991	0.029 (0.050)
BZHeight2	789	-2.586	1.290	773	-2.457	1.255	0.129 (0.064)*
BZBMI2	788	-1.407	1.178	774	-1.460	1.095	-0.053 (0.058)
BCurrEnroll	768	0.913	0.267	668	0.911	0.271	-0.002 (0.014)
BoyEdZScore	766	-0.124	0.902	660	0.102	0.988	0.225 (0.050)**
GCurrEnroll	706	0.944	0.221	662	0.919	0.262	-0.025 (0.013)
GirlEdZScore	703	-0.108	0.896	637	0.071	1.045	0.179 (0.053)**
BEverAttd2	1184	0.640	0.415	1215	0.631	0.429	-0.008 (0.017)
BoyEdZScore2	1085	-0.175	0.927	1131	-0.091	0.973	0.084 (0.040)*
GEverAttd2	1054	0.890	0.268	1115	0.869	0.292	-0.020 (0.012)*
GirlEdZScore2	827	-0.131	0.957	873	-0.057	1.054	0.073 (0.049)*

Table A: Summary statistics for dependent variables and difference in mean values between treatment and control areas. Standard errors of the differences between treatment and control areas are in parentheses. * indicates 1% significance level, ** indicates a 5% significance level and * indicates a 10% significance level.**