Evaluation of the Impact of the Mother and Infant Health Project on Maternal and Infant Health Outcomes in Ukraine

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Despite some progress, half way towards the target date of 2015 set for the Millenium Development Goals still leaves the world at extremely high maternal and infant mortality rates (MDGR 2008). Most efforts in these target areas involve reproductive health programs that rely on transfers of technologies that were instrumental in reducing infant and maternal mortality in the developed countries in the past. Among those technologies are the antenatal clinics, early onset of prenatal care, and training of the traditional birth attendants for the remote areas. Introduction of these technologies requires higher health care spending, so spending is often used as a policy variable of interest. However, existing empirical literature finds that in most settings higher spending on health care does not significantly reduce either maternal or infant mortality. This leads to a hypothesis that the level of spending does not reflect the quality of care and what matters more is not how much care is provided (available), but how exactly is the care provided. The investigation of such a question in the context of maternal and infant health is quite complicated for three reasons: (i) to identify the effect one needs to be able to separate the improvements in the way services are provided (quality) from some standard service provision (quantity), (ii) the evaluation needs to be done in a setting with rather high mortality and morbidity rates to assure identification of the effect, (iii) endogeneity of the obstetric care use needs to be addressed: e.g. mothers who anticipate poor birth outcomes may seek for a better quality and/or more quantity of care, leading to an underestimation of the effect. While the maternal and infant mortality rates are extremely high in the developing countries, it is not possible to evaluate impact of quality improvements since in majority of the cases they come along with the opening of new medical centers. In developed countries, where the prenatal and obstetric care is universal, the mortality rates are quite low to allow for identification of any effects. So, to investigate the issue one needs a combination of various characteristics of developed and developing countries and an application of a quasi-experimental design to mitigate the third difficulty.

The evaluation of the impact of the Mother and Infant Health Project (MIHP) in Ukraine that has started in year 2002 and is planned to continue till 2010 allows addressing all of the above mentioned concerns and identifying changes in the maternal and infant health outcomes due to the enhancements in the quality of Perinatal care and labor and delivery services. First, the basic Perinatal and obstetrics care is universally available in Ukraine. Hence, the estimated impact of the area participation in the MIHP can be attributed to the improvement in medical technologies and quality of prenatal care rather than the availability of services per se. Second, in spite of the fact that the population health in Ukraine compares favorably to that in the developing world, it is still lagging far behind the developed countries in terms of maternal and infant mortality and morbidity.[1] Third, the variation in the MIHP participation over time and across regions allows controlling for the overall trend in the country and area fixed effects, as well as overtime changes within areas by looking at the pregnancy unrelated health outcomes.

The MIHP project is aimed at improvement of overall maternal and infant health in various countries. It pioneers at supplying information about modern evidence-based medical technologies to local medical practitioners, authorities, and public. The Project is implemented in ten African, six Asian, six Latin American, and three Eastern European countries. In contrast to other countries, MIHP Ukraine is a comprehensive, large scope and a long horizon project which mainly affects quality of the following services: (i) medical perinatal and postpartum patronage, (ii) post-partum and post-abortion counseling on family planning methods, and (iii) labor and delivery. This is achieved through dissemination of information on evidence-based practices, training of local medical practitioners, and collaboration with the local authorities aimed at the revision of the maternal and infant health standards in the country.

This paper studies the impact of the MIHP participation on three sets of outcomes: maternal health, infant health, and family planning. In addition, we investigate the mechanisms through which the reductions in the infant and maternal mortality and morbidity take place via estimating the impact of the MIHP on prenatal care use, intermediate health outcomes and mortality components. The selection of the explanatory variables for the current analysis is based on the theoretical model of joint maternal and infant health production as outlined in Conway and Kutinova (2006). This model starts with the idea that mother maximizes her own utility that depends on her own health, infant's health, consumption goods that do not affect

[1] During the latest years, the level of anemia among pregnant women has increased 4.5 times, maladies of genital urinary system about 3 times, and diseases of blood circulation system 2 times. The average maternal mortality ratio fluctuates around 18-22 women per 100,000 live births, which is 3.5 times higher than in the EU. At the same time, infant mortality (9.5/1000) is two times of that in the EU, while the rate of stillbirth (16.89/1000) is four times higher than in the EU. Additionally, the incidence of congenital anomalies of newborns has increased over time and reached the number of 2877.99/100,000, which is 77% higher than the European Union average statistics (Center of Medical Statistics of Ukraine 2007).

health, and consumption goods that have an indirect effect on mother's/infant's health. The maximization is subject to the joint production of mother's and infant's health and standard budget constraint. The central feature of the model is that prenatal care affects both mother's and infant's health directly, but also indirectly: by affecting mother's health, it influences infant's health and vice versa. Mother is choosing the level of prenatal care and own consumption to maximize her utility. According to this framework prenatal care use will depend on the vector of prices, exogenous income, socio-economic characteristics and mother and infant health endowment. The resulting "semi-structural" equations for mother's and infant's health will depend on endogenous inputs of prenatal care, socio-economic characteristics, and mother and infant health endowments. Aggregating the health equations over the population of small geographic areas returns the relationship between the distribution of maternal and infant health in the area and the distributions of prenatal care use, socio-economic characteristics, and mother and infant health endowments.

Using policy evaluation methods (difference-in-difference and propensity score matching) we find that areas in which maternities participate in the MIHP observe greater improvements in maternal health. We find that improvements in maternal health and mortality may be a result of earlier attendance of the prenatal clinics, increased share of normal deliveries, reduction in C-sections, and lower levels of anemia and diseases of blood circulation system. The causal effect of the project on the maternal health outcomes is supported by the finding that the MIHP participation has no impact on other health outcomes, such as tuberculosis or diabetes. We find that the MIHP participation has no significant impact either on the abortion rates or on the use of pills contraception. Likewise we do not find that the MIHP has a significant impact on the infant mortality and morbidity.

MDGR. 2008. The Millenium Development Goals Report. Accessed online at http://www.un.org/millenniumgoals/pdf/The%20Millennium%20Development%20Goals%20Report%202008.pdf on September 12, 2008.