Abstract 1

Title: Building parental capacity to improve child development: Impact evaluation of an early childhood stimulation program in Bangladesh

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Abstract 1 Body

Background / Context:

Description of prior research and its intellectual context.

Globally, at least 200 million children younger than five years old are falling short of their potential for development and growth. In Bangladesh, 22% of infants have low birth weight and 64% are exclusively breastfed until age 6 months. Forty-one percent of children under five have stunted growth, and the majority lack appropriate stimulation and early learning opportunities. There is some evidence that improvements to children's health, nutrition, and development outcomes can be made through programs that provide direct learning experiences to children and families; are targeted toward younger and disadvantaged children; are of longer duration; and are integrated with family support, health, nutrition, or educational systems and services. Yet there are serious gaps in knowledge about how to deliver integrated early childhood interventions in cost-effective ways in low-income settings—that particularly focuses on improving growth and child development in the first thousand days of a child's life. This study presents the baseline results for an impact evaluation of one such intervention in Bangladesh.

Literature review. Children's development is the product of multidirectional interactions between poverty, socio-cultural factors, and psychosocial and biological factors. The conceptualization of development as a dynamic interplay between biological and environmental factors suggests that development is malleable, and that it can be affected by interventions targeting the child, the environment, or both.

A large body of research conducted in developing countries has found that adequate nutrition in infancy and early childhood is a critical foundation for children's physical and cognitive development (Black et al., 2008; Engle & Huffman, 2010; Grantham-McGregor, 1995; Grantham-McGregor & Ani, 2001; Khanam, Nghiem, & Rahman, 2011; Victora et al., 2008). Interventions designed to improve family nutrition and dietary diversity are widespread in developing countries, and there is strong evidence that these interventions are effective in terms of improving both children's physical growth outcomes and their cognitive skills. A review of studies of nutrition interventions found that they have the potential to improve children's physical outcomes, particularly their height-for-weight ratios (Bhutta et al., 2008). Studies of nutrition programs in Bangladesh have also found positive effects on children's physical development (Roy et al., 2005; Roy et al., 2007).

While adequate nutrition is a necessary precondition for healthy physical and cognitive development in young children, they also require stimulation to achieve their full learning potential. Stimulation in infancy and early childhood is important for optimal brain development (Avants et al., 2012; Farah et al., 2008; Shonkoff & Phillips, 2000; Walker et al., 2011; Walker, 2010), and a review of child development risk factors for children in developing countries identified low levels of cognitive stimulation in infancy as one of the most salient risks as well as a number of health-related factors and other psychosocial challenges (Walker et al., 2007). Similarly, a review in the *Lancet* found evidence across a number of studies that stimulation interventions had positive effects on child developmental outcomes (Walker et al., 2011).

Observational studies have also found that parent stimulation behaviors are associated with children's later cognitive skills, both in the United States and in developing countries (Barros, Matijasevich, Santos, & Halpern, 2010; Bradley, RH; Corwyn, RF; Burchinal, M; McAdoo, HP; Coll, 2001; Lugo-Gil & Tamis-LeMonda, 2008; McLoyd, 1998; Shonkoff & Phillips, 2000; Zaslow et al., 2006), which suggests that improving parent-child interactions may increase children's cognitive skills.

Save the Children has developed an innovative, low-cost and potentially scalable early stimulation program that delivers actionable messages to mothers and other caregivers that show them how to interact and play with young children. The program is low cost and potentially scalable because it builds on an existing delivery platform—nutrition education delivered via local community clinics—and trains current community health care providers to deliver additional messages on early childhood stimulation practices.

Purpose / Objective / Research Question / Focus of Study:
Description of the focus of the research.

Purpose. The purpose of this impact evaluation is to examine whether and how the Early Childhood Stimulation Program (ECSP) implemented by Save the Children improve the cognitive and language development and anthropometric outcomes of children between 3 and 42 months of age. The study is being carried out in Bangladesh, which has a recent history of successful policy interventions, such as family planning, microcredit, and the Green Revolution. These interventions are largely based on a recognition that women are key agents of change (Economist, 2012).

Objectives. The evaluation has four main objectives. The first objective is to document the impact of the early stimulation program on children's cognitive and language development (measured by Bayley Scales of Infant and Toddler Development), children's anthropometric outcomes, and mothers' parenting behaviors. The second objective is to build understanding about the intervention process by describing the mechanism through which the program affects child outcomes—that is, namely to understand the dynamic interrelationships between mothers' knowledge, mothers' behavior, and child development outcomes, and to examine the fidelity with which the programs can be implemented (namely the delivery of services and outreach by health workers). The third objective is to provide information to the Bangladesh government about the scalability of the program, if it is found to be effective. This includes estimating the benefits of the intervention relative to the costs, and investigating the potential of scaling the program using the NNS platform. The fourth objective is to build local capacity and inform policy by using impact evaluation techniques in close collaboration with the government of Bangladesh, Save the Children, and national-level research and program institutions.

Research Questions. There are five research questions that guide the evaluation:
1. What is the impact of the early childhood stimulation program (delivered with the NNS) on children's cognitive development outcomes?
2. What is the impact of the early childhood stimulation program (delivered with the NNS) on children's anthropometric outcomes?
3. What is the impact of the early childhood stimulation program on mothers' parenting behaviors?

4. What is the benefit of the intervention relative to the cost?
5. What is the mechanism through which the intervention affects the outcomes of interest?

Setting:
Description of the research location

The study is being carried out in rural Bangladesh in the sub-districts of Muladi, Satkania, and Kalaura. Within these sub-districts the study is taking place in 78 community clinics located in 30 unions.

Population / Participants / Subjects:
Description of the participants in the study: who, how many, key features, or characteristics.

The sample consists of 2574 households with children aged between 3 months and 18 months of age. The study sample frame was generated from community clinic health assistant records, which is a government document of record containing the population frame for all households with children under five years of age.

Intervention / Program / Practice:
Description of the intervention, program, or practice, including details of administration and duration.

The early childhood stimulation program developed by Save the Children seeks to improve child development by promoting positive early stimulation practices and maternal responsiveness to the emotional and physical needs of children up to three years old. The program builds on an existing delivery platform—household visits and community clinics—and trains community health care and family planning providers to counsel families (especially mothers of young children) on early childhood stimulation practices. Each household receives a Child Development Card, a booklet with key messages, and two picture books.
The Save the Children early childhood stimulation intervention builds on the NNS platform, which already reaches out to frontline service providers. The NNS program trains service providers to deliver a comprehensive nutrition package to households with young children, and Save the Children complements this by providing additional training modules on early stimulation and responsive care.

Research Design:
Description of the research design

This evaluation is a cluster-randomized control trial (RCT), in which community clinics within the same union (or administrative unit) are randomly assigned to either receive the intervention or not receive the intervention. A total of 78 community clinics were randomly assigned to the treatment and control groups. Within each community clinic catchment area, we randomly selected 33 households with children aged between 3 months and 18 months. The same set of households surveyed during the baseline data collection period will be surveyed during the endline data collection period.

Community clinics are ward-/village-level health facilities that deliver local primary health care and family planning services in rural areas. The study design includes stratification (blocking) at the union level. There are, on average, two or more community clinics within each union, which allows the implementation of both treatment and control conditions in each union.
To avoid any potential anticipation effects, randomization was performed after the collection of the baseline data had been finalized.

In the treatment group, all 39 community clinics are receiving the NNS nutrition package. The service providers working at the community clinic received an initial four-day training on early childhood stimulation as well as the program materials developed by Save the Children. Early stimulation messages (along with the program materials) are delivered to mothers and other caregivers during routine household visits, as well as during sick or well-baby visits to community clinics. The 39 community clinics assigned to the control group are also receiving the NNS nutrition package. However, the service providers operating in the control community clinics did not received training on early childhood stimulation and did not received the program materials.

Data Collection and Analysis
Description of the methods for collecting and analyzing data

Data collection took place face to face in the field, using highly scripted surveys. The team collected the following type of data: a) Household survey; b) Anthropometric measures; c) The cognitive and language subscales of the third version of the Bayley Scales of Infant and Toddler Development (BSID–III); c) Service provider survey; d) Administrator survey; e) Non-compliance survey.

Data collectors first located infants in the randomly selected sample by visiting the residential addresses provided by service providers. After locating each family, the field staff administered the household interview. After completing the survey, the mother was requested to visit her assigned community clinic at her earliest convenience—preferably the following day—so that the BSID–III test could be administered to her child.

Findings / Results
Description of the main findings with specific details

The study is ongoing. The team completed the baseline data collection last January 2014 and the baseline report. The baseline results validate the study design used in the impact evaluation. The randomization process appears to have worked successfully in terms of creating equivalent groups at baseline because the mean characteristics of the groups were balanced between the treatment and control conditions.

Conclusions
Description of conclusions, recommendations, and limitations based on findings

The study is ongoing.

Appendices

Appendix A. References.

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