



INDIA: Can we make parenting programs more cost-effective?

In the first years of life, all children need healthy food, a clean environment, and stimulation to thrive and reach their full developmental potential. However, poverty prevents millions of young children in low- and middle-income countries from receiving adequate nutrition and stimulation. As a result, many disadvantaged

from low-income settings has found that encouraging parents to play and interact more with their children can improve children's brain development, with impacts that can last into adulthood. Delivering these parenting programs at scale and in a cost-effective manner, however, has been a challenge, in part because some of the most successful programs have been delivered through intensive and relatively costly home-based programs.

The World Bank's Strategic Impact Evaluation Fund supported a randomized evaluation in Odisha, India that tested different ways of delivering weekly parenting sessions for two years. Children and their mothers received either nutritional education, nutritional education and individual home-based child development sessions, or nutritional education and group-based child development sessions, depending on which community they lived in.

The evaluation found that compared to receiving no intervention, the individual home-based sessions and group sessions both improved children's language and cognition, and they were equally effective. The group sessions were much cheaper to implement, however, costing \$38 per child per year, which was roughly a quarter of the cost of home visits. Most impacts occurred in the first year and were sustained in the second year. The nutrition education had no impact on developmental outcomes, suggesting that knowledge may not be an important barrier to better nutrition in this context. These findings suggest mother-child group sessions, when implemented well, offer a cost-effective alternative to home visits as a strategy to improve young children's cognitive development in low-income settings.



children's brain development lags behind that of their well-off peers, which can have lifelong consequences. Previous research

Context

India has experienced steady economic growth in recent decades, and many social and health indicators have greatly improved along the way, including indicators of early childhood development, but there is still a long way to go in addressing gaps in early childhood development. [UNICEF](#) estimates that 43 percent of children under age five in India are at risk of not fulfilling their developmental potential. Odisha, a state in eastern India on the Bay of Bengal, has experienced steady growth, but remains one of the country's poorest and most populated states.

Pratham Education Foundation, the implementing partner in this study, is a large and established non-governmental organization in India. In the context of this study, Pratham implemented a program, which like many others around the world, is based on the curriculum used in a foundational experimental

study in Jamaica that found long-term benefits of early childhood stimulation that lasted into adulthood. This parenting model is now known as Reach Up and Learn. In a previous evaluation of Reach Up and Learn in India, researchers found that the program improved children's development, but it was labor-intensive and costly. Together with Pratham, researchers decided to investigate whether adapting the home-visiting program into group sessions could deliver similar impacts at lower cost. The evaluation took place in three districts of Odisha state: Cuttack, Salepur, and Bolangir.

Poverty in Odisha state...

39% of children are stunted
44% lack drinking water on premises
30% of adults are illiterate

Source: World Bank, 2016

Evaluation

Researchers conducted a randomized controlled trial to evaluate the impact of nutrition education, home-based visits, and mother-child group sessions on five main outcomes: child cognition, language, motor development, physical growth, and morbidity. A total of 192 villages (clusters) were randomly assigned to one of four groups — three treatment groups and a control group. Each experimental group had 48 villages and approximately 360 children.

The first treatment group received nutritional education only. The nutrition education program focused on improving the quality of children's diets and basic hygienic practices in households through games, stories, and cooking demonstrations.

The second group received both nutritional education and home-based individual early childhood development sessions. The facilitators came to the house once a week for one-hour sessions, where they showed mothers how to interact with and respond to their children in ways likely to promote their child's development. They demonstrated play activities and encouraged mothers to participate by using toys made from locally available materials and books. Mothers received play materials to use at home that would be exchanged each week with every new set of activities demonstrated during the session.

The third group received nutrition education and weekly group sessions where facilitators taught an adapted version of the curriculum used in the individual sessions to groups of 7-8 children and their mothers. During the sessions, all mothers and children performed the same activities at the start, such as free play, singing, review of the previous week's activities, and child-rearing discussions. The groups were then divided in half based on children's ages for age-specific play activities.

The sessions all ran weekly for two years, starting in December 2015, and were led by female facilitators from within the local communities, nearly all of whom had secondary school education or higher (40 percent had bachelor's degrees). Home visits lasted about one hour, group meetings lasted 90 minutes, and nutritional education visits were 40-minutes long.

Researchers first collected data at baseline, before the programs began. At that time, they assessed children's development using an adapted version of the Ages and Stages Questionnaire (ASQ-3). At 12 and 24 months after baseline, caregivers brought children to testing centers, where testers with tertiary education or equivalent experience working with children measured children's cognitive, language, and motor development using the Bayley Scales of Infant and Toddler Development. Other enumerators

measured children's growth at home in all data collection rounds using World Health Organization (WHO) guidelines and standard tools for measuring height and weight. Researchers assessed children's wellness at midline and endline through mothers' reports on occurrences of diarrhea, fever, and cough in the previous two weeks using WHO definitions.

Children's socioemotional development was assessed at end-

line by maternal reports by using the Strengths and Difficulties Questionnaire. Secondary outcomes, such as home environment and parents' knowledge of infant development, were measured in all rounds in homes. All surveys and questionnaires were translated into the local language, Odiya, and extensively piloted before the evaluation began.

Findings

After one year, children in communities offered group or individual home-based sessions had better cognitive development than children in the control group.

Both home-based and group sessions led to improvements in children's cognition, amounting to 0.313 standard deviations (SD) and 0.298 SD, respectively. Children in the communities offered group sessions also had better language skills on average (a 0.313 SD improvement), while those in the home-based sessions didn't see significant impacts at the one-year mark. No statistically significant changes were observed in children's motor skills or physical growth relative to the control group.

At the two-year mark, children in both the group sessions and home-based intervention had better language and cognitive development than children in the control group.

Significant impacts on cognition persisted and remained stable from year 1 to year 2, as did the effects on language for children in the group-based sessions. After two years, children in the group offered home-based sessions showed a 0.23 SD language advantage over the control group that was marginally significant.

The nutritional education intervention had little to no impact on developmental outcomes.

Researchers had hypothesized that the nutrition intervention may lead to better nutrition and improve child growth, but there was no impact on children's height or weight (for their age). The approach also didn't lead to any improvements in other health indicators like diarrhea or coughing.

There are a few possible reasons why this approach to improving children's nutrition didn't work. For one, the nutrition counselling may have occurred too late: stunting (being too short for one's age) may have been better addressed through earlier intervention when children were younger. Second, household food security was low in this population — 15 percent of households reported at least one household member skipping meals in the past week — so nutritional supplementation may have been required. A further problem may have been poor sanitation, with less than half of households owning



Photo: Simone D. McCourtie / World Bank

toilets. Such inadequate sanitation adds to risks of diarrhea, intestinal disease, and parasites, preventing absorption of nutrients and contributing to malnutrition and poor growth.

Beyond language and cognition, researchers found limited impacts in other domains of child development.

Researchers also looked at a range of other outcomes that might be affected by the programs, but found little beyond the main outcomes. For example, no statistically or economi-

cally meaningful impacts were observed on children's motor skills. Group sessions led to reductions in reported fever after two years, but had no other effects on reported morbidity. The home-based intervention had a marginal impact on prosocial skills but there weren't any impacts on child behavior (internalizing and externalizing problems) or on parents' knowledge of child development.

The group sessions were much more cost-effective than the home visits.

The costs of training, materials, salaries, and overhead of the home visiting program led to a cost of \$135 per child per year when each home visitor made 15 weekly visits. Group sessions cost \$38 per child per year when each facilitator ran eight groups per week with eight children per group. Given the impacts were the same across the two program variants, the group session model ended up being much more cost-effective.

Group sessions may have worked partially through peer modeling or by promoting cultural acceptance of the practices that were taught.

Overall attendance was higher in the home-visit group than the group session group (75 percent compared with 51 percent), but impacts were the same. Because impacts are estimated based on families who were *offered* the sessions in the experiment, not just those who actually *received* the sessions, the identical impacts with differential attendance suggests that impacts of the group sessions for participants was much higher than for participants of the home-based intervention. The research team speculates that this is because mothers and children in the group sessions learned skills through observing others and that socially isolated mothers may have received support they needed by interacting with peers. They also hypothesize that group sessions aided cultural acceptance of the child stimulation and rearing practices that the program was trying to promote.

Conclusion

This was the first study to compare home-based and group-based parenting sessions. Group sessions cost only 28 percent of what home-based visits cost in this context, with equivalent average effectiveness among those offered the programs (and larger impacts for those who actually participated in the programs).

The results also suggest that the nutrition education model tested in this study isn't effective, and other approaches, possibly supplementation – which has been effective in other contexts – or improvements in sanitation may be necessary to improve children's physical growth.

The Strategic Impact Evaluation Fund, part of the World Bank Group, supports and disseminates research evaluating the impact of development projects to help alleviate poverty. **The goal is to collect and build empirical evidence that can help governments and development organizations design and implement the most appropriate and effective policies for better educational, health, and job opportunities for people in low and middle income countries.** For more information about who we are and what we do, go to: <http://www.worldbank.org/sief>.

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1818 H STREET, NW, WASHINGTON, DC 20433