The Impact of Early Childhood Education on Child Development in Karnataka, India

Researchers:

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Sector(s): Education

Location: Karnataka, India

Sample: 808 children

Target group: Children

Outcome of interest: Student learning Cognitive development

Intervention type: Early childhood development Early childhood education

AEA RCT registration number: AEARCTR-0001078

Partner organization(s): Hippocampus Learning Centres

Early childhood is a critical time for cognitive, social, and physical development. Unfortunately, in developing countries, many children under five fail to reach their developmental potential. Researchers partnered with Hippocampus Learning Centers (HLC), an organization that aims to provide affordable and high-quality pre-primary education in rural Karnataka, India, to test the impact of attending kindergarten on children's cognitive and socioemotional development. The scholarships program positively impacted enrollment in kindergarten and children's performance on cognitive tests, with some effects persisting through the first year of primary school. However, the scholarships did not have an effect on socioemotional development.

Policy issue

Early childhood is a critical time for cognitive, social, and physical development. For children under the age of five, cognitive and psychosocial stimulation may be especially important for psychological and neurological growth. Research from the United States, where Early Childhood Education (ECE) options such as public preschools and kindergartens are commonplace, suggests that ECE can help children gain skills necessary for educational success later in life.[1] Unfortunately, most evidence on the impacts of pre-primary schooling is from high-income countries, and experimental research on the impact of ECE in low- or middle-income contexts is relatively nascent. To address this evidence gap, researchers evaluated the impact of scholarships to attend kindergarten on child development in rural Karnataka, India.

Context of the evaluation

In rural India, enrollment in formal pre-primary schooling was quite limited at the time of the evaluation, with just 14 percent of preschool-aged children enrolled as of 2017. In many villages, government-run anganwadi centers provide some ECE, but largely serve as daycares staffed by individuals minimally trained in teaching. However, the government's role in ECE is set to expand—India's National Education Policy 2020, passed in July 2020, now includes preschool for children ages 3-6 in the education system structure.

Private preschools and kindergartens are another ECE option, but these often charge high fees and feature a curriculum based in rote learning. Additionally, parents may not believe that ECE is important for their child's development. Among the households in this study, parents tended to believe in the importance of rote learning, which could imply a lack of awareness of the importance of stimulating their children to encourage emotional and intellectual development.

Researchers partnered with Hippocampus Learning Centers (HLC), an organization that aims to provide affordable and high-quality pre-primary education for 3-6 year old children in rural Karnataka, India. HLC runs village "learning centers" which offer a year of prekindergarten and two years of kindergarten for US$70 to $107 per year.[2] The HLC model is unique because its curriculum has detailed, daily lesson plans and necessary materials in a ready-made kit that make it easy for teachers in rural areas to deliver quality lessons. New teachers are provided twenty days of intensive training and monthly in-service training throughout the year. The structured curriculum allows the HLC model to be easily scaled as the organization grows.

Photo: Kindergarten students learning at a Hippocampus Learning Center. | Photo: S. Nanda Kumar | J-PAL

Details of the intervention

In partnership with HLC, researchers conducted a randomized evaluation in 71 villages in Karnataka to test the impact of attending two years of kindergarten at HLC on children's cognitive and socioemotional development as well as their learning outcomes in the first year of primary school.

To encourage children to attend HLC, researchers created a scholarship program for children who were age-appropriate to enroll in the first year of kindergarten (aged 3.5-4.5) from the poorest households in their villages, determined through household surveys. The scholarship was worth 80-87 percent of the total cost to attend two years of kindergarten, accounting for material fees and kindergarten level (junior or senior) at an HLC school, or about INR 4,125-6,825 (US$59-98 in 2016). Scholarship families

were responsible for an INR 1,000 co-pay (US$15 in 2016) per year.

Eight-hundred and eight eligible children were entered into a scholarship lottery, among which a random half received a scholarship offer and formed the intervention group. The other half of children did not receive the scholarships, though they could attend HLC without the scholarship if they chose, and formed the comparison group.

Researchers gathered data on children's development at three points in time. After a baseline cognitive test prior to starting kindergarten, children were assessed on their cognitive and socioemotional development after completing kindergarten and again after completing first grade. The first assessment of socioemotional development was made by surveying parents on their impressions of their children's development, while the second, more direct, assessment was made via a series of games.

Results and policy lessons

Results from both immediately after finishing kindergarten and one year into primary schooling indicate that the scholarships program positively impacted enrollment in kindergarten and performance on cognitive tests. However, the scholarships did not have an effect on socioemotional development.

Enrollment: The scholarships increased the likelihood that children would attend kindergarten. Children offered scholarships were 47 percentage points more likely (a 207 percent increase) to attend HLC and 20 percentage points more likely (a 33 percent increase) to attend any kindergarten than those not offered scholarships. However, children who received scholarships were no more likely to enroll in primary school.

Cognitive development: Offering children a scholarship, and in particular attending HLC on a scholarship, had a large positive effect on cognitive development. Immediately after kindergarten, those induced into attending formal kindergarten have roughly doubled the rate of learning compared to the peers who did not attend kindergarten. After two years of attending HLC kindergarten, children who were offered a scholarship scored on average 0.4 standard deviations higher on cognitive tests covering subjects including math, language, memory, motor skills, reasoning, and creativity than students who were not offered a scholarship. Students who were offered the scholarship and attended HLC as a result (68 percent of students offered the scholarship) scored on average 0.8 standard deviations better than children who did not attend HLC on the cognitive tests. About 40 percent of this effect was found to persist through the first year of primary school.

Socioemotional development: The HLC program did not have an effect on any of the measured aspects of socioemotional development, either in the short- or medium-run. The direct assessment conducted at the end of first grade found no effect on children's contentiousness, willingness to attempt hard problems, their willingness to share with another child, or other measures. One explanation may be that socioemotional skills seem to arise when children interact with one another in a structured environment, and because most children in the comparison group attended public day care centers, the social environments of the scholarship and comparison groups may have been similar.

These results suggest that there can be substantial cognitive benefits to participation in ECE with a more formal curriculum. However, a more formal ECE curriculum does not appear to yield additional socioemotional gains beyond community day care.

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1. Weiland, Christina, and Hirokazu Yoshikawa. 2013. "Impacts of a prekindergarten program on children's mathematics, language, literacy, executive function, and emotional skills." *Child Development* 84(6): 2112-2130.; Peisner-Feinberg, Ellen S., Margaret R. Burchinal, Richard M. Clifford, Mary L. Culkin, Carollee Howes, Sharon Lynn Kagan, and Noreen Yazejian. 2001. "The relation of preschool child care quality to children's cognitive and social developmental trajectories through second grade." *Child Development* 72(5): 1534-1553.

2. Fees depend upon the wealth of the village in which thecenteris located and the grade that is being taught with Upper Kindergarten costing more than Lower Kindergarten. These fees also include materials and uniforms.