EVIDENCE MEMO

Reducing Malnutrition and Promoting Early Childhood Development

Evidence from randomized evaluations

The first 1,000 days of life comprise a critical period of physical and cognitive development. Children who experience normal physical growth and development in this period do better in school, and as adults, earn about 20 percent more in their jobs and are 10 percent more likely to own their own businesses.[1] On the other hand, inadequate nutrition during this period can cause stunting and contribute to long-term developmental consequences that affect future productivity and well-being.[2]

In this brief, Innovations for Poverty Action has complied evidence from randomized evaluations of programs that aim to support a child's first 1,000 days, in addition to evidence from academic reviews of high-quality trials in maternal and child health and early childhood development.

While all the interventions in this brief have been rigorously tested, sometimes solutions that work in one context may not work as well in another. In addition, while many of these interventions have been demonstrated to improve child health and development in trial settings, delivery (especially to remote populations) at scale will be more challenging. Careful monitoring and evaluation as these programs are adapted to a new context will help stakeholders understand whether programs produce the intended results.

Based on this research, the following are key lessons to consider:

1. Supporting women's mental and physical health can improve both maternal and child health.
2. Providing multi-faceted support to families, including parenting programs and a strong social safety net, can positively affect children's development in many areas.
3. Bundling interventions that increase consumption of vitamin-rich food in conjunction with interventions that facilitate nutrient absorption can improve program effectiveness.
4. Information on best health practices alone does not seem to increase child weight or decrease anemia.
5. Financial incentives—both for households to seek care and for workers to provide it—can lead to improvements in child health and/or development.
6. Water, sanitation, and hygiene (WASH) programs appear to have little to no impact on child growth and development; the ability of these programs to reduce diarrhea prevalence is more mixed.
7. Large cash grants can lead to rapid nutritional gains for children, as well as improvements on growth and development.
8. Simple behavioral interventions, such as home-based growth monitoring, may also be promising.

Supporting women's mental and physical health can improve both maternal and child health.

- **Supplementation for women of childbearing age can reduce the risk of low-weight births and stillbirths.** Supplements that have been demonstrated to be effective include iron, iron folate, folic acid, and iodine, in moderate-to-severely iodine deficient areas.[3] In such areas, iodine supplementation can increase children's cognitive development scores by 10 to 20 percent.[4]

- **Psychosocial support for new mothers can improve maternal and child health.** Thirteen studies of psychological interventions delivered by community health workers to women with prenatal depression in low and middle income countries successfully reduced maternal depression. Children benefited as well, including through improved mother-infant interactions, improved cognitive development and growth, reduced diarrhea, and increased immunization rates.[5]

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- **Multifaceted support for families, including a strong social safety net and parenting programs that support nurturing care (a stable environment for children that is healthy, protective, and stimulating) can positively affect children's cognitive, language, psychosocial, and motor development.** Key aspects of successful parenting programs appear to be: combining several behavior-change methods to instruct and support parents (e.g. combining visual guides such as posters with in-home visits from health care providers); combining nutrition and stimulation interventions; and providing opportunities for parents to practice stimulating and responsive parental techniques.[6]

Bundling interventions that increase consumption of vitamin-rich food in conjunction with interventions that facilitate nutrient absorption can improve program effectiveness.

- A program in Vietnam that ran for ten weeks provided Vitamin A-rich food prepared by local union volunteers to breastfeeding women in randomly assigned villages. Different groups of women received different types of Vitamin-A rich food: the first received leafy vegetables, the second yellow or orange fruits, and the third retinol-rich foods. A comparison group ate the standard local diet. **When all program groups were compared to the comparison group, researchers observed a statistically significant increase in Vitamin A levels as well as an increase in retinol in breastmilk.**[7]

- **Supplements, fortified food, and micronutrient powder can support maternal and child health.** Providing Vitamin A food supplements for children aged two to seven years old for six months led to higher, but minimal, betacarotene and retinol levels relative to a comparison group. Researchers note the potential of supplements to address micronutrient deficiencies, especially when bundled with other interventions that would facilitate nutrient absorption.[8]

- **Consuming fortified staple foods has a positive effect on women's nutrition.** In Rwanda, researchers examined the effects of adding iron-fortified beans to the diets of women in university for four months.[9] In the Philippines, researchers examined the effects of adding iron-fortified rice to the diets of women aged 18 to 45 years old for nine months.[10] Both randomized evaluations found that consuming iron-fortified staple foods led to an improved iron status relative to a comparison group that ate the standard diet. The Philippines study found that the largest improvements from the treatment were among nonanemic women with the lowest iron status.

Information on best health practices alone does not seem to increase child weight or decrease anemia.

- Researchers in Bangladesh conducted a randomized evaluation of the effects of a "responsive feeding" training program on weight gain among children aged 12 to 24 months. Responsive feeding is the principle of allowing the child to self-feed rather than having the mother decide when and how to feed them. **The researchers found statistically significant but minimal weight gain effects from the program, and recommend using responsive feeding in conjunction with other interventions.**[11]

- Similarly, schools in China sent letters and arranged school meetings, once to twice a year, that provided information about anemia and how parents can prevent it in their children. **A randomized evaluation demonstrated that these interventions did not lead to changes in hemoglobin levels or decreasing anemia rates relative to a comparison group.**[12]

Financial incentives— both for households to seek care and for workers to provide it—have had positive impacts on child health and/or development.

- **A conditional cash transfer program in Nicaragua valued at 15 percent of average yearly income led to improvements in child health and development.** After one year, the treatment group exhibited small but statistically significant improvements in height for age and leg motor skills relative to the comparison group. After two years, researchers found sustained improvement in language, short memory and social-personal skills in treatment relative to the comparison group.[13]

- **A pay-for-performance scheme, which gave hospital doctors in the Philippines bonuses based on their clinical performance, reduced wasting among children under five two years after the intervention was rolled out.** The intervention also improved child health, according to a general self-reported health measure.[14]

- **In Uganda, the introduction of community health promoters (CHPs), who received financial incentives to reach pregnant women and newborns, led to improved health knowledge (in how to address diarrhea and the causes of malaria), a 27 percent reduction in under-five mortality, and a 33 percent decrease in infant mortality.** The CHPs were tasked to conduct home visits, educate households on vital health behavior, provide basic medical care, refer cases to health centers, and sell preventive and curative health products. CHPs were incentivized through rewards of US$0.65 each time they registered pregnant women and visited newborns.[15]

- **Emphasizing career incentives, rather than social motivation, was an effective strategy for recruiting high-performing health workers and improving child health in Zambia.** A randomized evaluation found that making career incentives rather than social incentives salient on recruitment posters attracted workers who were more qualified and performed better on the job. Moreover, these workers delivered more services, promoted institutional childbirth, and reduced malnutrition by 25 percent in the communities they served.[16]

Water, sanitation, and hygiene (WASH) programs appear to have little to no impact on child growth and development; the ability of these programs to reduce diarrhea prevalence is more mixed.

- **A meta-analysis of randomized evaluations of WASH programs (individual and combination interventions) with an intervention period of 9-12 months suggested a small benefit of WASH interventions on length-for-age in children under five years of age.** However, the duration of the intervention studies was relatively short in these studies and none of the included studies was of high methodological quality.[17]

- **Two more recent rigorous studies of longer duration, in Kenya[18] and Bangladesh[19], found that neither individual nor combined WASH interventions had any effect on child growth over a two year period, unless a nutrition intervention comprised of counseling and lipid-based nutrient supplements was added. (There was no advantage to integrating WASH with nutrition in either study.)** In Bangladesh, diarrhea prevalence reduced in all groups except water treatment.

- Another recent study in Rwanda found no impact on rates of childhood diarrhea after two years from community health clubs, which are multi-session village-level gatherings led by trained facilitators and designed to promote healthy behaviors mainly related to water, sanitation, and hygiene.[20]

Large cash grants can lead to rapid nutritional gains for children, as well as improvements on growth and development.

- **In northern Nigeria, providing women with unconditional cash transfers of about $700 improved their families' food security and dietary diversity within one year.** Providing the transfers in one lump sum compared to in monthly installments made no substantial difference, and disbursing them in one lump sum was less costly.[21]

- **In Malawi, children born to mothers who had received unconditional cash transfers of about $10 per month for almost two years had higher height-for-age z scores** at follow up than those in the comparison group. This finding suggests providing cash transfers to women of childbearing age positively impacts the health of their future children.[22]

- **In Rwanda, cash transfers of about $530 improved household dietary diversity and height-for-age, and decreased child mortality after one year.** Smaller cash transfers of approximately $142, however, led to no detectable improvement in child health.[23] More research is needed on the impact of small transfers on child health.

- **In Nicaragua, cash transfers conditional on children's school attendance and receiving regular health check-ups significantly improved child health and development, effects that were sustained two years after the end of the program.** Parents who received transfers provided more nutritious food to their children, more cognitive and social stimulation, and exhibited a higher use of preventive healthcare.[24]

- In Mexico, researchers studied the effects of a conditional cash transfer program, which required school attendance and preventive medical care, on child health and development up to a decade after the launch of the program. **The study found larger cumulative cash transfers improved many aspects of children's physical, cognitive, and language development.[25] However, not all conditional cash transfer programs have led to improvements in child health and development,** suggesting the design of theses programs is critical to their success. [26]

Simple behavioral interventions, such as home-based growth monitoring, may also be promising.

- **In Zambia, researchers found that providing parents with full-sized growth charts, which included information about nutrition and were placed on the walls inside homes, reduced stunting rates among malnourished children by 22 percentage points.** In contrast, community-based monitoring, in which parents were invited to quarterly meetings to learn if their children had a healthy height and weight and received food supplements for malnourished children, did not lead to statistically significant reductions on stunting.[27]

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