

# Early Childhood Education: Three Pathways to Better Health

By Allison Friedman-Krauss, Sima Bernstein and W. Steven Barnett

While the link between schooling and health has been well established,<sup>1</sup> the direct and indirect effects of early childhood education programs on health have recently become a more substantial focus of research. This brief summarizes the research evidence, organized by three theoretical models that explain how early childhood education and development (ECED) programs can affect health, in both the long and short term (See Figure 1).<sup>2</sup> These models are sufficiently general that they apply to children and families in both developed and developing nations. We then apply these models and the empirical evidence to derive broad recommendations for early childhood policy.

Our definition of health includes both mental and physical health and indicators related to health such as high-risk behaviors (e.g., smoking and teen pregnancy), positive social-emotional development, immunizations, rates of illness, obesity, dental hygiene, and cognitive growth. Improvements on some of these health indicators, such as on-time immunizations, are direct effects of specific services offered to children attending ECED programs. Other improvements in health outcomes are achieved indirectly, such as reductions in household violence and smoking that result when preschool programs improve executive function and emotion-regulation.

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## Preschool Policy Update

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### What We Know:

- Research suggests participation in quality ECED programs can directly improve children's physical and mental health
- Research also suggests children's health improves as a result of the impact ECED programs have on their parents
- ECED programs can increase children's cognitive and social-emotional skills in the short-term, which can lead to improved health

### Policy Recommendations:

- All children should have access to high-quality preschool and parenting education should begin early in pregnancy with the degree of support based on risk of poor health and developmental outcomes
- Early education programs should provide screenings and referrals for health, dental, mental health, developmental, vision, and hearing, or facilitate access to these through other programs
- Every nation (and state) should prioritize high-quality early learning opportunities and other supports for early childhood development
- Because health habits are formed at an early age, early education programs should be required to provide health, nutrition, and exercise education
- To combat obesity, programs should prescribe desirable meals, snacks, and exercise; and when needed, offer nutrition supplementation to prevent and reverse effects of malnutrition
- Pre-K curriculum should include an emphasis on supporting children's social-emotional development
- More health-related early education research is needed

## I: Direct Effects of ECED on Child Physical and Mental Health

High quality ECED programs can directly improve children's physical and mental health in many ways, including the following:

### *Nutrition supplementation provided in ECED programs prevents malnutrition*

Malnutrition in children is a problem particularly in poor or low-income, developing countries<sup>3</sup>--a startling 71% of the world population.<sup>4</sup> Many countries including Mexico,<sup>5</sup> Columbia,<sup>6</sup> and Vietnam<sup>7</sup> have successfully introduced early childhood nutrition-intervention programs resulting in improved physical growth for participant children. Improving children's nutrition, while much more complex than simply increasing access to food, also has the potential to contribute to improved cognitive development.<sup>8</sup>

### *Nutritious meals and exercise activities provided by ECED programs reduce obesity*

Multiple studies find that nutrition-related programming or alterations to in-school meal plans in ECED programs yield reduced fat consumption and weight reduction in



young children.<sup>9</sup> Preschool programs can increase children's physical activity levels by providing opportunities for sustained indoor and outdoor active play. Lower rates of obesity also offer the collateral benefit of reduced labor market costs and reduced health-care costs.<sup>10</sup>

### *Increases in health screenings through services provided by ECED programs*

Evidence from Head Start (HS) studies in the 1990's showed large differences between HS and non-HS children in various health-care screenings including blood pressure, hearing, vision, and lead.<sup>11</sup> Almost thirty years later, health screening continues to be a cornerstone of Head Start programming.<sup>12</sup> Many state-funded preschool

programs are also required to provide health screenings and referrals.<sup>13</sup>

### *Improvements in biomarkers in adolescence*

Children who had attended preschool (compared to those care for exclusively by their parents) had significantly lower blood pressure and lower morning cortisol at age 15, leading researchers to reflect that "preschool programs in particular may help disrupt the cycle that leads from social disadvantage to health disparities".<sup>14</sup>

### *Greater likelihood of dental care*

Preschoolers enrolled in Head Start programs are more likely to receive dental care than their counterparts who were not enrolled in HS programs.<sup>15</sup> Many state-funded

preschool programs are also required to provide dental screenings and referrals.

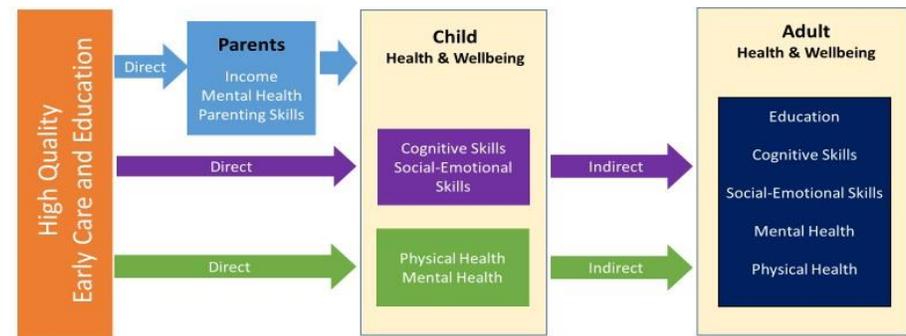
*Improved mental health*

Studies have linked participation in ECED programs to reduced rates of depressive symptoms later in life.<sup>16</sup> In addition, exemplar ECED programs (see Appendix A) including the Perry Preschool Project and the Carolina Abecedarian Project have demonstrated reductions in externalizing behaviors. Reductions in externalizing behaviors are associated with improvements in indicators of mental health in adulthood, including reduced unemployment and reduced tendencies to commit crimes--as well as improved biological markers of mental health, such as lower blood pressure and reduced hypertension.<sup>17</sup>

## II: Indirect Effects on Child's Health Through Parents

A broad spectrum of research also suggests that children's health improves as a result of the impacts ECED programs have on their parents. Positive impacts on parents as a result of their child's ECED experience include

Figure 1: Pathways from ECE



the following:

*Improvements in parents' mental health and parenting skills*

Many high-quality early childhood programs include parenting interventions and home visiting programs that teach parenting skills, treat parents' mental health or substance abuse problems, and provide supports to reduce parent stress. These programs can reduce the likelihood of children's experiencing abuse, neglect, injury or violence.<sup>18</sup> These potential impacts are critical as children who are abused or neglected are more likely than other children to develop mental health problems throughout their lives. Moreover, abuse and neglect can lead to injury which can impair health in the short- and long-term. Early Head Start, the Nurse Home Visiting Program, Healthy Families

America, and the Chicago Child-Parent Center (CPC) are all programs that focused on parenting skills that had impacts for young children and their mothers.<sup>19</sup>

*Improvement in parents' behavior based on accrued health knowledge*

Studies have found that children who attend quality early childhood programs are more likely (as compared to a control group) to show improvements on health indicators that entail parental/guardian assistance, such as increased health-care screenings,<sup>20</sup> increased dental care<sup>21</sup> and reduced rates of school absenteeism.<sup>22</sup>

Occasionally, preschool-based interventions include staff in addition to children and parents. In Eat Healthy, Stay Active, a six-month program introduced in Head Starts

across five states, all children, parents and staff were invited to participate in the program which focused on better health-care knowledge and chronic disease prevention. After six months, there were significant reductions in obesity and body mass index for children as well as parents and staff.<sup>23</sup> Further, through the program, parents were trained in treating basic childhood illnesses at home, resulting in reductions in doctor visits, emergency room visits and school absenteeism.<sup>24</sup> All of these adult-assisted, positive outcomes for children suggest that parents do internalize *and practice at home* the better health behaviors promulgated by ECED programs.

#### *Reductions in unhealthy levels of stress*

Recently, there has been much attention and research devoted to the effects of stress during childhood on adult health. Stress during early development (versus later in life) can be particularly damaging. Children living in sustained poverty, exposed to conflict, displaced from home, or experiencing other poverty-related risks are a high risk for excessive stress.<sup>25</sup> Participation in the CPC centers has been associated with reduction

in household violence,<sup>26</sup> which can decrease children's stress.

The catalyst for this reduced likelihood of maltreatment, researchers suggest, is that parents in quality ECED programs, like CPC, become significantly more involved in their children's schools. Through these interactions they are likely to form closer bonds with their children, learn from teacher role models, and/or develop support systems within the school—all of which can reduce parental stress and inclinations towards violence.<sup>27</sup>

### III: Effects on Child Development that Lead to Improved Physical and Mental Health

ECED programs can increase children's cognitive and social-emotional skills in the short-term, which, in turn, can lead to improved health:

#### *Cognitive gain*

There is a large evidence base indicating that participation in ECED programs is associated with significant gains in

cognitive development, including math, language, and literacy skills.<sup>28</sup> These cognitive gains are indirectly related to better long-term health, as better educated individuals are more likely to trust scientific health information,<sup>29</sup> are better able to use that knowledge to make smart health decisions and healthy lifestyle changes,<sup>30</sup> and are more adept at seeking and complying with medical treatment.<sup>31</sup>

Longitudinal studies also lend support to these long-term, health-via-education assertions. Multiple studies that have found intensive, high-quality preschool education to produce long-term increases in educational attainment also find evidence of improvements in adults' health care access, health-related behaviors and health. These include studies of intensive, small-scale programs and of large-scale public programs.<sup>32</sup> For example, adults who participated in the CPC early childhood program had higher rates of high school completion and college attendance and were more likely to have health insurance and less likely to have engaged in substance abuse.<sup>33</sup> More hours in the CPC program also affected results as full-day (versus part-day)

participants had higher scores on measures of physical health.<sup>34</sup> CPC research found some evidence of a reduction in depressive symptoms among adults, as well.<sup>35</sup>

Similar results were found in Perry Preschool longitudinal research where attendance was associated with higher educational attainment which, in turn, lead to reduced substance abuse in adulthood.<sup>36</sup> Taken together, these findings are all consistent with the substantial body of research connecting education and positive health outcomes.<sup>37</sup>

#### *Gains in social-emotional skills*

ECED program participation has also been associated with improved social-emotional skills, resulting in reductions in behavior problems and stress, as well as improvements in self-regulation and executive functions. These improvements in social-emotional skills have durable effects, as they predict much of the improvement in long-term outcomes, such as reduction in violent crime, arrests and unemployment.<sup>38</sup> That is, individuals who are better able to regulate their behavior and plan are less likely to engage in risky

behavior and more likely to be able to find and keep a job. Attending a quality ECED program has also been associated with fewer behavioral risk-factors in midlife,<sup>39</sup> an indicator of stable mental health.

## Summary

There is a broad base of research, stemming from a variety of fields including economics, education, psychology, and medicine, suggesting that children reap significant health benefits from attending ECED programs. The pathways to positive health outcomes may be direct, through services provided to the child, and/or indirect, through services provided to their parents and cognitive and social-emotional skills developed through ECED programs (See Figure 1).

Longitudinal studies that have followed children for decades after ECED participation find that benefits last far into adulthood.



## Policy Recommendations

The following policy recommendations are offered based on the substantial body of research supporting the connection between quality ECED program participation and improved health.

*Increase access* to high-quality early care and education programs for all children, prioritizing the most economically and educationally disadvantaged children. To do so, countries, states, and cities will need to increase their investments in high quality ECE.

*Begin parenting education early* in pregnancy with the degree of support based on risk of poor health and developmental outcomes.

*Provide screenings and referrals* for health, dental, mental health, developmental, vision, and hearing in early care and education programs or facilitate access to these services through other means.

*Include health, physical activity, and development of healthy eating habits* in early education curriculum, as such habits are formed at an early age. Programs also can help families implement healthy changes at home.

*Offer nutrition supplementation through ECE to prevent malnutrition where needed.*

*Include supports for children’s social-emotional development, including self-regulation, preschool curriculum in order to reduce future risky*

*behavior.*

*Support more health-related early education research. Both short- and long-term health outcomes should be included in evaluations of impacts of early childhood programs as well as benefit-cost analyses.*

**Appendix A:  
Commonly Cited Research Linking Early Childhood Education with Health Outcomes**

<b>Program Name</b>	<b>Randomized assignment</b>	<b>Scale and Number Served</b>	<b>Intervention years</b>	<b>Age of children</b>	<b>Hours</b>	<b>Parenting Component</b>	<b>Positive Health Outcomes</b>
Carolina Abecedarian (ABC)	Yes	Small n=111	1972-1983	0-5	40 hours per week	Family support services provided by request, but no information provided on parent-child interaction	Improved health and health behaviors and fewer depressive symptoms at age 21; lower risk of adult cardiovascular disease <sup>40</sup>
Chicago Child-Parent Center and Expansion Program (CPC)	No	Large Over 100,000 children served since inception. The sample for the Chicago Longitudinal Study (CLS) was taken from the CPC 1985-86 cohort and included 1,150 children in CPC centers and 389 in alternative programs.	1967-present	3 to 5	15 hours a week for preschool; kindergarten programs are either half day (2.5 hours) or full day (6 hours). 2.5 hours of parent involvement each week	Home Visitation Parent Workshops	Improved health-insurance coverage, reduced smoking, reduced substance abuse and reduced depressive symptoms in adulthood <sup>41</sup>
Head Start (HS)	Generally no, except Head Start Impact Study (HSIS) randomly assigned children to a HS group or a control group that could participate in non-HS services or programs.	Large Administration for children and families (ACF) estimates that over 32 million children have been served by HS since its inception. 5,000 children were in the original sample for the in HSIS.	HS began in 1965 Data for the HSIS collected 2002-2006	3 to 5	Average time estimated by HSIS was 24 to 28 hours per week	Varies from program to program. The HS Code of Federal Regulations specifies that parents must participate in operations and policy making and that policy committees and councils must be comprised of parent of enrolled children	Improved dental care and on-time immunizations. Improved parent reported rates of health screenings and well-child exams. Better eating habits and handwashing reported by parents. Reductions in childhood obesity and school absenteeism <sup>42</sup>
High/Scope Perry Preschool (PPP)	Yes	Small n=123	1962-1967	3 to 5	12.5 to 15 hours per week	Yes Home visitation and parent meetings	Improved health-insurance coverage, reduced drug use, and reduced smoking in adulthood <sup>43</sup>

Note: Studies of the ECE programs above provided much of the evidence regarding longer-term health effects of early childhood programs in the United States.

## End notes

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