High exposure to lead hits children’s ability to learn, says report

Increased levels of poisonous metal in blood found to be a leading cause of lower educational attainment.

Children who have high levels of lead in their blood can have much lower IQ scores and test results than their healthier counterparts, said the author of a study © Noah Seelam/AFP/Getty Images

Andrew Jack in New York JULY 30 2023

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Higher exposure to lead among children from low- and middle-income nations accounts for more than a fifth of the gap in learning outcomes between rich and poor countries, according to an analysis.

A review of 47 studies by researchers at the Center for Global Development, a Washington think-tank, suggests that more than 20 per cent of the gap in basic reading and mathematics can be attributed to elevated levels of lead in the blood, increasing concerns over the barriers to learning in the developing world.

It highlighted that children in low- and middle-income countries have average lead exposures that are 10 times higher than US levels, with only 40 per cent of children in those countries able to read and understand a simple story, compared with more than 90 per cent in the OECD club of mostly rich nations.

Some 600mn children had levels above 5 micrograms per decilitre, an amount that is considered worryingly high by the US Centers for Disease Control and Prevention.

Lee Crawford, lead author of the CGD paper, said children who have high levels of lead in their blood can have much lower IQ scores and test results than their healthier counterparts. “Lead poisoning is invisible — it has a huge impact on learning and productivity.”

To address the metal’s role as a leading cause of lower educational performance, health authorities are launching public awareness campaigns about lead contamination in paint, cosmetics and food. The CGD said lead exposure was particularly high in countries such as Afghanistan and India.

The study comes at a time of broader concern over poor educational outcomes for children in developing economies, with many children having suffered long periods of school closures during the Covid-19 pandemic.

Concern over lead will intensify a fierce debate among educationalists and policymakers over the most important priorities in children’s learning, from raising attendance in schools to improved achievement in basic literacy and numeracy, enhanced social and emotional learning, school feeding programmes and tackling violence.
While scientists have not discovered how high lead levels impair children’s ability to learn, the latest draft assessment issued this spring by the US Environmental Protection Agency describes causal relationships between lead exposure and reduced cognitive functions, hyperactivity and effects on cardiovascular health and development in children, as well as character traits such as aggression.

Andrew McCartor, executive director of Pure Earth, a charity focused on tackling toxic pollution, said lead was “by an order of magnitude the most damaging chemical to public health”. He estimated that up to one in three children around the world suffers from lead poisoning, which causes several million premature deaths each year.

While longstanding concerns over the effects on human health have led to a global ban on lead in petrol, campaigners have highlighted risks from sources including contamination from batteries, dust from paint, recycled metal cookware, adulterated spices and eyeliner used on infants in some cultures in a belief it wards off evil spirits.

The studies examined by the CGD, 18 of which focused on low- or middle-income countries, analysed lead levels in blood of children with a median age of four years old, and cognitive testing at eight years old. Most studies adjusted for parents’ IQ or education, other family background details or income levels.

USAID, the US development agency, said it was “expanding on our efforts to mitigate lead poisoning so that children can learn in safe and supportive environments” and planned to “monitor and mitigate toxic lead exposures for children”.

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