

Study: Lead exposure decreases Indian children's hand-eye coordination

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(Medical Xpress) -- Young Indian children exposed to lead poisoning scored low on tests that measured hand-eye coordination, a new study finds.

Researchers conducted the study on children living in Chennai, India, and examined how [lead](#) exposure influenced scores on three motor skill tests—copying figures, matching designs and using pegboards.

Despite the 2001 phase-out of lead in gasoline in India, the study found that blood lead levels in children remain relatively high, with half (52.5 percent) of the children having a level greater than 10 milligrams. An increase of 10 milligrams decreased the children's visual score by 2.6 points and 2.9 points for the drawing subtest.

"The implications are that in addition to the well-known effects of losing points of IQ, kids with modest levels of elevated [lead exposure](#) can also be expected to perform less well on the kinds of functions requiring hand-eye coordination, like writing, drawing or riding a bicycle," said Dr. Howard Hu, professor of environmental health sciences, epidemiology and internal medicine at the University of Michigan and the study's principal investigator.

The study, conducted from 2003 to 2006, involved 814 children between ages 3 to 7. The children's blood sample was measured with a lead analyzer.

Data collected from each child's parent or primary caregiver involved a questionnaire that covered topics related to the child's birth history, gender, school, parents' education and occupation, socio-economic background. Other factors included living conditions, nutritional and dietary habits of the child, and environmental surroundings, such as industrial exposure, traffic exposure, hobbies and residential exposure from paints and toys.

Children completed three tests, including a drawing task in which they copied designs arranged in order of increasing difficulty. Starting at an age appropriate item, the child proceeded until three consecutive items were failed.

The matching task involved arranging items in order of increasing difficulty. [Children](#) marked which of four options "goes best" with the standard item, and each child continued until he or she made six errors in a series of eight consecutive items.

On the pegboard task, the child inserted as many round pegs as possible within 90 seconds using the dominant hand.

The greatest decline in [motor skills](#) occurred at blood lead levels greater than 30 milligrams, resulting in poor scores with pegboard and matching tests.

Hu and Bhramar Mukherjee, an associate professor in the Department of Biostatistics, co-authored the study with colleagues at Sri Ramachandra Medical College and Research Institute, University of Medicine and Dentistry of New Jersey, Harvard Medical School and Harvard School of Public Health.

The findings appear in the current online issue of *NeuroToxicology*.

More information: www.sciencedirect.com/science/.../S0161813X11000581

Provided by University of Michigan

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