

Developmental disabilities reported in HIV-positive children in South Africa

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HIV-positive children in South Africa are more likely to have developmental disabilities compared to children who are HIV negative, according to researchers at Columbia University's Mailman School of Public Health. HIV-positive children ages 4 to 6 had nearly four times the odds of delays in sitting, standing, walking, and speaking, and more than twice the odds of a hearing disability and cognitive delay compared to HIV-negative children. The findings are published online in the journal *PLOS ONE*.

The children were tested through a widely used screening process called the Ten Question (TQ) screen which showed that more than 59 percent of the HIV-positive children reported delays compared to 43 percent of HIV-negative children. This is the first report of the use of the TQ screen in the Zulu language, and it was found to have high sensitivity for detecting serious developmental [disabilities](#), especially in HIV-positive children. The TQ Screen measures caregiver perception of how well their child functions compared to his or her peers with regard to neurodevelopmental functioning.

"This screening tool was developed to identify moderate and severe cognitive, motor, seizure, speech, vision and hearing disabilities and developmental delays in settings with limited access to professional resources," said Justin Knox, Ph.D., a postdoctoral research fellow in the Department of Epidemiology. "We found this test to be a very effective way to screen HIV-positive children for neurodevelopmental problems in resource-poor areas."

The proportion of children who screened positive among those both HIV positive and HIV negative were among the highest reported in population-based studies. Gross motor concerns were especially prominent, including delays in learning to sit and stand, difficulty walking or moving arms, and weakness in the arms or legs.

An initial door-to-door survey identified 14,425 households, including 2,049 children ages 4-6 years old who were residents of KwaZulu-Natal, South Africa for the past six months and 1,231 of their caregivers. A medical doctor conducted a physical examination and noted the children's medical history. Hearing and vision screenings were conducted as well as a psychological assessment for cognition and language [delay](#), and voluntary HIV testing.

At the conclusion of the study, 62 children were identified as HIV positive (5 percent)—approximately three times the number known prior to the study.

South Africa has among the highest HIV/AIDS prevalence in the world with over 7 million people living with HIV in 2016, including 320,000 children below the age of 14. Prior to availability of effective antiretroviral therapies, neurodevelopmental disabilities were among the earliest recognized features of pediatric HIV infection, affecting as many as 50 percent of children. Although early initiation of treatment appears to prevent many of the most severe neurologic impairments, it remains an important co-morbidity among children living with HIV.

"Many HIV positive [children](#) continue to have unrecognized neurodevelopmental disabilities," said Leslie Davidson, MD, professor of Epidemiology and Pediatrics, and the senior author of the study.

"Increased attention to early HIV diagnosis and intervention is critical to prevent these neurocognitive issues, as much as possible."

Provided by Columbia University's Mailman School of Public Health

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