Small children tend to remember certain things easily - the name of their favourite cookie, for example - and others with great difficulty, such as the face of a distant relative they see only once a year. But for some children, day-to-day memory tasks pose a huge challenge. While these children often read and learn at a normal level, they simply cannot keep straight events in everyday life. They suffer from developmental amnesia. A new Canadian study suggests that one key cause may be underdeveloped hippocampi.

Located on each side of the brain, the two hippocampi play a role in acquiring memories and storing and retrieving spatial information. In the study, researchers used magnetic resonance imaging (MRI) to measure the volume of the hippocampus in three different groups of children: those who had been diagnosed with developmental amnesia (DA), a group who had been born prematurely with a very low birth weight (LBW) and a control group. The researchers found that the DA and LBW groups had smaller hippocampi, with the DA group having the smallest ones.

The cognitive tests results showed that the DA and LBW groups varied anywhere from low-average to average levels for intelligence, literacy and mathematical tasks. Significant differences emerged in memory-related tests. The DA group showed great impairment, while the LBW group had problems in a few specific areas.

**MAN Y CHILDREN RECEIVE LATE DIAGNOSIS**

This study suggests that there is an association between a 20 to 30% reduction in bilateral hippocampal volume and developmental amnesia. In the LBW group, the researchers found an association between an 8 to 9% reduction in the hippocampal volume and memory disruptions in a few key areas.

Dr. Elizabeth Isaacs of the MRC Childhood Nutrition Centre in London, England, one of the researchers, notes that because children with developmental amnesia are able to learn, their memory problems are often not diagnosed until late childhood. Thus, these children spend years struggling when an earlier diagnosis and appropriate interventions could have made their lives easier.

“Even subtler are the effects displayed by children in the LBW group whose memory deficits may be blamed on inattentiveness or deliberate naughtiness,” Isaacs adds. The study highlights the need for earlier screening to determine if a child suffers from reduced hippocampal volume. Isaacs suggests that at-risk children, those born prematurely, for example, could one day routinely receive an MRI scan. “Once alerted to the possibility of this development, earlier identification and earlier introduction of remediation would be possible,” she says.

Dr. Annette Majnemer, Associate Professor at McGill University’s School of Physical and Occupational Therapy, notes that: “early identification of brain abnormalities in children with memory difficulties may also be helpful in counselling families more effectively about the causes of the memory deficits,” as well as helping clinicians provide more realistic expectations to parents on the long-term outcome for the children.

Early identification also allows for earlier intervention, Majnemer adds. “Therapeutic strategies could focus initially on facilitating the acquisition of memory skill so as to maximize skill development. However, adaptive approaches may be necessary in the long term to compensate for persisting memory difficulties and to ensure that these children are able to cope with everyday challenges and carry out activities independently.”