Babies in the Womb Have Memories

Thursday, July 16, 2009 10:02 AM

By: Jennifer Harper

They weigh less than 3 pounds, usually, and are perhaps 15 inches long. But they can remember.

The unborn have memories, according to medical researchers who used sound and vibration stimulation, combined with sonography, to reveal that the human fetus displays short-term memory from at least 30 weeks gestation - or about two months before they are born.

"In addition, results indicated that 34-week-old fetuses are able to store information and retrieve it four weeks later," said the research, which was released Wednesday.

Scientists from the Department of Obstetrics and Gynecology at Maastricht University Medical Centre and the University Medical Centre St. Radboud, both in the Netherlands, based their findings on a study of 100 healthy pregnant women and their fetuses with the help of some gentle but precise sensory stimulation.

On five occasions during the last eight weeks of their pregnancies, the women received a series of one-second buzzes on their bellies with a "fetal vibroacoustic stimulator," a hand-held diagnostic device used to gauge an unborn baby's heart rate and general well-being.

The baby's responses - primarily eye, mouth and body movements - were closely monitored over the weeks with ultrasound imaging to gauge "fetal learning" patterns. The researchers found that the babies acclimated themselves to the sounds and vibrations to the point that they no longer bothered to respond - a process known as "habituation."

"The stimulus is then accepted as 'safe' " by the babies, the study said.

The team also found that the tiny test subjects actually improved these skills as they grew older, with those who were 34- or 36-weeks old clearly showing that they had become familiar with the hum outside the womb.

"The fetus 'remembers' the stimulus and the number of stimuli needed for the fetus to habituate is then much smaller," the study said.

"It seems like every day we find out marvelous new things about the development of unborn children. We hope that this latest information helps people realize more clearly that the unborn are members of the human family with amazing capabilities and capacities like these built in from the moment of conception," said Randall K. O'Bannon, director of education and research for the National Right to Life Educational Trust Fund.

A call to NARAL Pro-Choice America for comment on the implications of the research were not returned.

The Dutch medical team, meanwhile, said its findings could help obstetricians track the healthy development of unborn babies during pregnancy. The research was published in Child Development, a medical journal.

Scientists have been curious about fetal responses to sound for decades.

The first real study of "habituation" occurred in 1925 when researchers discovered that fetuses moved less when exposed to a beeping car horn. Since then, door buzzers and even electric toothbrushes have been used to help researchers understand the fetal environment - and the response of the unborn to such influences.

Beeps and buzzes were not always the tools of choice.

In 2003, psychologists and obstetricians at Queen's University in Canada found a profound mother-baby link. In a study of 60 pregnant women, they found that the unborn babies preferred the voices of their own mothers - both before and after birth.

The heart rates of fetuses sped up when they heard their mother reading a poem, and slowed down when they heard a stranger's voice - evidence of "sustained attention, memory and learning by the fetus," said Barbara Kisilevsky, a professor of nursing who led the research.

The Queen's group has also investigated fetal response to the father's voice, concluding that if men try a little pre-natal vocalizing to their offspring, the newborn will later recognize the father's voice.