Do children conceived using in vitro fertilization have poorer elementary school outcomes than children conceived spontaneously?

Although there are numerous studies of adverse pregnancy outcomes and infant mortality comparing pregnancies conceived with various assisted reproductive technology (ART) modalities with pregnancies conceived spontaneously (1), comparatively few researchers have examined longer-term health outcomes (2–4). Even fewer studies have looked more broadly at education and development; thus, the study by Luke et al. (5) begins to fill a gap in our knowledge base.

In their study, Luke et al. (5) linked the Society for Assisted Reproductive Technology-Clinical Outcomes Reporting System (SART-CORS) data with Texas birth certificates and academic achievement test results for children 8 to 9 years of age. Successfully assembling the dataset for this analysis was a major feat in itself – the study required linkage of individual birth certificates with records concerning use of in vitro fertilization (IVF) treatment, with education records containing results of achievement tests in the third grade. As the authors note, a birth cohort of live births in eight states during 2004 to 2013 was linked with IVF data, but only for Texas was approval for linkage with state educational records approved.

Luke et al. (5) found that children conceived using IVF scored as well as or better than children conceived spontaneously on standardized reading and mathematics achievement tests at 8 to 9 years of age. Singletons and twins, analyzed separately, had similar results. It is important to note the children in special education or classified as economically disadvantaged were excluded from the study. Among singletons, this exclusion is unlikely to affect the study findings because the exclusion was more common among the control group, but for the analysis of twins where the comparison group was much smaller (for IVF N = 3,684 compared with controls N = 748) proportionately more controls were excluded from the analysis due to being in special education. It might be helpful to estimate special education participation rates, and perhaps compare the distribution of special education exceptionalities between the IVF and spontaneously conceived birth groups. Included with the published article are several supplemental tables delving into some of these issues. Supplemental Table 2, for example, compares reading and mathematics scores among IVF-conceived and spontaneously conceived children in special education. Among singleton births, there are deficits in mean scores for the IVF-conceived group, whereas among twins this group has higher mean scores. However, children in special education are heterogeneous, and generalizations based on these findings should be made with care.

This study (5), together with others examining mortality and birth defects, adds to our understanding of health and developmental outcomes of children conceived with IVF. However, were data available to explore health, growth, and development in a comprehensive fashion, numerous questions remain. Do high school graduation rates differ, or are there differences in grade retention? Are there differences in prevalence of developmental disabilities (for example, cerebral palsy, attention deficit with hyperactivity disorder, and autism spectrum disorder), or chronic illnesses, controlling for plurality and other socio-demographic factors? Studies incorporating the life course framework or the socio-ecological model might differentiate the contribution of parent-child, familial, and socio-environmental factors from reproductive factors in assessing educational outcomes, but this would require additional data collection from parents and families as well as a more sophisticated analytical strategy.

Future research examining longer-term outcomes in offspring conceived using ART should be conceptualized within an overarching theoretical framework, and draw upon population health informatics approaches and resources such as those used in this study (5). As time passes, larger studies following children later in adulthood will become possible, examining a broader array of factors and influences. For now, although many unanswered questions remain, research to date indicates that children conceived by ART who survive infancy have generally similar mortality, health status, and educational experiences to children conceived spontaneously.

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