Breastfeeding: What Do We Know, and Where Do We Go From Here?

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Exclusive breastfeeding through age 6 months with continued breastfeeding to 12 months and beyond is the optimal infant feeding method because of its lifesaving benefits for children and mothers worldwide.[1,2] Breastfeeding reduces all-cause and infection-related child mortality, sudden infant death syndrome–related mortality, and maternal breast cancer and cardiovascular risk; the effect of breast milk is dose-dependent, with exclusivity and longer duration increasing benefits.[3–5] With this background, Dr Lisa-Christine Girard and colleagues have conducted a unique and thoughtful study to examine the impact of breastfeeding on language, problem behaviors, and cognition in Irish children at ages 3 and 5 years.[6]

In their sample of >8000 children, the breastfed and not-breastfed groups were clinically and statistically different. This difference is especially important because there may be differences between mothers who do and do not breastfeed that are not known to the researchers (or anyone else) that either directly affect the outcome being studied or affect the outcome indirectly via another social or environmental factor (ie, as a mediator). Even randomization does not ensure perfect distribution of unknown variables between study groups, but it is the optimal study design. Indeed, the main challenge facing researchers who seek to examine the impact of breastfeeding on child outcomes is an inability to randomly assign individual mothers to breastfeed or not. Dr Girard and colleagues tackled this problem in 2 ways. Without the ability to randomly assign mothers to feeding choice, the authors chose to use propensity score matching to approximate randomization by matching for suspected confounders, and they used structural equation modeling to use their full data set and examine for mediator and moderator effects. One challenge of propensity score matching is that it causes data loss because not everyone can be matched; structural equation modeling thus served as a strong complementary analytical method.

The data set of Dr Girard et al has some limitations that should be acknowledged. Although most infants in the breastfeeding cohort were exclusively breastfed at ≤31 days, <5% were fully breastfed at >180 days, which limits the ability to examine optimal breastfeeding. Duration of breastfeeding was captured in broad time bands (≤31 days, 32–180 days, >180 days), which combines infants with very different feeding experiences and may dilute the impact of longer durations of breast milk receipt, depending on when exclusivity ends. Both exclusivity and duration are important, because dose response is well established for breast milk benefits.[3–5] Maternal IQ was not measured, as the authors appropriately note; ideally we need this information to consider child cognitive ability. Understanding these study limitations still does not diminish the value of the study, which is a thoughtful contribution to the breastfeeding literature.

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We can place the study of Girard et al in context by examining childhood outcomes from the PROBIT study, in which 31 Belarus hospitals were prospectively cluster randomized to a breastfeeding intervention based on the World Health Organization Baby-Friendly Hospital Initiative versus regular care, with significantly increased exclusive breastfeeding at 3 and 6 months and beyond among intervention hospital infants.[7] This large trial examined similar behavioral outcomes and is in agreement with Girard and colleagues; among the 13 889 children (81.5%) followed up at age 6.5 years, there was no effect of duration or exclusivity of breastfeeding on several validated measures of child behavior or on maternal relationship measures.[8] Finally, although Girard et al found no effect of breastfeeding on cognitive ability, the PROBIT study reported a mean IQ increase of 7.5 points (95% confidence interval, 0.8–14.3) at age 6.5 years in children from intervention hospitals.[9] Although the topic is controversial, and a recent systematic review identified heterogeneity between studies, among the 4 studies with the least bias (each >500 subjects, controlled for maternal IQ, breastfeeding recall duration <3 years) breastfeeding improved performance on IQ testing by 1.76 points (95% confidence interval, 0.25–3.26), suggesting a small but durable impact of breastfeeding on intelligence.[10]

But on what breastfeeding outcomes should we now focus? At this point, we know well that breastfeeding has an array of life-saving maternal, child, and societal benefits, even if childhood behavioral outcomes are not affected. The many known benefits of breastfeeding are neither fully realized nor equitably distributed, however, at least in part because not all women and their partners receive the preconception, prenatal, and postnatal education and support needed to initiate and continue breastfeeding as recommended.[11–14] Younger, unmarried, poor, and less educated women of racial and ethnic minorities are less likely to breastfeed, as we witness in the study of Girard et al (Table 1) and in national and international data alike.[6,14,15] How can we change the landscape so that all mothers can have opportunity and resources to have the chance to choose to breastfeed and to succeed if they so choose? This is the much-needed breastfeeding research that we hope to read about before the next breastfeeding commentary is published in *Pediatrics*.

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