Causal Effects of Breastfeeding on Child Development: An Economist’s View

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How does an Economist view Breastfeeding?

- Investments in early childhood are crucial for child development and long-term well-being (Almond et al., 2018)
- Many different types of inputs in early life
  - Breastfeeding (breast milk) is one of such inputs
- Newborn mainly sleeps and eats
- Breast milk versus something else

- This talk: focus on healthy full-term infants, child outcomes, settings where alternatives to BM are not obviously unhealthy.
Why are CAUSAL effects important for an economist?

• From societal point of view: weigh costs versus benefits

• Costs
  • straightforward to calculate; accounting excercise
  • for the economy to reach high breastfeeding rates, e.g.
    • Maternity leave duration
    • Public health interventions, health personal
    • Regulations that facilitate breastfeeding during work hours (mandatory lactation rooms, paid BF time, work from home etc.)
Why are CAUSAL effects important for an economist? (continued)

• Potential **benefits** for
  • Children
    • Temporary versus longer-term effects
    • If no longer-term effects, effort could be used on other potentially more important inputs
  • Mothers
    • Labor force participation (wages, pension savings), later health
  • Family dynamics
    • Father’s involvement, division of housework

• To weigh costs against benefits, we need **causal** evidence on the **benefits**
• Evidence on causal effects is really scarce!
Lots of Correlational Studies

- Document beneficial associations between BF and child outcomes
- Compare apples to oranges
  - Mothers are typically very different
  - Not random whether mother breastfeeds or not
- Controls
  - Most include only few background characteristics
  - Including more controls often reduces magnitude of correlation substantially
- IQ as an example (Horta et al. 2015)
  - Many studies document positive correlations
  - But once controlling for most obvious control (parental IQ), correlation is strongly reduced. Still easy to think about other important omitted variables
- Bottom line: correlations do not answer the question of causality
So How Do We Ideally Get at Causal Effects?

1. **Natural Experiments**
   - Find random factor affecting whether the mother breastfeeds – referred to as instrumental variable (IV)
   - Only one study convincingly uses this methodology: Fitzsimons and Vera-Hernandez (2021)

2. **Field Experiments** (RCT)
   - Researchers randomly implement some “treatment” to manipulate breastfeeding behaviors
   - Only one large-scale study: the Promotion of Breastfeeding Intervention Trial (PROBIT) (PIs Michael Kramer, Richard Martin, Emily Oken)
Causal Evidence from a Natural Experiment
Fitzsimons and Vera-Hernandez (2021)

• Setting
  • Children of low-educated mothers in the United Kingdom
  • Millennium Cohort Study (MCS)
  • Children born around 2000, before formula with DHA and ARA was available

• The random factor affecting BF
  • Born on a weekend (little hospital BF support) vs during the week (more BF support)
  • Early BF support strongly affects BF for at least 3 months

• Results
  • Large improvements in child cognitive development at ages 3-7 (0.5 SD)
  • No effects on child health or socioemotional development
  • No effect on factors in the social environment (maternal mental health, attachment, time investments)
Causal Evidence from a Field Experiment (RCT)
Brenøe, Stearns, and Martin (2021)

• Setting
  • 30 hospitals in Belarus
  • Healthy full-term infants born 1996-1997

• Cluster-randomized RCT
  • Intervention: WHO Baby Friendly Hospital Initiative
  • Control: status quo (routine separation of mother/child, delayed onset of BF, routine use of water/formula/other liquids, early intro of solid foods)
  • Intervention increased BF duration and BF exclusivity

• Results
  • Intervention significantly and persistently increased weight-for-age (WAZ)
  • No robust effects on other child health or cognitive measures through age 16
  • Substantial changes in infant feeding patterns
    • Estimated increase in calories explains major share of weight gain in early infancy
Lessons from the UK and Belarus

• Difference in results likely due to difference in feeding situation
  • UK: (partial) BF for 3+ months vs very little BF
  • Belarus: much vs less BF (e.g. at 3 months, control mothers still BF 3.5 times per day)
  • DHA, ARA seems important for cognitive development

• Positive causal effect on cognitive development when alternative lacks specific fatty acids

• Nutrition relevant for weight gain

• No evidence of health or socioemotional effects that economists care about
Conclusion (as an Economist Views the Evidence)

• We do not know much about the causal effects

• Definitely need more causal evidence from settings where alternative to BF is high-quality formula