Rapid Responses to:

RESEARCH:
Geoff Der, G David Batty, and Ian J Deary
Effect of breast feeding on intelligence in children: prospective study, sibling pairs analysis, and meta-analysis
BMJ 2006; 0: bmj.38978.699583.55v1 [Abstract]

Rapid Responses: Submit a response to this article

Rapid Responses published:

Does 1979 data hold up?

6 Octo

Veronica G. (Ronnie) Falcao, midwife
94041

Send response to journal: Re: Does 1979 data hold up?

Although this study was just published, it appears that it was based on data collected in 1979; it is hard to know whether the data collection stai from 1979 would hold up against today's standards.

It is not surprising that there would be parental influences on intelligence, but the question is whether parental influences account for all of the i in intelligence that is observed in breastfed babies.

Other studies based on more modern data have found that there appears to be an increase in intelligence that is independent of parental IQ:

Clin Pediatr (Phila). 2004 Oct;43(8):753-61. Influence of breast-feeding and parental intelligence on cognitive development in the 24-month-old Gomez-Sanchiz M, Canete R, Rodero I, Baeza JE, Gonzalez JA.

http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=pubmed&cmd=Retrieve&dopt=AbstractPlus&list_uids=15494884&query_hl=1&itool=pubmed

Competing interests: None declared

Defining breastfeeding properly could change conclusions

6 Octo

Rachel Myr, midwife
NO-4604 Kristiansand, Norway

Send response to journal: Re: Defining breastfeeding properly could change conclusions

The authors of this study conclude, seemingly without a doubt, that the observed correlation between being breastfed and performing better cog is attributable to maternal intelligence, based on the fact that mothers who stated they had ever breastfed their children at all, got higher scores military intelligence test apparently administered in connection with the study from which all the data were gleaned.

In the article, a breastfed child is defined as one whose mother reported EVER having breastfed, thus including those children who may have hac feed of colostrum on the first day of life, as well as children who may have been exclusively breastfed for a considerable period, though since the from the US with its iatrogenic societal deficiency in breastfeeding, the latter group is likely to be very small indeed. Most of the so-called breast children in this data set were likely partially breastfed for a time period measurable in weeks, not even months.

Drawing such pat conclusions about the effect of breastfeeding under such circumstances is like drawing conclusions about the effect of not smo based on outcomes in a population where some people claimed to have smoked continuously and some only partially, occasionally, or intensively short period. I use this comparison purposely, because it is innately obvious in 2006 that 'not smoking' is to be considered the norm, while 'smo health-threatening behavior.

I await with impatience the day when all those concerned with public health view breast- and artificial feeding along such a dichotomy. This migl force researchers who expect to publish their work, to define their concepts so that their research contributed something more meaningful to wh already know. As it is, even the reviewers in the BMJ seem oblivious to the significant bias (equating 'any' breastfeeding at all with exclusive breastfeeding for many months) which permeates the entire premise for the article in question, and renders the conclusions, at least for this rea meaningless.

rachel@myr.no

Competing interests: Employed as staff midwife and breastfeeding specialist in public hospital in Norway

Dose of human milk not specified

6 Octo

Marsha Walker, RN, IBCLC, Nurse, Lactation consultant
National Alliance for Breastfeeding Advocacy, Weston, Massachusetts 02493 USA

Declaring that breastfeeding has no effect on intelligence in children based on the results of this study is highly misleading. The study fails to ad delineate the dose of human milk received by children labeled as breastfeeding. The duration of breastfeeding is meaningless unless we know th of exclusivity of those defined as having been breastfed. "Breastfed" children in this study are lumped together no matter if they breastfed once 7 days or exclusively for six months. Failure to establish an exclusively breastfed control group eliminates any meaningful conclusion. I respectfu suggest that the editors of BMJ require researchers to include an exclusively breastfed control group in research such as this prior to publishing s skewed and unreliable article.

Competing interests: None declared

Send response to journal: Re: Dose of human milk not specified

Whose results are biased?

7 Octo

James E Akre, Author; Public Member, Board of Directors, International Board of Lactation Consultant Examiners
1232 Confignon, Geneva, Switzerland

Send response to journal: Re: Whose results are biased?

Based on everything we've learned in the last quarter-century about breast milk and breastfeeding, the authors' conclusion seems totally counter-intuitive. According to Siegel (Siegel DJ, The Developing Mind, 1999), at birth the infant's brain is the most undifferentiated organ in the genes and early experience shape the way neurons connect to one another and thus form the specialized circuits that give rise to mental proces seems reasonable to conclude that whether we fire this process with a food based on the milk of an alien species or in a manner that is consiste who and what we are as a species will make a significant difference in developmental outcome. Attempting to measure this difference retrospect challenging, of course, all the more in the absence of a clear fix on what kind of breastfeeding was being practiced by the children in the study c

What struck me first about the study and its analysis is the age of the data; or perhaps I should rather say the implications of the age of the you people in question, 14 to 22, who were first interviewed in 1979 and the feeding practices common during the specific period. The study cohort between 1957 and 1965. In 1957 - a year after La Leche League was founded in suburban Chicago - the national ever-breastfed rate in the US 28% (compared to 70% at present). I don't have a figure handy for duration, but my assumption is that it was correspondingly low, especially ir of contemporary national (American Academy of Pediatrics) and international (WHO) recommendations.

This period was also marked by infants being commonly fed semi-solids earlier rather than later - indeed, the earlier the better - as part of conv child-feeding wisdom. In the USA of the 1950s and 1960s it was customary to start complementary feeding before one month of age with cereal preparations, strained vegetables and fruits, and eggs and meat. Although duration of breastfeeding is dealt with briefly, there is no significant a to define what kind of breastfeeding, including duration or degree of exclusivity, or what kind of feeding practices in general, were common amo study population. The definition of "breastfeeding status" (Table 1) is a not especially informative one- dimensional divide between "not breastfe "breastfed".

In their discussion, the authors point out that "only a small proportion of the many studies that have shown a positive effect of breast feeding or children's cognitive ability control for material intelligence". They conclude by saying that "studies that do not control for maternal intelligence w probably give biased results". Under the circumstances, I would observe that studies that do not control for initial exclusivity and overall duratio breastfeeding will probably also give biased results.

Competing interests: None declared

mathematical manipulation

7 Octo

NAOMI BAUMSLAG, Clinical ProfessorPediatrics Georgeorgetown University Medical School
consultant physician 20817

Send response to journal: Re: mathematical manipulation

Dear Editor 1. The paper in the BMJ October 4th,2006 by Der et al" the effect of breastfeeding on intelligence in children; prospective study, sibl analysis, and meta-analysis October 4 is fundamentally flawed especially because of it's the loose definition of breastfeeding. The definition of breastfeeding used could mean once a day or just once. There was no effort to differentiate between exclusive breastfeeding and other forms of including mixed and exclusive breastfeeding. Suggest that the study be discounted totally on the basis of the unacceptable epidemiological defin breastfeeding and exclusion of premature infants. The duration and frequency of breastfeeding affects the dose of breastmilk and this has been minimized instead of explored. Furthermore the study used a hodge podge of old data. 2. The meta studies cited were very selected and data w mixed quality . Some of the data was recall data even up to one year which alone is problematic and not generalizable. 3. The authors attribute intelligence to the mother. Are so called breastfeeding mothers more intelligent than infants of formula fed mothers? Do fathers not have any ro this?

Are the authors suggesting breastfed mothers are more intelligent than mothers who don't breastfeed? Were the mothers single or married? If s then I suppose you could postulate fathers don't count. There are a lot of reasons mothers choose not to breastfeed including formula companie and advertisements. All this has been researched.1

In my opinion this is selective mathematical manipulation is not worth the paper it is written on and does nor prove anything. Naomi Baumslag M Clinical Professor Georgetown University Medical School phone 301 4699210 address 7100 Oak Forest Lane Bethesda MD

1 Baumslag N.and Michels D.(1995) Milk Money and Madness Culture and Politics of breastfeeding. Bergin and Garvey, Westport Connecticutp

Competing interests: None declared

Distribution of sample by length of feeding

7 Octo

Anna-Louise Hale, Breastfeeding Peer Support
24 Maywood Close, Kenton, Newcastle Upon Tyne, NE3 3QT

Send response to journal: Re: Distribution of sample by length of feeding

I really just have a query. Your groups for duration of breastfeeding are focused on durations of less than 6 months. What was the distribution o breastfeeding sample by duration?

Competing interests: None declared

No cognitive advantage for artificially fed infants given some breastmilk

7 Octo

Nina J Berry, PhD Candidate
Centre for Helath Behaviour and Communication, University of Wollongong, NSW AUSTRALIA 2250

Send response to journal: Re: No cognitive advantage for artificially fed infants given some breastmilk

Der, Batty & Deary (1) conclude that breastfeeding has no impact on cognitive development. While this study has effectively controlled for a nur confounders, it may suffer from misclassification bias. This is a problem that is common in the literature addressing effects of infant feeding in sp the fact that internationally agreed definitions were developed over fifteen years ago (2). Furthermore, the World Health Organization has recen the position that exclusive breastfeeding for at least four months followed by continued breastfeeding until at least twelve months is a prerequis physiologic growth and development (11). This means that research into the effects of infant feeding ought to take exclusively breastfed infants referent group if it is to clearly identify the effects of infant feeding on health outcomes (12).

The authors distinguished only two groups of infants, those never breastfed and those ever breastfed. Given that only 3% of mothers reported e breastfeeding at four months, it is not unreasonable to infer that this study misclassified a number of infants as 'breastfed' who would have beer predominantly artificially fed. It is likely that many of these infants did not receive a clinically significant dose of breastmilk or breastfeeding. It i surprising, then, that it found that "breastfeeding" did not significantly impact on the cognitive development of artificially fed infants.

As Der, Batty & Deary (1) point out there are relatively few high quality studies of the effects of infant feeding that control for maternal intelligen amongst those that do, evidence of cognitive deficit amongst artificially fed infants is not convincing. However, it is important to note that of the studies that the authors included in their meta-analysis (3-10) only five included a clear definition of breastfeeding and none of them included a exclusively breastfed referent group. This demonstrates that measurement error is common in the literature in this field and helps to explain the controversy that surrounds research into the effects of infant feeding.

Controlling for 'child's environment' is also problematic because it may not be an independent variable. As noted by Hay et al. (4) – which the au cite - there is evidence that breastfeeding itself increases maternal sensitivity and responsiveness.

It does not follow from this research that artificially fed infants are not at increased risk of cognitive deficit. The only conclusion that can be draw this study is that artificially fed infants who are fed some breastmilk are not conferred with a cognitive advantage over their completely artificiall counterparts. Further high quality research is needed in this area. Researchers should use internationally accepted definitions of breastfeeding (2

compare infants who are breastfed according to World Health Organization recommendations (13) with infants who are fed a commercial breastr substitute.

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Competing interests: None declared

Nice stats, too bad about the biology 10 Octo

Alison Barrett, Obstetrician and Gynaecologist
Hamilton, New Zealand

Send response to journal: Re: Nice stats, too bad about the biology

Der et al. confidentially conclude that "while breast feeding has many advantages for the child and mother, enhancement of the child's intelligen unlikely to be among them." In their rigorous statistical analysis, they appear to have overlooked the possibility that they didn't find a relationsh between breastfeeding and the child's cognitive development – when one exists – while at the same time assuming that the previous studies sh effects of breastfeeding on cognition are guilty of the opposite.

While no study to date has shown children to be intellectually advantaged by not being breastfed, this is dismissed by the authors as "publicatio They point to the size of their own study, and to the number of confounders independently controlled for, as the best indication of the validity of conclusions.

Rather than using statistics to explain away the significance of an observed effect, we need, first, to consider the probability that the effect is rea biologically plausible that babies who are fed with human milk achieve optimal neurological development?

Consider the World Health Organization's recently released Multicentre Growth Reference Study. This study, based on breastfeeding as the biolo norm, showed that babies who are breastfed exclusively for around 6 months and continue to be breastfed for up to 2 years and beyond while complementary foods are added, have marked, measurable and statistically significant differences in anthropomorphic growth compared to artifi babies (1). If their bodies grow differently, why shouldn't their brains develop differently as well?

If breastfed babies' brains develop differently, then why did Der et al. fail to find a difference in the cognitive outcomes they were assessing? Th comes in looking at the data used and the population described.

In data obtained from a US national longitudinal survey of youth, the children's mothers who didn't breastfeed achieved a raw score of 26 on the Forces Qualifying Test; and the children's mothers who did breastfeed, a whopping 46. To put this into perspective, a score of 31 is the cut-off fo admission to the US military. The standard errors in these two groups are both exceedingly small, thus we can be very confident that these two clearly represent two very different subsets of women. Mothers who admit they fully artificially fed their babies are at a significant cognitive disa in comparison to mothers who claim to have "breastfed". The authors give little or no consideration to defining what is meant by "breastfeeding" may have occurred for an unspecified length of time (2 days or 2 years), in an unclassified manner (exclusively or not) and with an undefined m breast-milk delivery (breast or bottle). Each of these has biological meaning.

The danger of using such different subsets to draw conclusions is that the statistical analysis of some of these confounders while simultaneously others may bury the important but smaller differences that exist within them. This has happened before.

Another study published last month, involving two of the same authors using the same data set, similarly suggested that mothers who smoke du pregnancy don't put their children at any cognitive risk. This, the authors explained, is because any perceived differences in IQ between children smokers and non-smokers was accounted for by genetic differences in the IQ of the mothers together with the mothers' educational achievemen

Presumably, the same could be "proven" statistically for drinking alcohol in pregnancy…that fetal alcohol effects aren't due to how much alcohol mother drinks, but due to her intelligence. If overwhelming numbers of low-IQ women drink during pregnancy, the biological effects on the fetus drinking alcohol might be said to be explained "more by intelligence" than by drinking alcohol.

A sibling comparison could factor out these between-mother differences. Yet, a sibling study is only feasible if there is sufficient within-family va breastfeeding prevalence or duration (3). This variation is not commented on by the authors of this particular study, although it has been detern previous study, which found statistically significant effects (3). If the bulk of the "breastfeeding" group includes a population of short-duration non-exclusive breastfeeders, there won't be much difference to detect.

And even if sufficient variation were present, a sibling study doesn't completely eradicate the possibility of type 2 error, especially if errors occur measurement of a variable (such as an IQ test measuring "intelligence"). If measurement errors are large enough, measurement bias can comp mask the true relationship between breastfeeding and cognitive outcome (3).

A further problem that plagues all such sibling studies is the reasons why siblings differ in their breastfeeding histories. It could be that one sibli critically ill, or that the mother was ill and on medication contraindicated in breastfeeding. In any case, it is very unlikely that the decision to bre one child more than another is made randomly. The unobserved factors that lead a mother to breastfed two children differently can have effects far-reaching, psychologically profound, yet completely undetectable by any statistical analysis.

What this study does point out – far from being the generalizable result to other developed countries suggested by the authors – are, to put it bl the marked inequalities that exist in the USA between the haves and the have-nots: children who are breastfed have intelligent mothers, and ch who aren't breastfed have not. The real tragedy will occur if, as a result of the considerable media attention this study has garnered (4, 5, 6, 7), children continue to be further disadvantaged – cognitively and otherwise – by not being breastfed.

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Competing interests: None declared

FAS is a alcohol problem

13 Octo

Mieke Siebelink, Labor and postpartum assistent and maternity Aid in Buller Hospital
Buller Hospital . Westport . New Zealand

We adopted two children with the Fetal Alcohol problem. I studied on the topic and am convinced that FAS has nothing to do with the intellectua of the parents, but is solely an alcohol problem. Every expectant parent should know the danger of alcohol in pregnancy. A small amount of alco damage your child forever.

Send response to journal: Re: FAS is a alcohol problem

Competing interests: None declared

Breastfeeding and Intelligence Not Demonstrated

19 Octo

James W. Prescott, Ph.D., Retired
Home 19958

The article on Breastfeeding and IQ in the BMJ was read with much interest, however, the duration of breastfeeding is far too short to expect an significant effect on intelligence, as claimed. The authors report "that the median duration of breastfeeding is three months and the 95th percent months". This duration of breastfeeding is far too short to test the hypothesis that there is a link between breastfeeding and IQ.

Send response to

There is increasing evidence that the long term health benefits of breastfeeding is to be found in the emotional-social-sexual domain rather than

journal:
Re: Breastfeeding and Intelligence Not Demonstrated

domain and it takes breastfeeding bonding for 2.5 years to optimize brain-behavioral development to realize these emotional-social-sexual deve effects.

The studies by this author on 26 tribal cultures with weaning age of 2.5 years or greater have documented that 77% of these cultures are rated absent in depression/suicide; and that a statistically significant difference exists in rated suicides between cultures with WA of 2.0 years or less v years or greater indicating a formative period of brain development that would account for these effects. There are, of course, no tribal cultures not breastfeed. It takes a particular kind of culture that supports a mother breastfeeding for 2.5 years or longer. See http://www.violence.de/prescott/politics-trust.pdf and http://www.violence.de/prescott/ttf/article.html; http://violence.de/prescott/ttf/cultbrain.

Clearly, this kind of data on breastfeeding for "two years of age and beyond", as recommended by WHO and UNICEF (Innocenti Declaration, 199 not exist in any of the national registers on breastfeeding, unless the authors have information to the contrary. Only 2.7 percent of American mc breastfeeding at two years of life and only 1.0 percent at 2.5 years of life. (NHANES 111,1988--94) (Third National Health and Nutrition Examina Survey). (Hedeger, 2001).

The effects of extended breastfeeding on reducing breast cancer was reported by Zheng, et al (2000). They report:

"For women who breastfed for more than 24 months per child, the odds ratio was 0.46 (95% confidence interval (CI): 0.27, 0.78) when compar those who breastfed for 1–6 months per child. A significantly reduced risk of breast cancer was also found for those whose lifetime duration of la totaled 73–108 months (odds ratio = 0.47, 95% CI: 0.23, 0.95) and for those who breastfed for 109 months (odds ratio = 0.24, 95% CI: 0.11,

It is time that modern neurodiagnostic tools of MRI, fMRI, PET scans and other modern quantitative methods of brain evaluation be employed to differences in brain structure and function in young adults who have been breastfed for "two years and beyond" v non-breastfed controls. There equal need to record the weaning age of every child and make it a part of the immunological record and a nation's vital statistics record. There is urgent need to establish a new international growth record that includes parameters of brain development and function, as they are not now a p breastfeeding record to evaluate the nutritional effectiveness of infant formula milk (WHO, 2001). http://www.who.int/inf-pr-2001/en/note2001-07.html.,

The psychobiology of breastfeeding takes time that is not recognized by modern human cultures and that it takes a particular kind of culture to s mothers breastfeeding for "two years of age and beyond". The modern human culture has lost its cultural heritage and is not one of these cultur

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Competing interests: None declared

Breastfeeding and Intelligence article has methodologic flaws

27 Octo

Melissa C. Bartick, physician (internist)
Cambridge Health Alliance, USA 02139

Send response to journal:
Re: Breastfeeding and Intelligence article has methodologic flaws

The article by Der, Batty and Deary has flawed methodology, making any conclusion about the effect on breastfeeding and intelligence prematur

In this study, breastfeeding is not defined. It can mean anything from one breastfeeding a day, to exclusive breastfeeding (8-12 breastfeedings The authors used duration as a proxy for dose, which cannot be done. We should treat breastfeeding as we treat all other drugs or treatments; v never publish a study on a drug where the dose was not specified. Duration is not an appropriate proxy for dose; nor would it be considered so f other intervention studied.

Furthermore, the median duration of breastfeeding was only 3 months in this study, when the recommended duration of breastfeeding is 1-2 ye few children in this study even reached recommended levels-- the 95th percentile here was only 14 months.

Finally, the study excluded the low-birthweight babies, most of whom are premature. This is a group known to be affected by breastfeeding, as breastmilk is especially important for neurologic and eye development in this group.

It is important that breastfeeding research and its peer review process be rigorous. It is clear that this study was not reviewed by people with ex breastfeeding research-- such reviewers would never recommend publishing a study with these serious methodologic flaws.

All we can conclude from this study is that breastfeeding for a very short duration, with unspecified doses of breastmilk, in non-low birthweight c had no effect on intelligence. To really determine the effect of breastfeeding on intelligence, one must carefully define breastfeeding, include a p of exclusively breastfed infants, and study infants whose breastfeeding duration approached recommended levels. Low birthweight infants shoul studied as a separate group.

Competing interests: None declared