Prolonged and exclusive breastfeeding of infants did not reduce growth by 12 months of age


QUESTION: Is a breastfeeding promotion intervention shown to increase duration and exclusivity of breast feeding associated with lower infant weight and length?

Design
Cluster randomised (cluster allocation concealed), unblinded, controlled trial with 12 months of follow up.

Setting
32 maternity hospitals and their affiliated clinics in Belarus.

Participants
Mother-infant pairs were enrolled if the mother intended to breast feed, had no illnesses contraindicating breast feeding, and had given birth to a healthy, singleton infant who had a gestational age ≥ 37 weeks, birth weight ≥ 2500 g, and a 5 minute Apgar score ≥ 5. 17,046 mother-infant pairs were enrolled, and 16,471 (97%) completed follow up. 31 sites were included in the analysis (1 site was omitted because data were falsified).

Mean body weight (g)

<table>
<thead>
<tr>
<th>Follow up (months)</th>
<th>Intervention</th>
<th>Control</th>
<th>Difference</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4341</td>
<td>4280</td>
<td>61</td>
<td>0.001</td>
</tr>
<tr>
<td>2</td>
<td>5258</td>
<td>5170</td>
<td>88</td>
<td>&lt;0.001</td>
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<tr>
<td>3</td>
<td>6153</td>
<td>6047</td>
<td>106</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>6</td>
<td>8131</td>
<td>8042</td>
<td>89</td>
<td>&lt;0.001</td>
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<tr>
<td>9</td>
<td>9509</td>
<td>9451</td>
<td>58</td>
<td>0.002</td>
</tr>
<tr>
<td>12</td>
<td>10564</td>
<td>10571</td>
<td>–7</td>
<td>0.726</td>
</tr>
</tbody>
</table>

Mean body length (cm)

<table>
<thead>
<tr>
<th>Follow up (months)</th>
<th>Intervention</th>
<th>Control</th>
<th>Difference</th>
<th>p value</th>
</tr>
</thead>
<tbody>
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<td>57.75</td>
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<tr>
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<td>71.62</td>
<td>0.31</td>
<td>0.039</td>
</tr>
<tr>
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<td>75.93</td>
<td>75.75</td>
<td>0.18</td>
<td>0.226</td>
</tr>
</tbody>
</table>

Main outcome measures
Weight, body length, and head circumference measured at 1, 2, 3, 6, 9, and 12 months of follow up.

Main results
Analysis was by intention to treat. Infants in the intervention group were more likely to be breast fed than infants in the control group during their first 12 months and were more likely to be exclusively breast fed at 3 months (43% v 6.4% p<0.001). Mean body weight was greater in the intervention group than in the control group at 1 month; the difference increased through 3 months, declined somewhat thereafter, and disappeared by 12 months (table). Body length followed a similar overall pattern as weight (table). The groups did not differ for head circumference at any time during follow up.

Conclusion
A breastfeeding promotion intervention shown to increase duration and exclusivity of breast feeding was not associated with deficits in weight or length during the first year of life.

COMMENTARY
In this study by Kramer et al, the long held view that prolonged and exclusive breast feeding is a causal factor in reduced infant growth is tested. This is the first study to look at this association using a randomised controlled trial design. Previous studies had used observational designs, which had problems such as selection bias, reverse causality, and confounding effects.

Even with a cluster randomisation strategy, some interaction (contamination) between study sites could exist. Chiefs of Obstetrics at sites not randomised to the intervention likely had some awareness about the WHO/UNICEF BFHI, but the increase in breastfeeding practice at the intervention sites clearly shows the effectiveness of the study intervention.

Although one of the 32 study sites was excluded from the analyses because data were falsified, a mechanism was in place to correlate the study data sheets with maternal records and interviews at the study sites. Overall, strong agreement between the study data sheets and hospital records was shown in the remaining sites.

The importance of randomised trials in uncovering sources of bias associated with observational studies is clear. When data were analysed by reconstructing the groups according to breastfeeding practices and ignoring randomisation, the findings supported previous observational studies, suggesting that exclusive breast feeding slowed growth.

Although the findings relate to the Belarus population, they are also relevant for maternal child nurses in higher income countries of the West. Strong evidence is provided that exclusive and prolonged breast feeding in healthy humans will enhance infant growth during the first 3 months of life and that growth patterns during the first year will not be affected. This evidence should instil confidence into practitioners and parents alike that exclusive breast feeding is sufficient for optimal infant growth.

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