

## Office of Evidence Based Practice – Specific Care Question Is breastfeeding protective against obesity?

Specific Care Question :

Does breast feeding protect against overweight or obesity?

Question Originator:

Julie Vandal, RD. LD

Plain Language Summary from The Office of Evidence Based Practice: Summary:

Included studies are meta-analyses and a systematic review of meta-analyses. The included studies report that the odds of overweight and/or obesity are decreased in infants who are breast fed. For example, (Horta, Bahl, Martines, & Victora, 2007) reported an odds ratio (OR) = 0.78, 95% CI [0.71-0.85], The protective effect of breast feeding was seen even when type of study (cohort versus cross-sectional), age when BMI was calculated, definition of breast feeding, or definition of obesity were taken into account. (Weng, Redsell, Swift, Yang, & Glazebrook, 2012) report similar protective effects. However, all studies of this type have the following limitations:

- The studies included in the meta-analyses are observational studies
- Much of the included data is based on recall, not real time collection of information (Risk of bias)
- Factors other than breast feeding affect body weight (Inconsistency)
- Each study used varying definitions of breast feeding, overweight/obesity (Inconsistency)
- Small studies tended to report a higher estimate of protective effect (Imprecision)

Since the studies are observational, only associations between factors can be described, causation cannot be stated. Each meta-analysis described how confounders such as maternal body weight, maternal smoking status or socioeconomic status were controlled for the ORs moved closer to 50:50, but children who were breast fed as infants were significantly more likely to not be overweight or obese.

Therefore based on low quality evidence a strong recommendation is made to support breast feeding to prevent overweight/obesity later in life. Desirable effects clearly outweigh undesirable effects. The recommendation may change when high quality evidence becomes available. Further research (if performed) is likely to have an important influence on our confidence in the estimate of effect and is likely to change the estimate.

Librarian Stein, B.

Reviewers: Julie Vandal RD, LD, Sarah Hampl MD, Barb Lawson, RN, IBLCE, Anne Mercer, MS, RN, IBLCE, Kay DeHart, RN BSN, IBLCE and Jamie Ayers, RN, BSN, IBCLC

EBP team member responsible for reviewing, synthesizing, and developing this literature: Nancy Allen MS, MLS, RD.

Search Strategy and Results:

(Breast feeding obesity AND ((Meta-Analysis[ptyp] OR Guideline[ptyp] OR systematic[sb] OR "Consensus Development



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Conference" [ptyp]) NOT medline[sb])  
Returned 1 paper

((("Overweight"[Mesh]) AND ("Breast Feeding"[Mesh] OR "Milk, Human"[Mesh]) AND (Meta-Analysis[ptyp] OR Guideline[ptyp] OR systematic[sb] OR "Consensus Development Conference" [ptyp])  
Returned 7 papers

Dr. Hampl and Ms. Vandal selected 3 papers

After close reading, Cope & Allison, (2008) was excluded and replaced by Horta, et al., (2007). The latter paper is summary of the former and a secondary source of evidence. Horta, et al, (2007) is the primary source and therefore it is the included in this analysis.

*Studies included in this review:*

Horta, B. L., Bahl, R., Martines, J. C., & Victora, C. G. (2007). *Evidence on the long-term effects of breast feeding: systematic review and meta-analysis*. Geneva Switzerland: World Health Organization.

Monasta, L., Batty, G. D., Cattaneo, A., Lutje, V., Ronfani, L., Van Lenthe, F. J., & Brug, J. (2010). Early-life determinants of overweight and obesity: a review of systematic reviews. *Obes Rev*, 11(10), 695-708. doi: 10.1111/j.1467-789X.2010.00735.x OBR735 [pii]

Weng, S. F., Redsell, S. A., Swift, J. A., Yang, M., & Glazebrook, C. P. (2012). Systematic review and meta-analyses of risk factors for childhood overweight identifiable during infancy. *Arch Dis Child*, 97(12), 1019-1026. doi: 10.1136/archdischild-2012-302263

*Studies not included in this review with rationale for exclusion:*

(Cope, M. B., & Allison, D. B. (2008). Critical review of the World Health Organization's (WHO) 2007 report on 'evidence of the long-term effects of breastfeeding: systematic reviews and meta-analysis' with respect to obesity. *Obes Rev*, 9(6), 594-605. doi: 10.1111/j.1467-789X.2008.00504.x Reason for exclusion- Secondary source based on Horta, et al., 2007.

Method Used for Appraisal and Synthesis: The Cochrane Collaborative computer program: Grade Pro.

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Characteristics of included study :

**Tables:**

**Table 1. Question:** Should breastfeeding vs. formula feeding in the first year of life be promoted be used for the prevention of overweight?

Quality assessment							Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations		
<b>overweight from 10 studies Weng 2012 (follow-up median 6 years; assessed with: BMI percentiles from six countries)</b>								
10	observational studies	serious <sup>1</sup>	very serious <sup>2,3,4</sup>	no serious indirectness	serious <sup>5</sup>	none	VERY LOW	IMPORTANT

<sup>1</sup> Bias assessment of included studies is not reported clearly

<sup>2</sup> Different classifications for increased BMI were used to determine overweight; including the Centers for Disease Control, the International Obesity Task Force, the UK 1990 growth reference percentiles, reference data from France, and national reference data from Germany, WHO standards.

<sup>3</sup> Heterogeneity is high, the I2 statistic is 73%

<sup>4</sup> Follow up period for growth varied from 2-14 years (median = 5 years)

<sup>5</sup> Wide confidence intervals



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**Table 2. Monasta 2010**

Author, date, country, and industry of funding	Patient Group	Level of Evidence (Oxford) / Strength of Evidence (GRADE)	Research design	Significant results	Limitations
(Monasta et al., 2010)	6 studies	1	Review of systematic reviews	<p>One of the included studies found that breast feeding had an inverse association with childhood obesity (pooled adjusted OR 0.78; 95% CI[0.71-0.85])</p> <p>Four of the included studies reported an inverse dose- response effect of breast feeding duration with risk of obesity</p> <p>In one large study removal of confounders (Parenteral obesity, maternal smoking an social class) removed the moved the odds ratio closer to one but it remained significant (pooled adjusted OR 0.94; 95% CI [0.88-0.99])</p> <p>The WHO SR (reported elsewhere) is included in this review.</p> <p>Breast feeding and breast feeding duration may protect against overweight and obesity in children and beyond. It may be easier to increase breast feeding rates than to decrease smoking rates</p>	The studies included in the systematic reviews are mostly observational studies; therefore confounding is a major limitation.



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Figures

Figure 1. Weng 2012

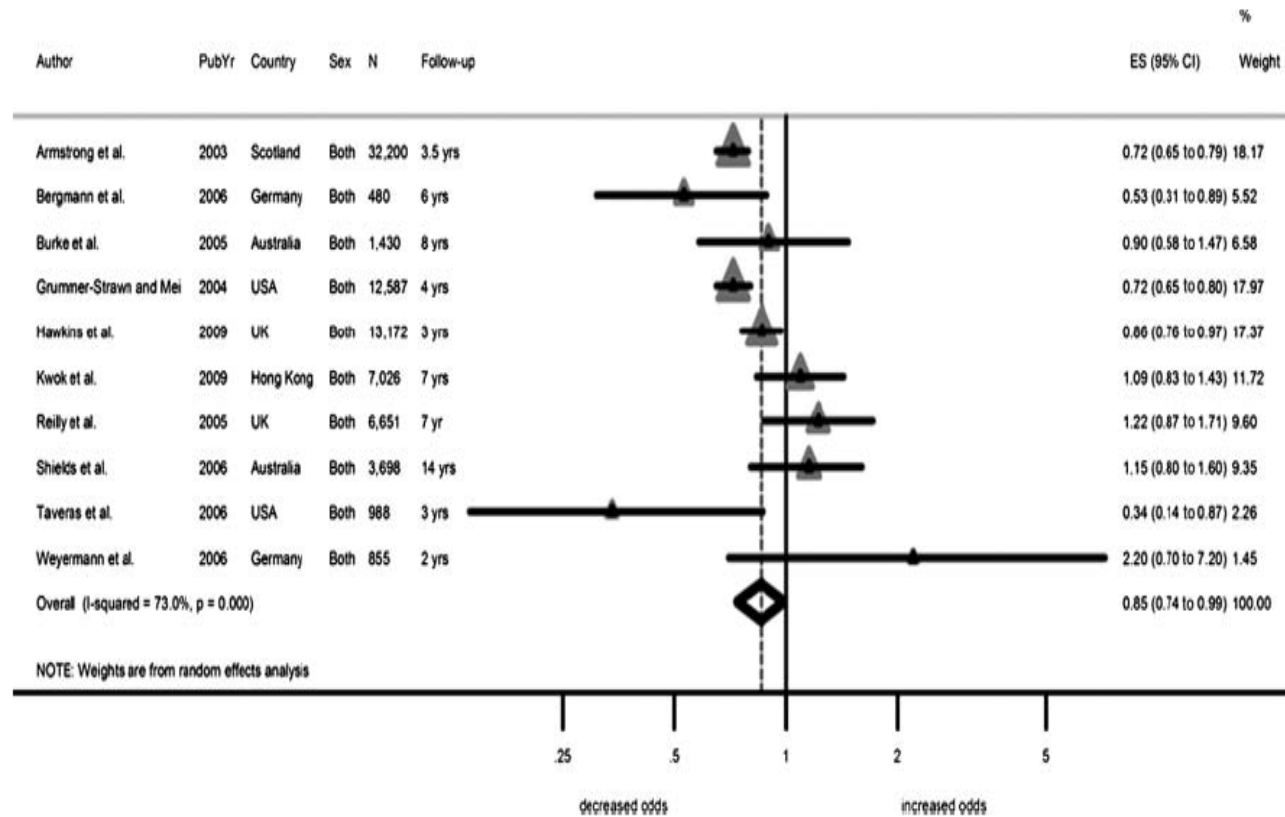


Figure 3 Pooled adjusted OR for childhood overweight from random effects meta-analysis of 10 studies:<sup>26 27 33 36 39 46 52-55</sup>; ever breastfed compared with never breastfed. ES, effect size.

Figure 2. Horta 2007



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**Figure 3.3.** Odds ratio and its 95% confidence interval of being considered as overweight/obese, comparing breastfed vs. non-breastfed subjects in different studies. Whether the estimate was for males (M), females (F) and all (A) is indicated in parenthesis

