

Can breastfeeding prevent childhood obesity

[Health & Medicine](#), [Childhood Obesity](#)



Can breastfeeding in the first six months prevent childhood obesity?

' Obesity' is defined as a body mass index (BMI) of $\geq 25\text{kg/m}^2$ (World Health Organisation 2015). In the past decade, throughout much of the world, the rates of obesity in children in particular have increased to epidemic proportions (Lefebvre & John 2012, p. 386). The World Health Organisation (2015) estimates that 42 million children under the age of 5 years are overweight or obese worldwide and in Britain, overweight and obesity affects nearly one-third of children aged 2 to 15 years (Health and Social Care Information Centre 2009). Since obesity in childhood is strongly correlated with serious disease and increased risk of mortality throughout life (Yan et al. 2014, p. 3), and because of the significant direct costs of obesity on health services and societies globally (Department of Health 2011), strategies to prevent childhood obesity are of paramount importance. Research has suggested that breastfeeding for the first six months may be protective against and, therefore, prevent obesity in childhood (Lefebvre & John 2012, p. 386). Through a critical evaluation of this research, this paper will answer the question of whether breastfeeding in the first six months can prevent childhood obesity.

The beneficial effects of breastfeeding for children are well-established in the literature. High-quality studies have demonstrated that children who are breastfed have a reduced risk of ear infections (Duncan et al. 1993, p. 867), respiratory infections (Bachrach, Schwarz & Bachrach 2003, p. 237), necrotizing enterocolitis (Lucas & Cole 1990, p. 1519), gastroenteritis (Chien 2001, p. 69), diabetes (Owen et al. 2006, p. 1043), atopic dermatitis (Gdalevich et al 2001, p. 520) and sudden infant death syndrome (SIDS)

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(Vennemann et al. 2005, p. 655). Breast milk is not only rich in protective antibodies and beneficial bacteria, it is nutritionally-balanced and adapts to meet an infant's changing needs (National Health Service 2015). Research has therefore suggested that another significant benefit of breastfeeding may be that it acts as a protective factor against obesity in childhood.

Kramer was the first to report that breastfeeding may result in a "significantly reduced" risk of obesity in children (1981, p. 4). In the next two decades, a number of similar studies also suggested an association between breastfeeding and a reduction in the risk of childhood obesity. In the mid-2000s this research was collated into three seminal meta-analyses which concluded that, overall, breastfeeding for the first six months did reduce the risk of childhood obesity. For example, Arenz et al. (2004, p. 1247) found that obesity had a "small but consistent" protective effect against obesity in children. This was supported by Owen et al. (2005, p. 1367), who demonstrated a small positive correlation between breastfeeding and a reduction in the risk of childhood obesity. Harder et al. (2005, p. 397) also found that the duration of breastfeeding was inversely associated with the risk of childhood obesity. These meta-analyses suggested an overall 15% to 30% reduction in odds of overweight from breastfeeding. However, they were widely criticised for major methodological problems, including a failure to deal appropriately or consistently with confounding variables such as parental BMI. As a result, the evidence they presented on the relationship between breastfeeding and reduced childhood obesity risk was not widely accepted.

However, the potential for a correlation between breastfeeding and a reduction in the risk of childhood obesity continued to be discussed and researched. In the past decade, a small number of high-quality studies have investigated this potential relationship. Evidence from this research is largely conflicting, with results varying depending on the study design used. For example, two large randomised-controlled trials found breastfeeding had no impact on the prevalence of obesity in children aged 6 or 11 years (Kramer et al., 2007, p. 1717; Martin et al., 2013, p. 1005). Similarly, several studies in siblings found no differences in the BMI of breastfed versus non-breastfed children (Evenhouse & Reilly 2005, p. 1781; Gillman et al. 2006, p. 112; Colen & Ramsey 2014, p. 55). Likewise, two high-quality American studies reported either no (Jiang & Foster 2013, p. 628) or small and inconsistent (Jenkins & Foster 2014, p. S128) effects of breastfeeding on childhood BMI. Conversely, multiple studies have reported a positive relationship between breastfeeding and a reduction in the risk of childhood obesity. For example, a large UK study concluded that breastfeeding reduced the overall risk of childhood obesity to a degree considered statistically-significant. These findings are supported in high-quality studies from Germany (Grube et al. 2015, p. 1), Brazil (Assuncao et al. 2015, p. 1) and Japan (Jwa et al. 2015, p. 1527). Furthermore, these studies demonstrate that the length of time a child is breastfed is proportional to the degree of their reduction in obesity risk, and that the inverse association between breastfeeding and overweight appears to be sustained over time.

Part of the problem underpinning these marked differences in study results can be explained by the quality of the studies themselves. Randomised-

controlled trials – the gold standard of research trials – investigating the effects of breastfeeding are rare, because the well-established benefits of breastfeeding means allocating children into ‘breastfeeding’ and ‘non-breastfeeding’ cohorts would raise justifiable ethical concerns (Grube et al. 2015, p. 2). In studies where groups are not randomised, a spurious relationship between breastfeeding and reduced risk of obesity may result as a result of confounding if, for example, mothers who breastfeed also adopt a healthier lifestyle involving a nutritious diet and adequate physical activity for themselves and their children (Centers for Disease Control 2007, p. 3).

Reasons for these marked differences in study results can also be explained by the diverse sociocultural context in which both breastfeeding and obesity are grounded. Essentially, sociocultural factors have a significant impact on both breastfeeding and obesity which confounds the relationship between these two variables. For example, a cohort study examining the correlation between breastfeeding and childhood obesity in groups of English and Brazilian children found that breastfeeding was associated with reduced risk of childhood obesity in the English cohort but not in the Brazilian cohort (Brion et al., 2011, p. 670). This study suggests that sociocultural factors have a significant impact on the relationship between breastfeeding and childhood obesity in cohorts with different sociocultural characteristics.

Another similar cohort study confirmed that breastfeeding in particular is a ‘socially-patterned’ phenomena, and that as a result the relationship between breastfeeding and childhood obesity may differ between cohorts in low- to middle-income and high-income countries (Fall et al., 2007, p. 47).

Furthermore, a high-quality meta-analysis found that evidence for the

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relationship between breastfeeding and childhood obesity is primarily derived from studies conducted in high-income countries where the correlation between breastfeeding and socioeconomic status is a significant source of confounding in this relationship (Horta & Victora 2013). It is apparent, therefore, that the question of whether breastfeeding in the first six months can prevent childhood obesity is largely dependent on sociocultural factors.

The sociocultural-dependent nature of the relationship between breastfeeding and childhood obesity is also revealed in studies which have adjusted statistically for other covariates, such as sociodemographic factors and variables concerning birth, pregnancy and parental atopy, etc. For example, in one adjusted study on a German cohort, Grube et al. (2015, p. 1) conclude that breastfeeding might help to prevent childhood obesity. However, in another adjusted study on a Chinese cohort Jing et al. (2015, p. 55) found no statistically significant effect of breastfeeding on reducing the risk of childhood obesity. Because these studies both adjust for a range of sociodemographic and other covariates, sociocultural differences are an important explanation for the differences observed in results.

It is exceedingly difficult, perhaps impossible, to control for the diversity of sociocultural variables evident in different populations. The best that can be done is to control for as many other variables, such as sociodemographic factors, as possible. When this is done, the evidence overwhelmingly suggests that breastfeeding in the first six months can reduce the risk of childhood obesity. For example, a meta-analysis by Horta and Victora (2013)

concluded that, if only studies which control for confounding are considered, breastfeeding leads to a reduction in childhood obesity of around 10%. This is supported by another large meta-analysis by Yan (2014) which, after examining only studies controlling for confounding, concluded that the risk of childhood obesity was lower in breastfed children by 22%.

It is worth noting that no Cochrane Systematic Review - the gold standard of meta-analysis - has been completed on the relationship between breastfeeding and childhood obesity. However, a Cochrane Systematic Review on evidence for the optimal duration of breastfeeding did conclude that breastfeeding did not confer any protection against obesity in children to the age of 6 years (Kramer & Kakuma 2012, p. 5) - a surprising finding, given the conclusions drawn in the previous paragraphs. However, this Cochrane Systematic review looked at obesity in terms of weight gain rather than BMI, the standard measure for obesity. It also did not exclude studies which failed to adjust for confounding. Thus, it is not accurate to compare its results with those of the meta-analyses discussed previously.

It is now generally accepted that breastfeeding in the first six months can reduce the risk of childhood obesity. However, complicating this conclusion is the complexity surrounding differences in the concepts of childhood obesity prevention versus risk reduction. The literature widely accepts that breastfeeding reduces the risk of childhood obesity; however, no studies claim that breastfeeding prevents obesity. Thus, in direct answer to the research question it must be concluded that breastfeeding in the first six months does not prevent childhood obesity. However, breastfeeding does

reduce the risk of childhood obesity. Moreover, the length of time a child is breastfeed is proportional to the degree of their reduction in obesity risk and the inverse association between breastfeeding and overweight appears to be sustained as the child grows (Centers for Disease Control 2007, p. 4).

A variety of research is now being undertaken to further explain the relationship between breastfeeding and a reduction in the risk of childhood obesity. It has been suggested that, due to more normalised concentrations of the hormone leptin, breastfed children may have a more well-developed recognition of satiety and an improved ability to self-regulate their energy intake in both early and later childhood (Gillman 2011, p. 681). Hormones in human breast milk may influence this learned self-regulation of energy intake (Savino et al. 2009, p. 397). Additionally, breast fed children have a lower plasma insulin concentration and a shorter insulin response resulting in more regulated body fat deposition (Dietz 2001, p. 2506). Furthermore, the higher protein intake of formula-fed infants may stimulate the secretion of insulin and result in the dysregulation of body fat deposition (Dietz 2001, p. 2506).

The conclusion that breastfeeding reduces the risk of childhood obesity is widely accepted by global peak bodies on child health. These peak bodies include the World Health Organisation's (2015) UNICEF, whose Baby Friendly Initiative is widely endorsed by maternity hospital and health service in the UK. The relationship between breastfeeding and a reduction in the risk of childhood obesity is also reflected in the policy statements and guidelines of most major paediatric bodies worldwide, including the Royal College of

Paediatrics and Child Health (2011) and the American Academy of Pediatrics (2012).

Obesity in childhood is a significant problem globally. This paper has concluded that whilst breastfeeding in the first six months does not prevent childhood obesity, there is evidence to suggest that breastfeeding does reduce the risk of childhood obesity. Moreover, the length of time a child is breastfeed is proportional to the degree of their reduction in obesity risk and the inverse association between breastfeeding and overweight appears to be sustained over time. However, it must be remembered that both breastfeeding and obesity are grounded in a range of sociocultural determinants which may confound this relationship. However, since obesity in childhood is strongly correlated with serious disease and increased risk of mortality throughout life, and because of the significant direct costs of obesity health services and societies globally, a relationship between breastfeeding and a reduction in the risk of childhood obesity is a significant finding.

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