



## Evidence summary

## A summary of a Cochrane review: Omega-3 fatty acid addition during pregnancy

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### 1. Introduction

Review authors in the Cochrane Collaboration conducted a review of giving omega-3 fatty acids to pregnant women and the effects upon the mothers and their babies. After searching for all relevant studies, they identified 70 studies comparing omega-3 fatty acids from supplements or foods to either a placebo or no added omega-3 fatty acids. This summary presents the findings of the review that are related to the outcomes of the pregnancy.

#### 1.1. Omega-3 fatty acids and pregnancy

Eating fat is important in a healthy diet. However, the type and amount we should eat continues to be studied. There are many types of fatty acids that play a different role in our bodies, namely poly-unsaturated, saturated and mono-unsaturated fatty acids. Poly-unsaturated fats (PUFA) can be omega-3 or omega-6 fatty acids. Omega-3 fatty acids include long chain fatty acids: docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA); and alpha-linolenic acid that is not long chain. The most common food that provides omega-3 long chain poly-unsaturated fatty acids (LCPUFA) is fish.

A key question is whether birth outcomes could be improved if pregnant women consume more omega-3 LCPUFA. Important birth outcomes include preterm birth which is defined as birth before 37 weeks of gestation, and very preterm birth which is defined as birth before 34 weeks of gestation. Preterm birth can increase the babies' risk of dying or their risk of illness later in life if they survive. Other important outcomes to measure include the size and weight of the baby. A baby at low birth weight, a baby who had slowed growth during the pregnancy or is small for gestational age, may be at increased risk of problems later in life. A baby who is large for gestational age may cause difficulties to the mother and baby during birth. Other harms to the mother during birth are also measured.

### 2. What does the research say?

Seventy studies with a total of 19,927 women compared the effects

of omega-3 fatty acid supplements or food enrichment to placebo or no omega-3 fatty acids. Sixteen of the studies were carried out in the USA, eight studies in Iran, six in the UK, and multiple studies in Australia, Denmark, the Netherlands and Spain. In these 70 studies, pregnant women were randomly selected to receive either omega-3 fatty acids or a placebo or no supplement at all. About half of the trials included women at increased risk of poor mother or infant outcomes because they had a previous preterm birth, gestational mellitus, or were overweight or underweight. In about half of the trials women started omega-3 supplements before they were 20 weeks pregnant. Women received mostly DHA in 27 trials, and a mix of DHA and EPA in the other trials. Doses of omega-3 fatty acids ranged from less than 500 mg/day to more than 1 g/day.

The certainty that we have in the effects of omega-3 on each of the important outcomes ranges from high to low. Our certainty was lower when there was not enough data from the studies (i.e. the confidence intervals include the possibility of an important effect or no effect), but we can make some conclusions about pregnant women at normal or high risk of poor birth outcomes. Omega-3 fatty acids reduce the chance of very preterm birth and slightly reduce the chance of preterm birth. Omega-3 fatty acids also probably reduce the number of babies dying at birth or shortly afterwards (perinatal death) slightly. The evidence also found that omega-3 fatty acids slightly reduce the number of babies at low birth weight but has little to no effect on the number of babies who are small for gestational age. However, omega-3 fatty acids probably slightly increase the number of babies who are large for gestational age. Omega-3 fatty acids may have little or no effect on the serious harms to mothers (see [Table 1](#)).

Additional well-designed trials are needed to understand which women are most likely to benefit from increasing their omega-3 fatty acid intake, and what are the optimal types, timing, and amounts of omega-3 fatty acids.

### 3. Where does this information come from?

This summary is based on a Cochrane systematic review: Middleton P, Gomersall JC, Gould JF, Shepherd E, Olsen SF, Makrides M. Omega-3

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**Table 1**  
Effects of omega-3 fatty acids on birth outcomes in pregnant women.

What was measured	Effect when not taking omega-3 fatty acids	Effect when taking omega-3 fatty acids	Certainty of the evidence	What happens when taking omega-3 fatty acids
Number of preterm births that occurred (< 37 wks) (26 studies, 10,304 women)	134 out of 1000 babies	On average 15 fewer babies per 1000 (from 25 fewer to 4 fewer)	⊕⊕⊕⊕ <b>high</b>	Omega-3 fatty acids slightly reduce the chance of preterm birth
Number of very preterm births that occurred (< 34 wks) (9 studies, 5204 women)	46 out of 1000 babies	On average 19 fewer babies per 1000 (from 26 fewer to 11 fewer)	⊕⊕⊕⊕ <b>high</b>	Omega-3 fatty acids reduce the chance of very preterm birth
Number of babies who died (stillbirth or death shortly after birth) (10 studies, 7416 women)	20 out of 1000 babies	On average 5 fewer babies per 1000 (from 9 fewer to 1 more)	⊕⊕⊕⊕ <b>moderate<sup>a</sup></b>	Omega-3 fatty acids probably reduce the chance of death at birth or shortly after
Number of babies at low birth weight (15 studies, 8449 women)	156 out of 1000 babies	On average 16 fewer babies per 1000 (from 28 fewer to 2 fewer)	⊕⊕⊕⊕ <b>high</b>	Omega-3 fatty acids slightly reduce the chances of low birth weight
Number of babies small for gestational age (8 studies, 6907 women) Measured in minutes	129 out 1000 babies	On average 1 more baby per 1000 (from 13 fewer to 17 more)	⊕⊕⊕⊕ <b>moderate<sup>a</sup></b>	Omega-3 fatty acids probably have little to no effect on the number of babies who are small for gestational age
Number of babies large for gestational age (6 studies, 3722 women)	117 out of 1000 babies	On average 17 more babies per 1000 (from 4 fewer to 42 more)	⊕⊕⊕⊕ <b>moderate<sup>a</sup></b>	Omega-3 fatty acids probably slightly increase the number of babies who are large for gestational age
Serious harms to the mother (2 studies, 2690 women)	6 out of 1000 mothers	On average no difference in the number of mothers (from 4 fewer to 10 more)	⊕⊕⊕⊕ <b>low<sup>b</sup></b>	Omega-3 fatty acids may have little to no effect on the serious harms to mothers.

Details about the certainty of the evidence: <sup>a</sup>Evidence is moderate certainty because the confidence intervals are wide. <sup>b</sup>Evidence is low quality because there is little data and the confidence intervals include the possibility of no effect and an important effect.

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