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## Fish Oil Fatty Acids in Pregnancy May Reduce Wheeze and Asthma in Offspring

Posted on [January 6, 2017](#)

### MedicalResearch.com Interview with:

**Hans Bisgaard, M.D., D.M.Sc.**

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### *MedicalResearch.com: What is the background for this study?*

**Response:** Asthma and lower respiratory infections are leading causes of morbidity and mortality in pediatric populations. Thus, having low cost, effective, safe options for prevention could have important implications for both clinical practice and public health.

The increased use of vegetable oils in cooking and of grain in the feeding of livestock has resulted in an increase in the intake of n-6 polyunsaturated fatty acids and a decrease in the intake of n-3 polyunsaturated fatty acids, especially the long-chain polyunsaturated fatty acids (LCPUFAs) — eicosapentaenoic acid (20:5n-3, EPA) and docosahexaenoic acid (22:6n-3, DHA) — found in cold-water fish. N3-LCPUFAs are known to have immune-modulatory effects, and observational studies have suggested an association between a diet that is deficient in n-3 LCPUFA during pregnancy and an increased risk of asthma and wheezing disorders in offspring. Only a few randomized, controlled trials of n-3 LCPUFA supplementation during pregnancy have been performed and these have generally been underpowered and produced ambiguous results.

Therefore, we conducted a double-blind, randomized, controlled trial of n-3 LCPUFA supplementation during the third trimester of pregnancy in a total of 736 Danish women to assess the effect on the risk of persistent wheeze and asthma in offspring.

The clinical follow-up rate among children was 96% (N=664) by the end of the 3 years double-blind period and 93% (N=647) after an additional follow-up to age 5 years.

### *MedicalResearch.com: What are the main findings?*

**Response:** By age 3 years, the risk of persistent wheeze or asthma was 16.9% in the treatment group and 23.7% in the control group (hazard ratio, 0.69; 95% confidence interval [CI], 0.49 to 0.97; P=0.035), corresponding to a relative reduction in risk of 30.7%. Similar results were seen by age 5 years.

The preventive effect of supplementation appeared to be driven primarily by children of mothers who had low blood levels of EPA and DHA at randomization (the lowest third of the trial population), for whom the risk of persistent wheeze or asthma was 17.5% in the treatment group as compared with 34.1% in the control group (hazard ratio, 0.46; 95% CI, 0.25 to 0.83; P = 0.011), corresponding to a relative reduction of 54.1%. Similarly, The effect of supplementation seemed strongest in children of mothers with dietary intake of EPA+DHA in the lowest third ( Supplementation was also associated with a reduced risk of infections of the lower respiratory tract but not with a reduced risk of [eczema](#), allergic sensitization, or other secondary end points.

**MedicalResearch.com: What should readers take away from your report?**

**Response:** The risk of persistent wheeze or asthma was reduced by approximately one third in the first 5 years of life among children of women who received daily supplementation with n-3 LCPUFA during the third trimester of pregnancy. This effect was most prominent among children of women with low blood levels and intake of EPA and DHA before supplementation and of women with a FADS genotype associated with low EPA and DHA levels. These findings promise a simple and safe precision prevention strategy that may significantly relieve the large burden of wheezing and related lung disorders in children.

**MedicalResearch.com: What recommendations do you have for future research as a result of this study?**

**Response:** These results should stimulate further research of the potential health effects of n-3 LCPUFA supplementation during pregnancy. Such research should include studies elucidating the causal mechanisms, the potential for precision prevention based upon EPA+DHA blood levels and FADS genotypes, and clinical trials in other populations and ethnicities. It is also possible that lower doses of n-3 LCPUFA than the ones used in our study would be sufficient.

**MedicalResearch.com: Is there anything else you would like to add?**

**Response:** The implications of our findings on health and disease may be wide. The number needed to treat to prevent one case of persistent wheeze or [asthma](#) was 14.6 in the entire cohort and 5.6 among women with the lowest blood levels of EPA and DHA before intervention.

The maternal baseline intake of n-3 LCPUFA was high in this Danish population relative to that of the global population. It has been estimated that 80% of the global population consumes less than 250 mg of EPA and DHA per day, — a level that is well below 321 mg per day, the level below which we observed the highest treatment effect in our trial. Our data therefore suggest that a sizeable effect may be expected from supplementation in other populations worldwide; however, this suggestion is speculative, since other factors may be at play in such populations.

**MedicalResearch.com:** Thank you for your contribution to the MedicalResearch.com community.

**Citation:**

[Fish Oil–Derived Fatty Acids in Pregnancy and Wheeze and Asthma in Offspring](#)

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N Engl J Med 2016; 375:2530-2539 December 29, 2016 DOI: 10.1056/NEJMoa1503734

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