Effects of omega-3 fatty acids on child and maternal health

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Record Status
This is a bibliographic record of a published health technology assessment from a member of INAHTA. No evaluation of the quality of this assessment has been made for the HTA database.

Citation

Authors' objectives
The purpose of this study was to conduct a systematic review of the scientific medical literature to identify, appraise and synthesize the evidence of omega-3 fatty acids in child and maternal health. Evidence was sought to investigate a series of questions regarding the influence of the omega-3 fatty acid intake (supplemented during pregnancy) on the duration of gestation, incidence of preeclampsia, eclampsia or gestational hypertension (GHT), and incidence of infants small for gestational age (SGA), as well as the association between the maternal biomarkers during pregnancy and the pregnancy outcomes outlined above. The influence of the omega-3 fatty acid intake (supplemented or breast milk) on the developmental outcomes in preterm and term infants, such was growth, neurocognitive development and visual function, were also investigated, as well as the association between the maternal, fetal or children biomarkers and these clinical outcomes. The impact of effect modifiers was also examined, as well as the safety profile. The results will be used to inform a research agenda.

Authors' conclusions
Studies investigating the influence of omega-3 fatty acids on child and maternal health revealed the absence of a notable safety profile (i.e., moderate-to-severe AEs). Pregnancy outcomes were either unaffected by omega-3 fatty acid supplementation, or the results were inconclusive. Results suggested the absence of effects with respect to the impact of supplementation on the incidence of GHT, preeclampsia or eclampsia, as well as on infants being born SGA. However, regarding evaluations of the duration of gestation, some discrepancies were observed, although most of the studies failed to detect a statistically significant effect. Biomarker data failed to clarify patterns in pregnancy outcome data.

Results concerning the impact of the intake of omega-3 fatty acids on the development of infants are primarily, although not uniformly, inconclusive. The inconsistencies in study results may be attributable to numerous factors.

In addition, making clear sense of the absolute or relative effects of individual omega-3 fatty acids, or even omega-3 fatty acid combinations, on child outcomes is complicated or precluded by the following problem. Studies typically employed interventions that involved various cointerventional or background constituents (e.g., omega-6 fatty acids), yet whose metabolic interactions with the omega-3 fatty acid(s) were not taken into account in interpreting the results. The dynamic interplay among these fatty acid contents (e.g., competition for enzymes), and how this interplay may influence outcomes, may differ in important ways depending on whether DHA or olive oil is added to this combination of cointerventional or background constituents, particularly in the maternal population. This strategy prevented the isolation of the exact effects relating to the omega-3 fatty acid content. It is thus very difficult to reliably ascribe definite child outcome-related benefits, or the absence thereof, to specific omega-3 fatty acids. Biomarker data failed to clarify patterns in child outcome data.

Future research should likely consider investigating the impact of specific omega-6/omega-3 fatty acid intake ratios, in no small part to control for the possible metabolic interactions involving these types of fatty acids. To produce results that are applicable to the North American population, populations consuming high omega-6/omega-3 fatty acid intake ratios should likely be randomized into trials also exhibiting better control of confounding variables than was observed, especially in the present collection of studies of child outcomes.