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[Intervention Review]

Polyunsaturated fatty acids (PUFAs) for children with specific learning disorders

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ABSTRACT

Background

About 5% of schoolchildren have a specific learning disorder, defined as an unexpected failure to acquire adequate abilities in reading, writing or mathematic skills not as a result of reduced intellectual ability, inadequate teaching or social deprivation. Of these, 80% are reading disorders. Polyunsaturated fatty acids (PUFAs), in particular omega-3 and omega-6 fatty acids, which are found abundantly in the brain and retina are important for learning. Some children with specific learning disorders have been found to be deficient in these PUFAs, and it is argued that supplementation of PUFAs may help these children improve their learning abilities.

Objectives

To assess the effects of polyunsaturated fatty acids (PUFAs) supplementation for children with specific learning disorders, on learning outcomes.

Search methods

We searched the following databases in April 2012: CENTRAL (2012, Issue 4), MEDLINE (1948 to April Week 2 2012), EMBASE (1980 to 2012 Week 16), PsycINFO (1806 to April 2012), ERIC (1966 to April 2012), Science Citation Index (1970 to 20 April 2012), Social Science Citation Index (1970 to 20 April 2012), Conference Proceedings Citation Index-Science (1970 to 20 April 2012), Conference Proceedings Citation Index-Social Sciences and Humanites (1970 to 20 April 2012), Cochrane Database of Systematic Reviews (2012, Issue 4), DARE (2012, Issue 2) , ZETOC (24 April 2012) and WorldCat (24 April 2012). We searched the WHO International Clinical Trials Registry Platform and ClinicalTrials.gov on 24 April 2012. We also searched the reference lists of relevant articles identified by the searches.

Selection criteria

Randomised or quasi-randomised controlled trials comparing polyunsaturated fatty acids (PUFAs) with placebo or no treatment in children aged below 18 years with specific learning disabilities diagnosed using DSM-IV, ICD-10 or equivalent criteria. We intended to include participants with co-existing developmental disorders such as attention deficit hyperactivity disorder (ADHD) or autism.

Data collection and analysis

Two authors (ML and KH) independently screened the titles and abstracts of the search results and eliminated all studies that did not meet the inclusion criteria. Authors were contacted for missing information and clarifications when needed.

Main results

We did not find any studies suitable for inclusion in the review. One study is awaiting classification as we were unable to get any information from the study author.

Authors' conclusions

There is insufficient evidence to draw any conclusion about the use of PUFAs for children with specific learning disorders. There is a need for well designed randomised studies to support or refute the use of PUFAs in this group of children.

PLAIN LANGUAGE SUMMARY

Polyunsaturated fatty acids (PUFAs) for children with specific learning disorders

Children have specific learning disorders when their abilities in reading, spelling, writing and mathematical skills are considerably below what is expected for their age and is not a result of lower intelligence, inadequate teaching or social deprivation. They can occur in isolation (for example, only having a reading disorder), in combination (for example, having reading and mathematics disorder), or with another developmental problem such as attention deficit hyperactivity disorder (ADHD). Polyunsaturated fatty acids (PUFAs) are considered 'brain food' and pharmaceutical companies promote their use, usually as omega-3 fatty acids or docosahexaenoic acid (DHA), for improving learning abilities. The objective of this review was to assess the effects of PUFAs supplementation on the reading, writing, spelling, and mathematical abilities of children with specific learning disorders. We found a study that measured the effect of PUFAs compared to placebo on reading, spelling (written) or mathematical skills in children with specific learning disorders. However, it could not be included as another active ingredient was part of the intervention - carnosine. There is one further study that we were unable to rule in or out due to lack of information. There is insufficient evidence, therefore, to support or refute the use of PUFAs for children with specific learning disorders.