Reviewer’s report

Title: Childhood fish oil supplementation modifies associations between road density and allergic sensitisation

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Reviewer: Anna Bergstrom

Reviewer's report:
In this manuscript Hansell and colleagues examine interactions between fish oil supplementation the first five years of life and traffic related air pollution (TRAP) on allergic disease and lung function outcomes at ages 5 and 8 years. In the previously published main analyses of the association between TRAP and allergic disease outcomes, the authors showed that TRAP was associated with allergic sensitization to house dust mite and allergic rhinitis (Hansell et al 2014). The present manuscript is a secondary analysis of these data, which is clearly stated in the manuscript.

There are few published studies on the potential interaction between dietary factors and TRAP. Thus, the present study is an interesting addition to the existing literature.

The manuscript is clearly written and easy to follow. The main findings are statistically significant interactions between fish oil supplementation and TRAP for house dust mite, inhalant and all-allergen SPTs and for HDM-specific interleukin-5 response at age 5 years. In contrast, there were no interaction for symptoms of allergic disease.

Major comment
The fact that there seems to be interactions between fish oil supplementation and HDM sensitization but not to symptoms of allergic disease is interesting. Do you think that there is a biological explanation for this difference?
I miss a discussion on the generalizability of the results. It is briefly mentioned in the background section (page 5) that the RCT is conducted in a group of children with a family history of asthma. I think that it may be good to add the description of these inclusion criteria to the description of the study population as well. Could the choice of study population have influenced the observed results, and the generalizability of the results?

Minor comments
Page 7: It is not entirely clear to me what "nurse-administered questionnaires" means in practice. Where this questionnaires distributed by nurses but filled out by parents (in the clinic or at home), or did the nurse fill out the questionnaire during an interview with the parents?

Level of interest
Please indicate how interesting you found the manuscript:
An article of importance in its field

Quality of written English
Please indicate the quality of language in the manuscript:
Acceptable

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