Reviewer's report

**Title:** Maternal fish and shellfish consumption and respiratory and allergic outcomes at age two: A prospective cohort study in Brittany, France

**Version:** 1  **Date:** 24 July 2013

**Reviewer:** Ruth Etzel

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Maternal fish and shellfish consumption and respiratory and allergic outcomes at age two: A prospective cohort study in Brittany, France

The authors studied a cohort of 3421 women enrolled before 19 weeks of gestation in three districts of Brittany, France. Enrollment was from 2002 through 2006. They measured maternal fish and shellfish intake by a food frequency questionnaire at study intake. Wheezing and allergies (atopic dermatitis and food allergy) were evaluated by a questionnaire completed by the mother when the child was 2 years old. Sixty-eight percent of the mothers completed the questionnaire.

This is a well-written manuscript that makes a valuable contribution to the literature. The question posed by the authors is new, important, and well defined. The methods are appropriate and well described. Sufficient details are provided to replicate the work. The data appear to be sound. The authors found that moderate maternal fish intake during pregnancy (1 to 4 times a month) was associated with a lower risk of wheezing (OR=0.64 (0.42-0.99)) before age two compared with low intake (<once/month). After multiple imputations, the OR was 0.95 (0.66-1.36).

Shellfish intake at least once a month during pregnancy was associated with a higher risk of food allergy before age 2 (OR=1.63, 95% CI 1.10-2.43) compared to low or no intake (<once/month). Multiple imputation confirmed this association (OR=1.40, 95% CI 1.00-1.98).

The discussion and conclusions are well balanced and adequately supported by the data.

**Major compulsory revisions**

None noted.

**Minor essential revisions**

**Title:** Please note that France is spelled incorrectly in the title.

In the discussion section of the manuscript, arsenic is mentioned as a possible contaminant of seafood, but my understanding is that that arsenic in fish and shellfish is organic and is considered nontoxic.
Discretionary revisions

1. In the discussion section of the manuscript, the authors might consider mentioning the possible role of selenium deficiency in the development of wheezing. Fish and shellfish can be excellent sources of selenium; although the bioavailability of the selenium appears to vary depending on the species of the fish or shellfish and the place where they are produced. Some researchers have noted that seafood materials appear to contain nutritionally-effective organoselenium compounds that have not yet been chemically identified (Yoshida et al, 2011).

2. It appears that the authors did not take moisture damage and mold in the home into account in their multivariable analyses. Visible mold is a significant risk factor for recurrent wheezing in infants at high risk of developing atopic disorders (Cho et al, 2006). Objectively documented moisture damage in the kitchen and the main living area of the house is associated with both doctor-diagnosed wheezing and parent-reported wheezing apart from cold during the first 18 months of life. In addition, moisture and mold problems may be associated with atopic sensitization to cat dander, apparently independent from cat ownership (Karvonen et al, 2009).

References:

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests.