Reviewer's report

Title: Maternal fish and shellfish intake and pregnancy outcomes. A prospective cohort study in Brittany, France.

Version: 1 Date: 3 August 2007

Reviewer: Emily Oken

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General
This study of birth outcomes among seafood consumers in Brittany is the first such study in France, and the first to examine the effects of shellfish independently from the effects of seafood. A primary limitation of the study is the assessment of seafood intake prior to pregnancy rather than during pregnancy. The authors also need to provide more information about the validation of the exposure measure and of the outcomes (especially gestation length). A more detailed and organized discussion of previous literature, better highlighting the salient elements of prior studies, would help in understanding how this study fits in.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

1. The discussion of prior lit has some notable gaps. For example, the authors might want to reference the paper by Smuts et al. (OB GYN 2003), a RCT of DHA enriched eggs which found an increase in gestation length, and the study by Knudsen et al (BJOG 2006), an RCT of fish oil which found no effect on gestation length. Please also see the recent publication by Halldorsson et al. (IJE 2007), which includes a discussion of previous trials as well as new data suggesting that intake of fatty fish, which are likely to contain higher levels of persistent organic pollutants, is associated with lower fetal growth. I would be helpful if the authors could specify which of the prior studies examined fish only, which fish and shellfish. Background, line 10 – was the ‘negative effect on birthweight’ from an influence on fetal growth or on gestation length?

2. Methods – dietary assessment. Have the food frequency questions been validated or used previously? Please provide more detail about the fish question. Were fresh water fish not included at all? Which fish types were named? Were portion sizes included for fish and for shellfish?

3. Methods – outcome assessment. How was gestation length determined? i.e. based on LMP, ultrasound, or clinical assessment? Was it validated? This question is important as preterm birth was a primary outcome and SGA was of course based on the gestational age assessment.

4. Table 2. Please include a column for all shellfish combined, which seems to be the primary exposure used in analyses. Also I don’t understand why the authors...
have different collapsed categories for fish vs. shellfish. Why not keep the same
categories for both? Surely not b/c of N’s in each categories.

5. Discussion. Please change the first line – the study was of seafood intake prior
to pregnancy, not during pregnancy.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of
a term, which the author can be trusted to correct)

6. Abstract – methods. Please clarify that fish and shellfish intake was
pre-pregnancy, not during pregnancy as it would be reasonable to assume.

7. Abstract – results. Please include the effect estimate and CI for fish intake with
SGA and confidence limits for the effect on gestation length.

8. Methods page 6. Did the authors include gestation length as a covariate for
the SGA analyses? If not I suggest they do so, or report that such adjustment did
don't make any difference to their results.

9. Methods – statistical analysis. For the trend of trend, it would be preferable to
model the categories using the mean intake within each category, rather than
assigning ordinal values to each category.

10. Results. Please reference table 1 in the text. The first paragraph of the
results is not well organized, as the authors jump around among outcomes.
Perhaps they should group the predictors for each outcome.

11. Table 1. The organization of the table is confusing. It seems the % under the
header ‘overall’ is a column prevalence and the %’s under the outcome headers
are row prevalences. Please label more clearly. For the dichotomous outcomes,
please include the alternative category, e.g. married, >= baccalaureate, parous. It
is difficult to interpret the reported p values in isolation (was the rate of preterm
birth higher or lower among parous women??).

12. Results. Please include effect estimates and confidence limits, not just p
values.

13. Discussion, page 8. Isn’t it also possible that enrollment bias may explain the
low rate of adverse outcomes? (i.e. as seen elsewhere, women who enroll in
research studies are likely to be healthier).

14. Discussion, page 9. Where do these new results come from regarding the
mean g/dy of fish and shellfish intake? How calculated? How related to the
monthly servings used elsewhere? These results should be explained and
presented in the Results section, not the Discussion.

15. Discussion, page 10. It would be helpful if the authors could clarify which
studies examined birthweight (which reflects fetal growth as well as gestation
length) and which isolated fetal growth as an outcome.

16. Discussion, page 11. From where do they get the data about which are the
most commonly consumed types of fish and crustaceans?

17. Discussion – conclusions. The statement that their findings ‘confirm’ an
association between fish consumption and length of gestation is too strong, since
prior evidence is conflicting, including a recent large RCT that was null.

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Discretionary Revisions (which the author can choose to ignore)

18. Discussion page 11. Are there any evidence that lead, arsenic, and cadmium are likely to be related to fetal growth or gestation length? if not the authors might want to limit their discussion to the persistent organic pollutants.

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

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