Commentary

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# The Safety of Promoting Fish Consumption in Pregnancy

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## Description

Since the Minamata tragedy in 1956 in which there were adverse neurodevelopmental consequences to the offspring of pregnant mothers eating shellfish contaminated with very high levels of mercury, toxicologists have been aware of the possible harmful neurological effects of prenatal exposure to mercury on the offspring [1]. Subsequently there were other tragic exposures to high levels of mercury in pregnancy with similar results. This raised anxiety in the general population to avoid mercury from all sources and at all levels of exposure. A publication on prenatal mercury exposure in the Faroes focussed attention specifically on seafood. The population of the Faroes was known to have high blood levels of mercury largely due to their high consumption of pilot whale [2]. Grandjean and colleagues studied 917 offspring of women and compared their IQ and other neurocognitive test levels with the concentration of mercury in their cord blood at the time of delivery [3]. They showed that, in general, the higher the mercury level the lower the cognitive ability of the offspring.

The cumulative effect of these reports was to convey the message that seafood contains high levels of mercury, and that this may harm the brain of the unborn child. Scientists had shown that the amount of mercury in fish varied with the species, with those at the higher end of the food chain, such as shark or swordfish, having higher levels [4]. Although there was ample evidence to indicate that if the mother ate fish during pregnancy the offspring would benefit policy-makers advised pregnant women to eat fish during pregnancy but to avoid those fish with likely high levels of mercury [5]. This resulted in confusion such that women were often unsure as to which fish to avoid, and many then avoided fish altogether [6,7].

The initial results from the Faroes resulted in a number of studies being devised to look at the long-term consequences of fish consumption and the relationship with mercury. The most statistically powerful of these were those undertaken in the Seychelles in the Indian Ocean, where the majority of the population were fish-eaters, and in the Avon Longitudinal Study of Parents and Children (ALSPAC) in the UK [8,9]. Both studies showed benefits of fish consumption during pregnancy. No adverse associations were found between maternal mercury levels and neurodevelopment in the Seychelles where the majority of the population ate fish frequently [10]. Recent analyses of the ALSPAC cohort study have demonstrated that although mercury levels in women who did not eat fish were associated with poorer neurocognitive outcomes, the mercury levels among fish eating mothers were associated with beneficial outcomes in their children in **Figure 1**, there were significant interactions between fish consumption and mercury blood level for eight further outcomes including IQ and scores for educational achievements [11,12].

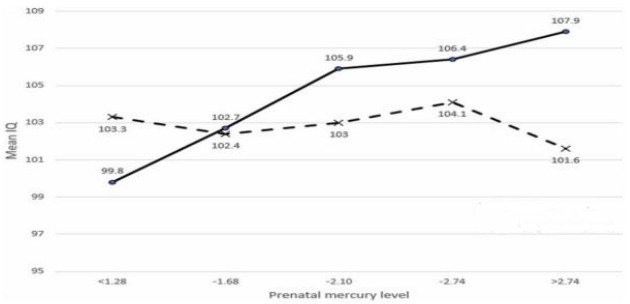


**Figure 1:** The mean IQ levels found for the 8-year-old offspring for each 20th centile of maternal blood Hg level, contrasting the levels of the children whose mothers had eaten fish in pregnancy with those who had not. **Note:** (—●—) Mother ate fish; (—×—) Mother ate no fish.

## Conclusion

No studies have shown an adverse outcome with consumption of fish that have high levels of mercury (consumers of such fish would likely be within the higher end of maternal blood mercury among fish-eaters which shows no deterioration in offspring ability). Together with the Seychelles study, the implication from the ALSPAC data is that it is better to recommend fish consumption in pregnancy, regardless of species. It should be noted that such a recommendation is not for other seafood such as whale meat or shellfish where contamination is likely to be much greater, and the nutritional benefits of fish eating are not as great.

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