

Birth cohorts: What can be learned?

## **POP EXPOSURE AND REPRODUCTIVE OUTCOMES – STUDIES AMONG FISHERMEN’S FAMILIES FROM SWEDEN**

Rylander L.

Division of Occupational and Environmental Medicine and Psychiatric Epidemiology, Department of Laboratory Medicine, Lund University, Sweden.

### **Introduction**

Persistent organohalogen pollutants (POPs) has been associated with negative reproductive outcomes.<sup>1</sup> In Sweden the main exposure route for POPs is through consumption of fatty fish from the Baltic Sea, off the eastern coast of Sweden.<sup>2, 3</sup> Fishermen from the Swedish east and west coasts (where the fish is less polluted) have been found to eat on average more than twice as much fish than subjects from the general population.<sup>3</sup> The east coast fishermen had higher average plasma levels of dioxin-like POPs (290 pg/g lipid) than west coast fishermen (139 pg/g lipid) and men from the general population (123 pg/g lipid).<sup>3</sup> Also fishermen’s wives from the Swedish east and west coasts have reported that they consume more than twice as much fish as compared with women from the general population.<sup>4</sup> Accordingly, fishermen and their families from the Swedish east and west coasts were feasible as study base for investigations of the hypothesized associations between POPs and reproductive outcomes.

### **Material and Methods**

Cohorts of fishermen from the Swedish east and west coasts have previously been established.<sup>5, 6</sup> By linkage to the national Swedish population register and to registers at the local parish offices, we identified women who are, or had been, married to these fishermen.<sup>4</sup> In addition, we established cohorts of sisters to the fishermen.<sup>7</sup>

The cohorts of fishermen’s wives and sisters were linked to the Swedish Medical Birth Register, which includes almost every (coverage 98-99%) infant born in Sweden since 1973.<sup>8</sup> In addition, within the cohort of fishermen’s wives from the Swedish east coast a case-control study was performed to investigate the association between maternal plasma concentrations of 2,2’,4,4’,5,5’-hexachlorobiphenyl (CB-153) and low birth weight.<sup>9</sup>

### **Results and Discussion**

Infants from the east coast cohorts did not have an increased risk for perinatal death or congenital malformations, but for lower birth weight, as compared with infants from the west coast cohorts.<sup>7, 10</sup> When east coast fishermen’s wives and sisters were taken together, and compared with the corresponding west coast women, an odds ratio of 1.4 (95% CI 1.1-1.8) was obtained for the outcome low birth weight (<2500 g), and for the outcome Small for Gestational Age an odds ratio of 1.5 (95% CI 1.2-2.0).<sup>7</sup> Both ORs were adjusted for parity, gender, maternal age and smoking habits.

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The case-control study within the cohort of east coast fishermen's wives indicated an increased risk of lower birth weight among infants born to mothers who reported relatively high intake of fish from the Baltic Sea<sup>11</sup>, as well as among infants born to mothers with relatively high concentrations of CB-153 in plasma.<sup>10</sup> Moreover, an increased risk for lower birth weight was observed among infants born to mothers who had grown up in a fishing village.<sup>11</sup> This latter exposure variable may be interpreted as an indirect measure of a mother's accumulated consumption of fish from the Baltic Sea.

There are a number of studies from other countries supporting negative associations between POP exposure and lowered birth weight. However, there are also studies indicating no effect or even positive effects.<sup>1</sup>

The cohorts of fishermen families from Sweden have also been used for investigations of associations between POPs and other health outcomes, such as time-to-pregnancy, semen quality, osteoporosis, diabetes, cancer and mortality.

### References

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