

Fertility and female dietary exposure to persistent organochlorine compounds - The fishermen's sisters

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Research principal

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Description

Animal studies have shown that exposure for PCBs, can effects the menstrual cycle and cause reduced fertility in females. In humans, fertility can be measured by examining the waiting time to pregnancy, ie the time between the time when a couple stop using contraception and the time when the woman becomes pregnant. This can be measured only if the pregnancy was planned. Once pregnancy has been established, it is possible to examine fetal survival by looking at miscarriage risk. In Sweden consumption of fatty fish (such as salmon and herring) from the Baltic Sea is one of the major sources of exposure to PCB. It has previously been shown that Swedish fishermen and their families eats more fish than the general population.

In order to study the possible health effects of exposure to PCBs through consumption of fatty fish from the Baltic Sea, groups of fishermen from the Swedish east coast have been identified. By matching with different registers groups of wives and ex- wives of the fishermen (fishermen's wives), and groups of sisters and half-sisters (fish sisters) have been identified. As a reference population (non-exposed), corresponding groups have been identified among fishermen on the Swedish west coast.

Questionnaires were sent to the wives of fishermen and fish sisters to gather information about their first planned pregnancy. Besides waiting time to pregnancy questions were also asked about

pregnancy outcomes in order to calculate the risk of miscarriage. The response rate in both groups was just under 60% (1090 West and 505 East Coast fishermen's wives, and 1103 West and 709 East Coast fish sisters). In 121 East Coast fisher wives and 165 East Coast fisher sisters blood samples were analyzed to determine the concentration of the CB 153. This concentration was then used as a measure of exposure to PCBs.

Purpose:

To investigate whether exposure to persistent organochlorine compounds through the consumption of fatty fish from the Baltic Sea leads to a decreased fertility, measured as time to pregnancy, to investigate whether the same exposure implies an increased miscarriage risk, and to assess the relation between blood levels of PCB and the reproductive outcomes time to pregnancy and miscarriages.

Here, only the first planned pregnancy of each woman was inquired about. The questions asked in the sister questionnaire were similar to those in the wife questionnaire. No information was collected on the women's partners. The fishermen's sisters were asked about their alcohol consumption, and if they at any point in their life had experienced a miscarriage. Of the 709 east coast fishermen's sisters who replied to the first questionnaire, 203 women supplied a time to pregnancy as well as agreed to participate in further studies. These women were contacted and asked if they were willing to supply blood samples for analysis of CB-153. At the time of the blood sampling they were asked to fill out a second questionnaire regarding time to pregnancy and pregnancy outcome for all their pregnancies. Information was collected on the year of the pregnancy, use of contraceptives before conception, time to pregnancy, smoking habits, pregnancy outcome and, in case of live births, breast-feeding (months of breast-feeding only, breast-feeding together with additional formula, and breastfeeding combined with solids). In all, 286 fishermen's wives and sisters had blood drawn and supplied a time to pregnancy

Data contains personal data

Yes

Sensitive personal data

Yes

Code key exists

Yes

Unit of analysis

[Individual](#)

Time Method

[Cross-section](#)

Time period(s) investigated

1999 - 1999

Number of individuals/objects

1812

Response rate/participation rate

58%

Data format / data structure

[Numeric](#)

Data collection 1

- Mode of collection: Physical measurements and tests
- Time period(s) for data collection: 1999 – 1999
- Source of the data: Population group

Geographic spread

Geographic description: The Swedish east and west coast

Responsible department/unit

Department of Laboratory Medicine, Lund

Research area

[Medical and health sciences](#) (Standard för svensk indelning av forskningsämnen 2011)

[Health sciences](#) (Standard för svensk indelning av forskningsämnen 2011)

[Occupational health and environmental health](#) (Standard för svensk indelning av forskningsämnen 2011)

[Health](#) (CESSDA Topic Classification)

Keywords

[Reproduction \(biological\)](#), [Cohort studies](#), [Fertility \(human\)](#), [Food](#), [Pregnancy complications](#), [Environmental pollution](#), [Polychlorinated biphenyls](#), [Dioxins](#), [Miscarriage](#), [Epihealth](#), [Epihealth_skåne](#), [Scania](#), [Fish and fish products](#)

Publications

Axmon A, Rylander L, Strömberg U, Jönsson B, Nilsson-Ehle P, Hagmar L. Polychlorinated biphenyls in serum and time to pregnancy. *Environ Res.* 2004 Oct;96(2):186-95.

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