

SETIL Study (Italian epidemiological study on the aetiology of childhood leukemia, lymphoma and neuroblastoma): risk of childhood cancers in relation to parental occupational exposure



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Cases: children aged 0 to 10 years, resident in the 14 participating regions and diagnosed in the period 1998-2001 with acute leukemia, non Hodgkin Lymphoma (NHL) or neuroblastoma.

Controls: (2:1) were chosen at random using the national health service rolls, two controls were matched to each leukemia case on month of birth, sex and province of residence.

Data Collection: Study subjects' parents were interviewed by trained interviewers using a structured questionnaire. In the case of occupational history, detailed information was collected on all jobs held by parents using also *"job specific questionnaires"*

Exposure Assessment: The collected data were reviewed by expert industrial hygienists to estimate the exposure to a list of agents : a general category "solvents" including all substances used as solvent, specific categories of chemical classes and individual chemicals

Exposures were rated on two scales: "probability" and "intensity". Parental occupational exposures were assessed considering 3 time windows: 1 year before conception, during pregnancy , after birth of child until diagnosis

Statistical analyses Point estimates of odds ratios (ORs) and the corresponding confidence intervals (95% CI) were calculated. All the analyses were performed using multiple logistic regression models, taking into account relevant potential confounders (sex, age, area). **Separate analyses were conducted for maternal and paternal exposures. Analyses were performed for each agent with medium or high assigned probability of exposure for all levels of intensity and for different time windows.** Parents who never used any of the listed chemicals were used as the referent population

Results. A total of 685 leukemias, 98 NHL, 155 neuroblastomas and 1,047 controls were interviewed

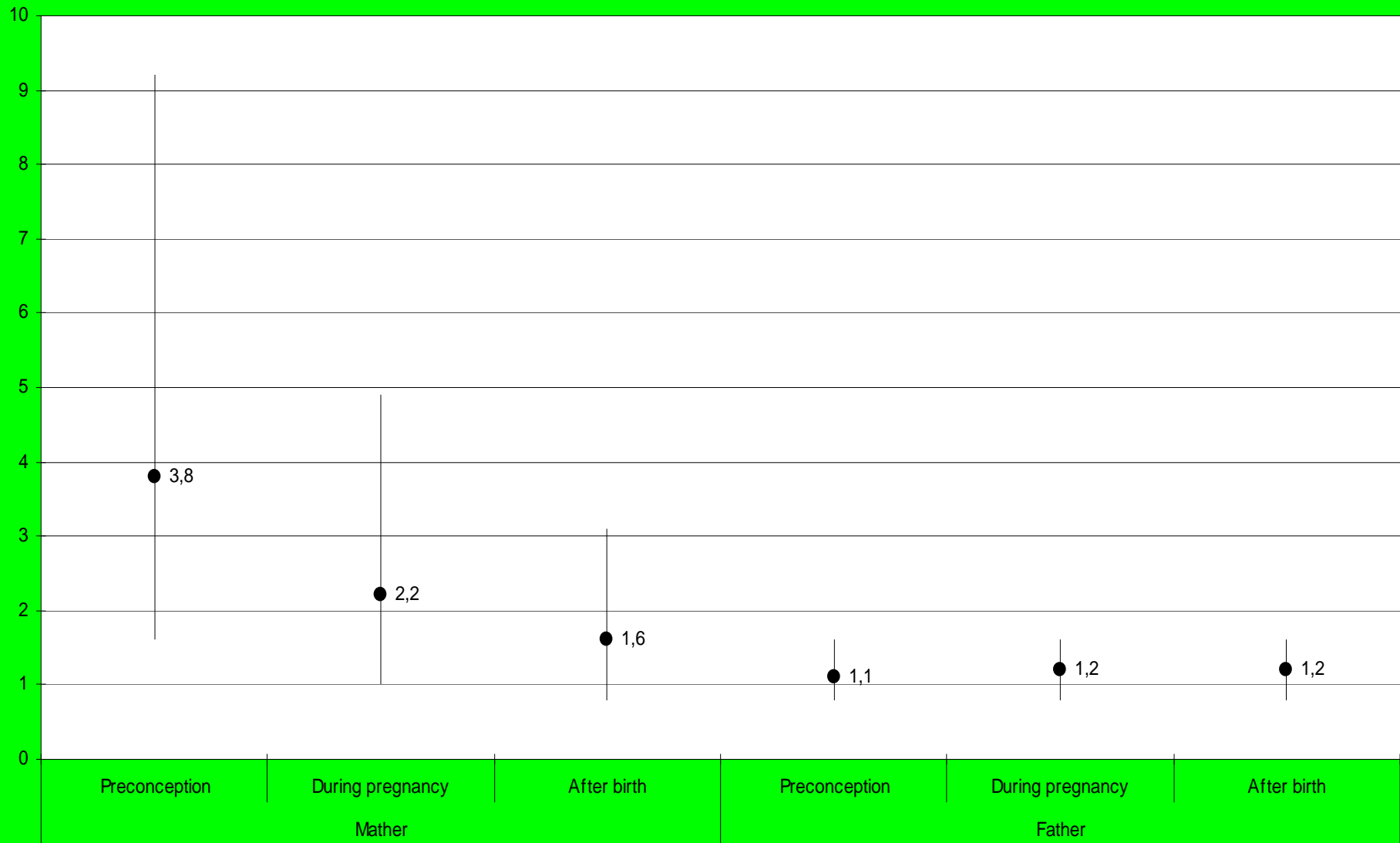
Results for leukemia were reported for selected exposure (chemical classes or individual substances) when there were at least five exposed cases.

Number of cases and controls, ORs*, 95% confidence intervals (95%CI) for leukemia by parental exposure to chemical classes (*Adjusted by gender, age, and area) all intensity levels and probability of exposure >low

Chemical classes	Father				Mother				
	Exp. cases	Exp. Controls	OR	CI 95%	Exp. cases	Exp. controls	OR	CI 95%	
Solvents	132	189	1.1	Chemicals	MOTHER				0.8-1.6
				Exp. cases	Exp. Controls	OR	CI 95%		
Aromatic hydrocarbons	74	98	1.2	Benzene	6	3	3.1	0.8-12.4	1.0-3.4
				Toluene	14	12	1.8	0.8-4.0	
Chlorinated hydrocarbons	40	61	1.0	Xylene	13	10	2.0	0.9-4.7	0.7-1.9
Aliphatic h.	42	69	0.9	0.6-1.4	20	13	2.4	1.2-4.9	
Oxygenated organic compounds	55	75	1.2	0.8-1.7	34	45	1.2	0.7-1.9	
Mineral oils	97	109	1.4	1.1-1.9	10	17	0.9	0.4-2.0	
Diesel exhaust fumes	134	154	1.4	1.1-1.8	18	20	1.4	0.7-2.6	
Lead	49	47	1.7	1.1-1.5	6	9	1.0	0.4-2.8	

Figure – Aromatic Hydrocarbons

- Parental exposure ORs, 95%CI for leukemia by time windows



Final remarks

We found increased risk of selected childhood cancers associated with parental exposures to some chemical classes of solvents, particularly maternal exposure to aromatic and aliphatic hydrocarbons.

Increased ORs were also observed for paternal exposure to diesel exhaust fumes and mineral oils exposure.

Analyses by time windows shown increased risks for mother's exposures particularly in the preconception period.

Our results suggest that some parental occupational exposures may be a risk factor for the development of selected types of childhood cancer