

# ENVIRONMENTAL EXPOSURES AND CHILDHOOD LEUKEMIA: AN EXPLORATORY ANALYSIS IN BRAZIL

**Jeniffer Dantas Ferreira**, *Environment and Public Health Post-graduation Program, National School of Public Health, Oswaldo Cruz Foundation (FIOCRUZ), Rio de Janeiro, Brazil*

**Arnaldo César Couto**, *Environment and Public Health Post-graduation Program, National School of Public Health, Oswaldo Cruz Foundation (FIOCRUZ), Rio de Janeiro, Brazil*

**Maria do Socorro Pombo-de-Oliveira**, *Pediatric Hematology-Oncology Program, Research Center, Instituto Nacional de Câncer/Rio de Janeiro, Brazil*

**Sergio Koifman**, *Environment and Public Health Post-graduation Program, National School of Public Health, Oswaldo Cruz Foundation (FIOCRUZ), Rio de Janeiro, Brazil*

**Background and Aims:** Childhood leukemia is a rare hematological neoplasm and several factors related to environmental exposures and individual characteristics existing in our environment may have on the process of leukemogenesis.

**Methods:** This investigation is part of a national multicenter study that included 292 cases of leukemia in children aged 0-12 years and 541 controls of similar age, centers of origin of cases and hospitalized for non-neoplastic causes. The information of selected environmental exposures was obtained through interviews with mothers of cases and controls tied to a standardized questionnaire from a database of clinical and epidemiological case-control study of hospital based on risk factors for childhood leukemia.

**Results:** The principal component analysis and factor analysis identified factors associated with leukemogenesis. Further, an unconditional logistic regression was carried out aiming to ascertain the magnitude of association between the selected factors, and their composing variables, with childhood leukemia. The model displaying the highest power explained 52% of the total variance, including 3 factors, each one of the showing factors loadings higher than 0.6: "conditions related to chemical exposure during pregnancy", which explained 20% of the variance; "lifestyle exposures", such as smoking and hair dyes and hair cosmetics use during pregnancy, explaining 17% of the total variance; and "consumption of health services during pregnancy", such as X rays and delivery type (cesarean or vaginal delivery), explaining 15% of the total variance. Logistic modeling revealed statistically significant association between childhood leukemia and chemical exposure during pregnancy (OR=1.36; 95% IC=1.16-1.59), and also with consumption of health services during pregnancy (OR=1.27; 95%IC =1.08-1.49).

**Conclusions:** The observed results are suggestive of the contribution of environmental exposures to childhood leukemia development, not just individually, which has been supported by the literature according to carcinogenesis and leukemogenesis as resulting from several mutations triggered by joint environmental exposures.