



Developing a Child Cohort Research Strategy for Europe

CHICOS newsletter

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A word from CHICOS

The CHICOS project was launched in January 2010 and is now reaching its conclusion, officially ending on 28th February 2013. It has aimed to develop an integrated strategy for birth cohort research and coordination in Europe for the next 15 years. CHICOS is a coordination action, funded by the European Union's Seventh Framework Programme (FP7).

We are looking forward to disseminate the final results of CHICOS and its working groups at the beginning of 2013. We will have a number of resources to present these results and a future Newsletter will keep you updated.

Over the last years, CHICOS has organized two meetings gathering together European birth cohorts: in Barcelona, Spain (April 2011), and Turin, Italy (May 2012). These events have provided great opportunities for international researchers involved in birth cohorts to share experiences, form collaborations and discuss the future of birth cohort research in Europe. We would like to take this opportunity to thank all participants. Reports from the meetings are available on the CHICOS website¹.

A major meeting is being planned by another European-funded FP7 project RICHE, together with CHICOS and colleagues from TACTIS and EURO-PERISTAT, to make the strategic case for further investment in child health research. This meeting will be held on May 30-31, 2013, in Dublin, Ireland, and will launch the CHICOS and RICHIE final reports. Please, save the date! You will find more information about this event in this Newsletter, as well as on the [meeting website](#).

Many researchers involved in birth cohort research have been contacted by CHICOS investigators in the last two years in order to update and complete an inventory of European cohorts started in pregnancy or at birth, with at least one year of follow-up and including at least 300 newborns. About 70 cohorts are now listed in the searchable website [Birthcohorts.net](#), including detailed information on exposure and outcome data and availability of biological samples. New cohorts, or those not yet included, are encouraged to contact us or visit the Birthcohort.net website to participate

At the beginning of the CHICOS project in 2010 it was decided to conduct a number of case studies, combining data from many European birth cohorts, in order to investigate specific child health outcomes and exposures. These studies represent a unique opportunity to explore possibilities of collaboration among European birth cohorts. In this Newsletter we intend to introduce you to the nine CHICOS case studies and their aims.

<http://www.chicosproject.eu/>

¹ <http://www.chicosproject.eu/pubs-docs/>

CHICOS case studies

Nine case-studies have been conducted within the framework of CHICOS. Their objective was to answer specific research questions and simultaneously evaluate possibilities of multi-cohort collaborative studies in Europe. To date, data have been collected from all cohorts. We expect the first results to be published throughout 2013.

Case study 1

Alcohol consumption during pregnancy and birth weight

Leading investigator: *Katrine Strandberg-Larsen*, University of Copenhagen, Denmark

“Studies of alcohol use during pregnancy and pregnancy outcomes have repeatedly found a ‘J-shaped’ association, suggesting that women who abstain from alcohol during pregnancy are at increased risk compared to women with a ‘light alcohol use’ (<1 unit per day). No strong experimental evidence to support this hypothesis exists and it is plausible that the observed association is an artefact attributable to behaviour modification bias or confounding by environment, genes or lifestyles. **The aim** of this case-study is to examine whether the observed beneficial effects of light drinking on the birth weight and risk of preterm birth are likely to be causal. Data from European birth cohorts were pooled to explore whether the observed beneficial effects can be replicated when: 1) restricting the analyses to first-time pregnancies with a short waiting time to pregnancy, 2) comparing differently exposed siblings or cousins in order to obtain more alike comparison groups and 3) doing parental-offspring comparisons.”

Case study 2

Socioeconomic inequalities in preterm delivery

Leading investigator: *Gry Poulsen*, University of Copenhagen, Denmark

“A socio-economic gradient in preterm birth has been found in many countries. The mechanisms behind this gradient are poorly understood and factors such as access to antenatal care and lifestyle have been shown only to explain a small part of the gradient. International comparison studies have the potential to show how population characteristics and policies influence socio-economic inequalities in health. **The aim** of this case-study is to examine the association between maternal education and preterm birth in 12 different European birth cohorts and to study how characteristics of the cohorts influence the association.”

Case study 3

Persistent Organic Pollutants and Birth Outcomes

Leading investigator: *Maribel Casas*, Center for Research in Environmental Epidemiology (CREAL, Barcelona, Spain

“Fetal growth restriction related to PCBs has been studied in a large number of studies, but findings of low-level exposed populations have not been consistent. Low birth weight has also been observed in relation to relatively high DDT exposure, but findings could not be reproduced. Recently, a meta-analysis of 7990 women enrolled in twelve European birth cohorts from 1990-2008 found an inverse association between low-level exposure to PCB and fetal growth while no such association was found

for p,p'-DDE (Govarts et al. 2011 EHP). The meta-analysis of cohort specific summary statistics did not allow for an adequate modelling of exposure-response relations where pooled data is needed to fully explore the data. **The aim** of this case study is to examine exposure-response associations between biological markers of persistent organic chlorines (POC) and selected pregnancy outcomes (birth weight, gestational age, and sex ratio) in order to (i) discuss causal inference; (ii) detail exposure-response relations, if any; (iii) identify thresholds and no-effect levels, if any; (iv) identify vulnerable subgroups, if any; and (v) examine interactive effects of exposures and characteristics.”

Case study 4

Selected maternal occupations and fetal health

Leading investigator: *Maribel Casas*, CREAL, Barcelona, Spain

“Occupational settings are a source of long-term exposure to environmental agents and conditions with potential negative effects on reproductive health. Most of the evidence comes from occupational cohort studies using retrospective data, case-control studies, and registry-based studies; the population-based birth cohort design has rarely been used in this field, mainly because of the combination of rare exposures involved. However, this study design has important strengths, including prospective collection of data, collection of data directly from the mother, and follow-up of the children for several years after birth. Few birth cohorts have enough statistical power to examine the effects of specific occupational exposures and adverse birth outcomes, and therefore pooling of data across European cohorts may be particularly valuable. **The aim** of this case-study is to assess the association between maternal occupational exposures (biological, chemical, physical) and the risk of adverse pregnancy outcomes and to evaluate the heterogeneity between cohorts in such effects.”

Case study 5

Central fat mass and cardiovascular diseases

Leading investigator: *Debbie Lawlor*, University of Bristol, United Kingdom

“It has been suggested that BMI is a poor measurement of adiposity particularly in children and that centrally distributed fat, as indicated by waist circumference, or direct assessment of fat, are better methods for identifying children at risk of adverse cardiometabolic outcomes. However, limited available evidence from one study in children suggests similar magnitudes of association of BMI, directly assessed body fat mass and waist circumference with cardiometabolic risk factors. Amongst adults the large Emerging Risk Factor Collaboration suggests that the association of BMI and waist circumference with cardiovascular disease risk are similar in magnitude, but that study does not include children and it is in that age group that the use of BMI as a useful marker of adiposity is particularly questioned. **The aim** of this case-study is to analyse individual data from children participants in a collaboration of European birth cohort studies in order to produce precise estimates of associations of BMI, waist and fat mass with cardiometabolic outcomes and to compare the magnitudes of these associations for the three measurements of adiposity or its distribution.”

Case study 6

Fish consumption and fetal growth

Leading investigator: *Leda Chatzi*, University of Crete, Greece

“Fish contains various nutrients considered to be beneficial for fetal growth and development, including polyunsaturated n-3 fatty acids, protein, selenium, iodine and vitamin D. In particular, the n-3 fatty acids DHA and EPA have been associated with higher birth weight in both randomised controlled trials and observational studies. Fish intake during pregnancy has also been supported to enhance fetal growth rate and decrease the frequency of intrauterine growth retardation (IUGR) and low birth weight. Other trials, however, have found no association. On the other hand, fish consumption is also a well-known route of exposure to pollutants such as methyl mercury, dioxins and polychlorinated biphenyls (PCB), which may adversely affect fetal growth and birth outcomes. Thus far, results from studies focused on the associations between maternal fish consumption and birth outcomes have not been consistent. The population-based birth cohort design has important strengths in that it collects data prospectively, for population-based samples, collects data on many covariates, and follows children up for many years after birth, thereby providing insights into developmental problems in the first years of life as well as at birth. Few birth cohorts have enough statistical power to examine the effects of sub-categories of seafood intake during pregnancy and adverse birth outcomes, and therefore pooling of data across European cohorts may be particularly valuable. **The aim** of this case-study is to evaluate the effect of fish intake during pregnancy on birth outcomes in European birth cohorts as part of the CHICOS project.”

Case-study 7

Maternal complications in pregnancy, caesarean section and wheezing/asthma

Leading investigators: *Franca Rusconi*, Meyer Children's University Hospital, Florence, Italy; *Daniela Zugna*, University of Turin, Turin, Italy

“The prevalence of maternal conditions in pregnancy, including hypertensive disorders, diabetes, and obesity has increased, at least in some countries. Studies investigating whether these complications are associated with respiratory problems in the offspring are scarce and conflicting. Pooling data from several cohorts would provide adequate power to evaluate the associations, controlling for several confounders. An association between caesarean delivery and asthma has been found in many but not all studies, and a problem of causality vs. confounding has been raised. Since rates of (and indications for) caesarean section greatly vary among EU countries, international comparisons will be important to test the association with asthma and, if any, to speculate on the mechanisms involved. **The aims** of this case-study are: **a.** to analyze the associations between hypertensive disorders in pregnancy, pre-pregnancy BMI, and diabetes or glucose intolerance in pregnancy and wheezing and recurrent wheezing in the first 12-24 months of life; **b.** to analyze the association between mode of delivery (vaginal, caesarean and subtypes) and active asthma at school age.”

Case-study 8

Early growth and wheezing/asthma

Leading investigator: *Liesbeth Duijts*, Erasmus MC, Rotterdam, The Netherlands

“Previous studies suggested that low birth weight is associated with increased risks of asthma. Low birth weight is not likely to be causal for asthma per se. The same birth weight might be the result of various fetal growth patterns, and children with a low birth weight tend to experience postnatal catch

up growth, which has been suggested to be associated with pulmonary functioning, respiratory symptoms and childhood asthma. Secondly, children with a low birth weight are frequently born preterm. In preterm born children, the lungs are not fully developed both mechanical and immunological, which makes the lungs more vulnerable for later exposures and increases the risk of asthma. Studies so far have shown inconsistent results which might be particularly due to methodological issues including differences in populations, definitions used for asthma outcomes and adjustment for potential confounders. **The aim** of this case-study is to address these methodological issues by examining the associations of birth weight and gestational age at birth and infant weight with the risk of childhood asthma using data from 147,252 subjects of 31 European cohort studies.”

Case-study 9

Association between prenatal POPs exposure and respiratory infections and wheezing at early ages (0-2 years) within European birth-cohort

Leading investigator: *Mireia Gascon*, CREAL, Barcelona, Spain

“Organochlorine compounds (OCs) are synthetic persistent organic pollutants (POPs) distributed worldwide throughout the environment, food and human tissues. OCs, mainly polychlorinated biphenyl 153 (PCB-153) and dichlorodiphenyldichloroethylene (p’p-DDE), may increase the risk of respiratory infections during the first years of life, even at low exposure levels. In addition, low respiratory tract infections (LRTI) are one of the major risk factors for developing asthma later in life and prenatal DDE exposure has also been associated with asthma and wheezing in children aged 4 and 6 years. In Europe, there are some cohorts that have collected information on PCBs and DDE and respiratory infections/wheezing at early ages (ENRIECO inventory – www.birthcohortsenrieco.net); of these, only the Spanish cohorts (INMA-Menorca and INMA-Sabadell/Valencia/Gipuzkoa) have published their results, showing a possible effect of DDE, but not of other OCs, on asthma, wheezing, and respiratory infections. **The aim** of this case-study is to evaluate whether these associations can be replicated in other populations and to provide summary risk estimates for the associations.”



The CHICOS project team during the kick-off meeting in Barcelona, Spain, April 2010

Upcoming events

CHILD HEALTH RESEARCH, THE KEY TO A HEALTHIER SOCIETY

Dublin City University, Dublin, Ireland

Thu May 30th - Fri May 31st 2013

The two FP7-funded projects RICHE and CHICOS are hosting this international child health meeting to celebrate European child health research, to emphasize the importance of this work to the European Commission and other policy makers. The two projects will launch their final reports at the meeting in Dublin, which coincides with the Irish EU presidency in the first half of 2013.

Other European child health projects (EU-funded or otherwise) are invited to present, and there will be a special session for researchers from the island of Ireland. The call for submissions is now open and will close on January 30th. Registration will open on February 1st 2013 and early bird registration will close on April 14th 2013.

Find more information on the meeting website www.child2025.eu.

Leading international researchers, practitioners in child health and policy makers will participate in the meeting. Presentations will be given by a number of distinguished speakers, including Patricia Reilly from Maire Geoghegan-Quinn's office, Lennart Köhler from the Nordic School of Public Health, and Helmut Brand from Maastricht University and Bad-Gastein.

Save the date, you are invited!



Developing a Child Cohort Research Strategy for Europe

CHICOS project Contact us!²

² <http://www.chicosproject.eu/contacts/>