

NEWSLETTER



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Per la ricerca degli articoli pubblicati nella letteratura scientifica nel trimestre in esame sono state consultate le banche dati Medline, Embase, utilizzando le seguenti parole chiave (o i loro sinonimi): 'Birth Cohort', 'Primary Care', 'Infant', 'Child', 'Human', 'Newborn', 'Pediatrician', 'General practice'. Sono qui riportate le referenze considerate rilevanti e pertinenti.

1. Paediatr Perinat Epidemiol 2021;35(5):612-625. doi:10.1111/ppe.12757
THE MATERNAL HEALTH STUDY: STUDY DESIGN UPDATE FOR A PROSPECTIVE COHORT OF FIRST-TIME MOTHERS AND THEIR FIRSTBORN CHILDREN FROM BIRTH TO AGE TEN.

Brown SJ, Gartland D, Woolhouse H, et al.

Background: Maternal health is critical to the health and well-being of children and families, but is rarely the primary focus of pregnancy and birth cohort studies. Globally, poor maternal health and the exposure of women and children to family violence contribute to the perpetuation and persistence of intergenerational health inequalities.

Objectives: The Maternal Health Study was designed to investigate the contribution of social and obstetric risk factors to common maternal physical and psychological morbidities. Over time, our focus has expanded to include mother-child pairs and investigation of intergenerational trauma and family violence.

Population: A total of 1507 first-time mothers were recruited in early pregnancy from six public hospitals in Melbourne, Australia, in 2003-2005.

Methods: Women completed questionnaires or telephone interviews in early pregnancy (≤ 24 weeks); at 32 weeks' gestation; at three, six, nine, 12 and 18 months postpartum; and at four and ten years. At ten years, women and children were invited to participate in face-to-face interviews, which included direct assessment of children's cognitive and language development. A wide range of obstetric, social and contextual factors have been measured, including exposure to intimate partner violence (IPV) (1-year, 4-year and 10-year follow-up).

Results: 1507 eligible women were recruited at a mean gestation of 15 weeks. At one year, four years and ten years postpartum, 90.0%, 73.1% and 63.2% of the original cohort took part in follow-up. One in three women in the study (34.5%) reported exposure to IPV in the first ten years of motherhood: 19% in the first 12 months postpartum, 20% in the year prior to four-year follow-up and 18.3% in the year prior to ten-year follow-up.

Conclusion: The study affords a unique opportunity to examine patterns of maternal and child health and health service use associated with exposure to IPV.



2. Arch Dis Child 2021;106(SUPPL 1):A413-A414. doi:10.1136/archdischild-2021-rcpch.717
ROLES OF EARLY-LIFE SKIN MICROBIOTA ON NATURAL COURSE OF INFANTILE ECZEMA.

Chen Y, Yau JW-K, Song Y, et. al.

Background: Eczema is a common skin inflammatory disease during infancy. Most paediatric patients develop eczema within 6 months of age, but the severity and persistence vary. While infantile eczema in most cases could improve or get

resolved with age, some children may follow a relapsing and persistent course. The underlying decisive early-life factor is not yet known. An increasing number of studies have shown an association between eczema and skin microbiome fluctuations. Evidence has revealed an association between gut microbiome and persistence of eczema, but currently limited data are available in terms of skin microbiome.

Objectives: This prospective study aimed to investigate whether skin microbiome profiles differ between patients with transient eczema and those with persistent eczema.

Methods: We followed up 120 Chinese infants living in Hong Kong from childbirth to 2 years old. At 6, 12 and 24 months, participants attended clinic visits in our hospital and eczema was diagnosed based on Hanifin and Rajka criteria by paediatricians. Based on physician diagnoses, participants were further classified into transient eczema group, persistent eczema group and never eczema group. Skin microbes at left antecubital fossa (LAF) were serially sampled by flocked swabs at 1, 6 and 12 months. Skin microbiome data was later generated by 16S rRNA sequencing. A recently developed statistical method for microbiome called Analysis of Compositions of Microbiomes with Bias Correction (ANCOM-BC) was used to assess differentially abundant taxa among groups.

Results: In our birth cohort, 60/119 (50%) participants are male, and 28/119 (24%) were born by caesarean section. Forty-three out of 120 (36%) participants' mothers have history of allergies. Forty-six out of 101 (46%) participants developed eczema within 6 months, and 33/97 (34%) presented with active eczema at 12 months. At 24 months, 18/ 100 (18%) participants still had active eczema. During the study period in total 297 skin swab samples from LAF were collected. Alpha diversity represented by Shannon and Simpson indices significantly increased from 1 month to 6 months ($p=0.001$ and $p=0.004$ respectively). Relative abundance of *Staphylococcus* and *Corynebacterium* progressively decreased from 1 month to 6 months ($\beta = -1.95$, $p < 0.001$; and $\beta = -1.72$, $p < 0.001$, respectively) and further to 12 months ($\beta = -1.14$, $p = 0.04$; and $\beta = -1.59$, $p < 0.001$, respectively). Alpha diversity did not significantly differ among groups of children with persistent eczema, transient eczema and without eczema. Besides, this study failed to detect significantly differentially abundant bacterial taxa associated with eczema persistence.

Conclusions: Establishment of skin microbiome is highly dynamic in early life. Our results do not support that earlylife microbiota at left antecubital fossa is associated with eczema persistence during infancy.



3. Mol Psychiatry 2021 doi:10.1038/s41380-021-01357-x
MEDICAL CONDITIONS AND ATTENTION-DEFICIT/HYPERACTIVITY DISORDER SYMPTOMS FROM EARLY CHILDHOOD TO ADOLESCENCE.

Galéra C, Cortese S, Orri M, et al.

The comorbidity between physical and mental health conditions is challenging and frequently goes unrecognized in practice. Associations between Attention-

Deficit/Hyperactivity Disorder (ADHD) and physical conditions have been reported in youth. However, prior research failed to: (1) address the patterns of associations in early childhood, middle childhood, and adolescence within the same population sample; (2) consider a large set of physical disorders at the same time; (3) take confounders into account. Our goal was to assess the associations between ADHD symptoms and a broad set of physical conditions across developmental periods. This birth cohort study (n = 2057) is the first to explore the associations between ADHD and a wide range of medical conditions by encompassing the whole early development from 5 months to 17 years in the same sample and relying on innovative network analyses. We found significant associations between ADHD symptoms and several physical conditions, some of which were observed in early childhood, middle childhood, and adolescence (e.g., asthma, sleep problems) or were confounded by socioeconomic status or psychiatric comorbidities (e.g., body mass index, dental caries). The study calls for an effective integrated care model encompassing mental and general healthcare across the developmental period.



4. Public Health Nutr 2021;24(18):6094-6102. doi:10.1017/S1368980021003621
THE ROLE OF EDUCATION AND MIGRATION BACKGROUND IN EXPLAINING DIFFERENCES IN FOLIC ACID SUPPLEMENTATION INTAKE IN PREGNANCY: RESULTS FROM A GERMAN BIRTH COHORT STUDY.

Miani C, Ludwig A, Doyle I-M, et al.

Objective: Official German recommendations advise women to start taking folic acid supplementation (FAS) before conception and continue during the first pregnancy trimester to lower the risk of birth defects. Women from lower socio-economic background and ethnic minorities tend to be less likely to take FAS in other European countries. As little is known about the determinants of FAS in Germany, we aimed to investigate the association between FAS and formal education and migration background, adjusting for demographic factors.

Design: We used data (2013-2016) on nutrition and socio-economic and migration background from the baseline questionnaire of the BaBi cohort study. We performed multivariate regressions and mediation analyses.

Setting: Bielefeld, Germany.

Participants: Nine-hundred forty-seven women (pregnant or who had given birth in the past 2 months).

Results: 16.7% of the participants (158/947) did not use FAS. Migration-related variables (e.g. language, length of stay) were not associated with FAS in the adjusted models. FAS was lower in women with lower level of formal education and in unplanned pregnancies. Reasons given by women for not taking FAS were unplanned pregnancy and lack of knowledge of FAS.

Conclusions: Health practitioners may be inclined to see migrant women as an inherently at-risk group for failed intake of FAS. However, it is primarily women who did not plan their pregnancy, and women of lower formal education level,

who are at risk. Different public health strategies to counter low supplementation rates should be supported, those addressing the social determinants of health (i.e. education) and those more focused on family planning.



5. Sci Total Environ 2021; doi:10.1016/j.scitotenv.2021.151658
PRENATAL EXPOSURE TO AIR POLLUTION AND NEURODEVELOPMENTAL DELAY IN CHILDREN: A BIRTH COHORT STUDY IN FOSHAN, CHINA.
Su X, Zhang S, Lin Q, et al.

Background: Prenatal exposure to air pollution may have adverse effects on neurodevelopment in children, but epidemiological evidence remains inconclusive.

Objective: To investigate the associations between prenatal air pollution exposure and neurodevelopmental delay.

Methods: We conducted a birth cohort study based on pregnancy and birth registry in Foshan, China. Exposure to particulate matter of aerodynamic diameter < 1 µm, 2.5 µm, 10 µm (PM1, PM2.5, PM10), nitrogen dioxide (NO₂) and sulfur dioxide (SO₂) over pregnancy (trimester 1, 2, 3 and entire pregnancy) was estimated at each woman's residential address using spatial-temporal models. Neurodevelopmental assessment was performed by pediatricians using a five-domain scale and developmental quotient (DQ) was calculated as a global measure. Logistic regression models were used to investigate the associations between prenatal air pollution exposure and neurodevelopmental delay (DQ < 75) with adjustment for potential confounders.

Results: We included 15,778 child-mother pairs in this analysis, including 1013 children with neurodevelopmental delay. We observed positive associations between prenatal exposure to air pollution and higher risk of neurodevelopmental delay in children. The adjusted odds ratios (ORs) per 10 µg/m³ elevation in PM1, PM2.5, PM10, NO₂ and SO₂ in entire pregnancy were 1.12 [95% confidence interval (CI): 1.01, 1.25], 1.15 (95% CI: 1.03, 1.29), 1.12 (95% CI: 1.02, 1.24), 1.06 (95% CI: 0.94, 1.19) and 1.58 (95% CI: 1.11, 2.23), respectively. The associations were more robust for trimester 1 and trimester 2, especially trimester 1.

Conclusions: Exposure to air pollution during pregnancy, especially early-to-mid pregnancy, was associated with increased risk of neurodevelopmental delay in young children, indicating its adverse neurodevelopmental effects in early-life stage.



6. Int J Obes (Lond), 2021 doi:10.1038/s41366-021-00975-3
DETERMINANTS OF CORD BLOOD ADIPOKINES AND ASSOCIATION WITH NEONATAL ABDOMINAL ADIPOSE TISSUE DISTRIBUTION.
Tan K, Tint MT, Michael N, et al.

Background: Cord blood leptin and adiponectin are adipokines known to be associated with birth weight and overall infant adiposity. However, few studies

have investigated their associations with abdominal adiposity in neonates. We examined maternal factors associated with cord blood leptin and adiponectin, and the association of these adipokines with neonatal adiposity and abdominal fat distribution measured by magnetic resonance imaging (MRI) in an Asian mother-offspring cohort.

Methods: Growing Up in Singapore Towards healthy Outcomes (GUSTO), is a prospective mother-offspring birth cohort study in Singapore. Cord blood plasma leptin and adiponectin concentrations were measured using Luminex and Enzyme-Linked Immunosorbent Assay respectively in 816 infants. A total of 271 neonates underwent MRI within the first 2-weeks after delivery. Abdominal superficial (sSAT), deep subcutaneous (dSAT), and intra-abdominal (IAT) adipose tissue compartment volumes were quantified from MRI images. Multivariable regression analyses were performed.

Results: Indian or Malay ethnicity, female sex, and gestational age were positively associated with cord blood leptin and adiponectin concentrations. Maternal gestational diabetes (GDM) positively associated with cord blood leptin concentrations but inversely associated with cord blood adiponectin concentrations. Maternal pre-pregnancy body mass index (BMI) showed a positive relationship with cord blood leptin but not with adiponectin concentrations. Each SD increase in cord blood leptin was associated with higher neonatal sSAT, dSAT and IAT; differences in SD (95% CI): 0.258 (0.142, 0.374), 0.386 (0.254, 0.517) and 0.250 (0.118, 0.383), respectively. Similarly, each SD increase in cord blood adiponectin was associated with higher neonatal sSAT and dSAT; differences in SD (95% CI): 0.185 (0.096, 0.274) and 0.173 (0.067, 0.278), respectively. The association between cord blood adiponectin and neonatal adiposity was observed in neonates of obese mothers only.

Conclusions: Cord blood leptin and adiponectin concentrations were associated with ethnicity, maternal BMI and GDM, sex and gestational age. Both adipokines showed positive association with neonatal abdominal adiposity.



7. Eur Spine J 2021 doi:10.1007/s00586-021-07054-1

SPINOPELVIC ALIGNMENT AND LUMBAR VERTEBRAL SHAPE IN CHILDREN: ASSOCIATIONS WITH STRUCTURAL SPINAL ABNORMALITIES AND BODY COMPOSITION IN THE GENERATION R STUDY.

van den Heuvel MM, Griffioen NE, Achterberg HC, et al.

Purpose: To investigate the spinopelvic alignment and vertebral shape in children, and associations with body composition and structural spinal abnormalities on magnetic resonance imaging (MRI).

Methods: We performed a cross-sectional study embedded in the Generation R Study, a prospective population-based birth cohort. Pelvic incidence and vertebral concavity ratios for each lumbar level were determined on sagittal MRI images in 9-year-old children, and structural spinal abnormalities were scored semi-

quantitatively. The BMI-SD score was calculated, and body composition was assessed using DXA scans. Associations of pelvic incidence and vertebral concavity ratios with structural abnormalities and body composition measures were assessed using (multilevel) regression analyses.

Results: This study included 522 participants (47.7% boys), aged 9.9 years (IQR 9.7-10.0). The mean pelvic incidence was 36.6° (SD 8.0). Vertebral concavity ratios ranged from 0.87 to 0.90, with significantly lower ratios for boys compared to girls. Associations were found for a larger pelvic incidence with decreased disc height [OR 1.03 (95% CI 1.02-1.05)], and a pelvic incidence in the lowest tertile with less disc bulging [OR 0.73 (95% CI 0.56-0.95)]. Increased vertebral concavity ratio was associated with decreased disc height [OR 14.16 (95% CI 1.28-157.13)]. Finally, increased fat-free mass index was associated with a smaller pelvic incidence [adjusted OR 0.85 (95% CI 0.07-1.63)].

Conclusion: The mean pelvic incidence of 9-year-old children is 36.6° on supine MRI images, and a slightly concave shape of the lumbar vertebrae is seen. Spinopelvic alignment is associated with structural spinal abnormalities, and might itself be influenced by the children's body composition.

COORTI STORICHE

1. Sci Rep 2021;11(1):21588. doi:10.1038/s41598-021-00631-w
THE RELATIONSHIP BETWEEN HEALTH-RELATED QUALITY OF LIFE AND MELANCHOLIC DEPRESSIVE SYMPTOMS IS MODIFIED BY BRAIN INSULIN RECEPTOR GENE NETWORK.

Selenius JS, Silveira PP, Salonen M, et al.

To investigate whether expression-based polygenic risk scores for the insulin receptor gene network (ePRS-IRs) modify the association between type of depressive symptoms and health-related quality of life (HRQoL). This cross-sectional study includes 1558 individuals from the Helsinki Birth Cohort Study. Between 2001 and 2004, the Short Form-36 questionnaire was employed to assess mental and physical components of HRQoL and Beck Depression Inventory (BDI) to assess depressive symptoms. Depressive symptoms were categorized into minimal (BDI < 10), non-melancholic and melancholic types of depression. The ePRS-IRs were calculated for the hippocampal (hePRS-IR) and the mesocorticolimbic (mePRS-IR) regions of the brain. General linear regression models adjusted for age, sex, population stratification, lifestyle factors and body mass index were applied to analyze the data. Both types of depressive symptoms were associated with lower HRQoL ($p < 0.0001$). HePRS-IR modified the association between the types of depression and mental HRQoL (p for interaction = 0.005). Melancholic type of depressive symptoms was associated with higher mental HRQoL compared to the non-melancholic symptoms among individuals with low hePRS-IR (adjusted mean 4.1, 95% CI 0.7-7.4, $p = 0.018$). However, no such difference was evident in moderate or high hePRS-IR groups as higher hePRS-IR was associated with lower mental HRQoL ($B = -3.4$, 95% CI -5.6 to -1.2) in individuals with melancholic type of depressive symptoms. No direct associations were detected between the ePRS-IRs and type of depressive symptoms or HRQoL. Variations in the glucose-insulin metabolism can lower HRQoL in individuals with melancholic depressive symptoms.



2. Crim Behav Ment Health 2021;31(3):211-219. doi:10.1002/cbm.2194
SELF-REPORTED AND GENERAL PRACTITIONER RECORDED INDICATORS OF LIFETIME HEALTH UP TO AGE 48 ACCORDING TO OFFENDER TYPE IN THE CAMBRIDGE STUDY IN DELINQUENT DEVELOPMENT.

Skinner GCM, Farrington DP.

Background: Previous research has suggested that people with a history of offending have worse health compared to non-offenders, but it is less clear whether all types of offenders are at similar health risks. In a New Zealand birth cohort study, Moffitt evidenced three main offending trajectories—life-course-persistent (LCP), adolescence-limited (AL) and late-onset (LO) offending,

subsequently confirmed in other substantial longitudinal studies. **Aims:** Our aim was to explore the relationship between these offending trajectories and both self-reported (SR) and general practitioner (GP) (primary care) recorded health indicators.

Methods: Self-reported medical data at age 48 were obtained for 394 men followed since age 8 years in the Cambridge Study in Delinquent Development. In addition, medical records were obtained from GPs for 264 of them. Health indicators from both sources were compared between each of the three established trajectories of offenders across the life course—LCP, AL, LO and the non-offenders.

Results: LCP offenders were found to have over twice the likelihood of disabling medical conditions according to both self-report and GP records. They were also more likely to have GP records indicating mental health problems and treatment for them. According to GP records alone, the LO offenders were also more likely to have mental health problems. The health of AL offenders appeared to be no different from that of the crime-free controls.

Conclusions: Our findings add weight to the growing evidence that LCP offending and offending that only occurs relatively late in life are likely to be the indicators of generally unhealthy and disrupted lives. This suggests that if lifestyle is to change for the better, interventions are likely to be needed for health as well as antisocial behaviour.

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