ID: 27
TITLE: THE BIRTH TREND AND SHORT-TERM PROGNOSIS OF SMALL-FOR-GESTATIONAL-AGE INFANTS IN JAPAN
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CONTENT:

Low birth weight is associated with hypertension, cardiovascular diseases and type II diabetes mellitus, of which mechanisms are called as “Developmental origins of health and disease, DOHaD”. Adaptation for unfavorable environment during fetal and early infancy periods is thought as a main cause of DOHaD. The number of low birth weight infants is increasing in Japan, which can lead to increased disease burden in future. According to this theory, preterm small-for-gestational-age (SGA) infants should be a strong risk factor for future morbidity. The aim of this study was to elucidate recent trend of preterm SGA birth in Japan and its associate factors.

We used the Neonatal Research Network of Japan (NRNJ) database for this analysis. This database contains clinical information of infants with gestational age (GA) less than 32 weeks or birth weight ≤ 1500 g admitted in 217 participating NICU, and a total of 56097 cases were registered between Jan 2003 and Dec 2015. The data of infants with less than 30 weeks gestation was analyzed in this study. SGA was defined as birth weight less than 10th percentile for GA. Infants with congenital anomalies, less than 22 weeks gestation and having missing data which was essential for analysis were excluded. The birth trend and the associate factors of SGA birth were explored.

In 32272 eligible infants, 31024 infants were analyzed in this study, and overall SGA rate was 23.6%. The rate of SGA increased from 8.1 to 29.2% as the gestational weeks advanced. The frequency of SGA birth has increased by approximately 7% during the 13-year study period, which was statistically significant upward trend (p < 0.001, Cochran-Armitage trend test). SGA was significantly associated with maternal age (odds ratio 1.03, 95% CI 1.02-1.03), hypertensive disease of pregnancy (HDP)/eclampsia (OR 7.66, 95% CI 7.14-8.23), and year of registration (OR 1.01, 95% CI 1.00-1.02) after adjusted for parity and the number of fetuses. SGA rate significantly increased in GA 23, 24, and 25 weeks infants, but not significant in > 25 weeks gestation. The survival to discharge rate was significantly improved during this period in SGA of < 26 weeks gestation (from 58.1 to 82.9%).

SGA birth rate was significantly increasing during the 13-year study period in Japan, which was strongly related with advanced maternal age and coexisting HDP. SGA rate significantly increased in GA 23-25 weeks, which would not be explained by older maternal age. Since short-term survival is improving, increasing indication of intensive care for more premature SGA may be one of reasons of this result.

IMAGES:
https://www.eiseverywhere.com/eselectv3/v3/events/351149/submission/files/download?fileID=7e62af1c5ccc4f11d450890caf6c05d0-MjJxOS0wNSM1Y2UyNyY2YmI3YWJx

The frequency of SGA birth from 2003 to 2015.

COI: None declared
ID: 163

TITLE: SUDDEN UNEXPECTED POSTNATAL COLLAPSE IN THE NETHERLANDS. UPDATE OF A RECENT SURVEILLANCE STUDY

AUTHORS: Christian Hulzebos 1, Ben Semmekrot 2, Rene Matthijsse 3, Henrike Klein-Ikkink 4, Klasien Bergman 1

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CONTENT:

Sudden and unexpected collapse (SUPC) of apparently healthy newborn infants is a life threatening event. Underlying diseases are reported in approximately 50% of SUPC cases, and include congenital (cardiac) anomalies, infections, intracranial hemorrhages, metabolic and endocrine disorders. When no underlying disease is determined, SUPC may be caused by postural asphyxia: accidental suffocation due to an obstructed airway. Postural asphyxia is associated with prone position on mother’s chest, breast-feeding, and poor recognition of airway compromise. As skin-to-skin contact has many advantages, awareness of risk factors of postural asphyxia is of utmost importance. We aim to determine the prevalence of SUPC and associated factors in the Netherlands.

The Dutch Surveillance Center of Pediatrics (the so-called NSCK) registry on SUPC was set up in April 2019 and will run for three years. The NSCK is part of the International Network of Pediatric Surveillance Units (www.inopsu.com). All pediatricians nationwide are asked to voluntarily report on cases of SUPC. The case definition of SUPC is: a newborn ≥ 35 weeks of gestational age with an Apgar score ≥ 8 after 5’ who presents with cardiorespiratory collapse necessitating resuscitation within 24 h of birth. Resuscitation also includes insufflation breaths (before CPAP).

In the first month of the registry 5 cases have been registered. We have noticed that not all pediatricians are aware of this SUPC registry, and some hesitate to report cases. This may be due to unclear inclusion criteria, or unclear definitions of resuscitation. Alternatively, the word “unexpected” may falsely be interpreted and not result in a SUPC report when health care professionals “already feel uncomfortable with the infant’s condition” and deterioration was not unexpected.

SUPC occurs in the Netherlands. Exact numbers and prevalence of postural asphyxia and associated risk factors will be available after completion of the SUPC registry. Analysis of SUPC risk factors will contribute to optimal safety of skin-to-skin practices. Pediatricians are encouraged to report any possible SUPC case when in doubt. Meanwhile, awareness and early recognition of possible airway compromise during skin-to-skin contact is essential.

IMAGES:
https://www.eiseverywhere.com/eselectv3/v3/events/351149/submission/files/download?fileID=1728ee5178a718e0cf59f920d3fb9fb2-MjAxOS0wNSM1Y2UyNjY2YmU1MGQ4

Table. Would you report these infants to the NSCK registry on Sudden Unexpected Postnatal Collapse?

COI: None Declared
ID: 201
TITLE: A SURVEY ON NEONATAL HEMOCHROMATOSIS MANAGEMENT IN JAPAN: DURING A 5 YEAR PERIOD (2010 – 2014)
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CONTENT:

Neonatal hemochromatosis (NH) is a disease with poor prognosis causing severe liver failure in both fetal and neonatal periods and is assumed to be an allogeneic immunological fetal liver injury. Up till date, no survey has outlined management of NH in Japan, due to the disease’s difficulty in diagnoses and treatment. Here we report the first nationwide survey for management of cases diagnosed clinically with NH in a 5 years period from 2010 to 2014.

Questionnaire surveys were sent to the National Perinatal Maternal and Child Medical Centers and the Organ Transplant Centers of a total of 275 hospitals, regarding their experiences for management of NH cases during 2010-2014. A further detailed questionnaire regarding diagnosis and management was sent to hospitals with positive respond of experiencing cases.

From 275 hospitals included in the survey a total of 197 hospitals responded. The responds included managements of 19 cases. Only 2 cases completely fulfilled the diagnostic criteria of NH stated by the Japanese Society of Pediatric Gastroenterology, Hepatology and Nutrition (JSPGHN). In 16 out of 19 cases abdominal imaging including MRI, CT, and/or ultrasound was performed where iron deposition in 8 cases was observed. Therapeutic prophylaxis via maternal antenatal IVIG administration was done in 2 cases out of the 19. Both cases survived without requiring postnatal therapy. The remaining 17 cases received post-natal medical treatments and liver transplantation was performed in 9 of them. Later on 2 cases were finally diagnosed as Niemann-pick disease. Fourteen out of the 17 cases survived and non-surviving cases (n=5) expired during first 6 month of age.

From this survey, fulfilling the requirements for diagnosing NH using the criteria stated by the JSPGHN is difficult to reach, as many cases could not receive required diagnostic investigations due to their poor general condition. Therefore, in order to improve NH prognosis a revision of the JSPGHN diagnostic criteria and a standardized management for NH including antenatal therapeutic prophylaxis is warranted.

COI: None declared
**ID:** 273  
**TITLE:** TOBACCO SMOKING DURING PREGNANCY AS RISK FACTOR FOR BRONCHOPULMONARY DYSPLASIA: A SYSTEMATIC REVIEW AND META-ANALYSIS  
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**CONTENT:**

Tobacco smoking during pregnancy is associated with a range of severe adverse pregnancy outcomes, including stillbirth, congenital anomalies, intrauterine growth restriction (IUGR), preterm birth, and neonatal mortality. In addition, data from recent observational studies suggest that tobacco smoking during pregnancy may increase the risk of developing bronchopulmonary dysplasia (BPD). However, this association has not yet been systematically investigated. We aimed to conduct a systematic review of studies reporting on tobacco smoking during pregnancy as risk factor for BPD.  

PubMed/MEDLINE and EMBASE databases were searched. Studies were included if they examined preterm infants and reported primary data that could be used to measure the association between fetal exposure to maternal tobacco smoking and the presence of BPD. BPD was defined as supplemental oxygen requirement on postnatal day 28 (BPD28; all BPD), supplemental oxygen requirement at the postmenstrual age (PMA) of 36 weeks (BPD36; moderate/severe BPD), or as need for ≥30% oxygen and/or positive pressure at 36 weeks PMA (severe BPD). A random-effects model was used to calculate risk ratios (RR) and 95% confidence intervals (CI).  

We found 2094 potentially relevant studies, of which 33 met the inclusion criteria (170.222 infants; 27.335 exposed to maternal smoking; 24.730 cases of BPD). Meta-analysis could not demonstrate a significant association between tobacco smoking during pregnancy and BPD28 (16 studies, RR 1.02, 95% CI 0.92 to 1.12; p=0.678; heterogeneity: I²=30.2%, p=0.121), BPD36 (18 studies, RR 1.10, 95% CI 0.98 to 1.23; p=0.098; heterogeneity: I²=73.4%, p<0.001), or severe BPD (3 studies, RR 1.14, 95% CI 0.52 to 2.48; p=0.734; heterogeneity: I²=56.2%, p=0.102).  

Maternal smoking during pregnancy may potentially influence the risk of BPD through direct effects on lung development or, indirectly, by increasing the rate of IUGR, which is recognized as risk factor for developing BPD. However, our data do not suggest an association between maternal smoking during pregnancy and BPD. Nevertheless, some analyses are limited by the high heterogeneity of the included studies.  

**COI:** None declared
ID: 446

TITLE: PREVALENCE AND DIFFERENCES OF IDEAL CARDIOVASCULAR HEALTH IN URBAN AND RURAL AREAS OF TYROL – PRELIMINARY DATA FROM THE EVA-TYROL STUDY

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CONTENT:

There is evidence that early adoption of a healthy lifestyle has positive effects on cardiovascular health (CVH) in adulthood. In order to measure and promote CVH in teenagers and young adults the American Heart Association developed the concept of the so-called health metrics including four health behaviours (non-smoking, ideal Body Mass Index (BMI), regular physical activity, favourable dietary patterns) and three health factors (total cholesterol, blood pressure and fasting blood glucose).

The aim of this study is to I) assess the prevalence of ideal CVH and II) compare the health metrics among teenagers according to their origin from the urban or rural area.

The Early Vascular Aging (EVA) study is a cross-sectional study conducted among 2102 pupils and apprentices in North and South Tyrol, aged between 14 and 19 years. The ideal health behaviours are defined as never smoked a cigarette, 4-5 points in a healthy diet score, a BMI below the 85. Percentile and more than 60 minutes of physical activity per day. With regard to the health factors, blood pressure values after 10 minutes at rest below the 90. Percentile, fasting blood glucose below 100mg/dl and cholesterol levels below <170 mg/dl were considered as ideal. The classification in urban and rural areas considers population density, infrastructural facilities, commuter integration and reachability of centres (defined by Statistik Austria).

2102 adolescents participated in the study (44% male, mean age 16.5 years). 29.4% of the participants were smokers, 7.8% reported a healthy diet and 42.6% had the ideal amount of daily activity. Ideal BMI was found in 78.1% and ideal systolic blood pressure in 68.1%. 66.7% had optimal cholesterol levels and 99.3% showed an ideal fasting blood glucose. For evaluating differences between urban or rural origin, data was available from 1728 teenagers. We found no significant differences for smoking status (p=0.27), dietary behaviour (p=0.78), fasting blood glucose (p=0.36), BMI (p=0.19) or blood pressure (p=0.32). Teenagers whose main place of residence is in the urban area showed a significant higher proportion of ideal total cholesterol levels (47.2% vs. 37.8%, p<0.01). Likewise there were more urban adolescents with ideal total cholesterol levels (69.5% vs. 64.5%, p=0.016).

With regard to smoking, healthy diet or ideal daily activity the examined adolescents showed a poor health behaviour. Apart from the differences shown for ideal physical activity and cholesterol levels the urban and rural areas do not considerably differ in CVH. This might be due to the numerous sporting activities throughout Tyrol. To sum up, the necessity of further promotion of ideal CVH is indicated.
COI: None declared
ID: 568

TITLE: THE DANISH NEWBORN QUALITY DATABASE: A RESOURCE FOR QUALITY IMPROVEMENT AND RESEARCH.

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CONTENT:
The newborn period is associated with high mortality and morbidity which is mainly due to preterm birth. Research efforts have improved both mortality and morbidity in preterm newborns. However, knowledge related to pathophysiology and optimal treatment strategies in preterm babies is still incomplete. The Danish Newborn Quality Database (DNQD) aims to monitor and improve the care and quality of treatment for all newborns in Denmark, through specific quality indicators. Further, due to population fullness, access to biological material, antenatal data and complete follow-up, DNQD will provide a unique research resource for improving neonatal care.

Denmark has some 62,000 births per year. Since 2016 DNQD collects data on all newborns in Denmark. DNQD operates within the national framework of the Danish Clinical Registries (RKKP), which ensures access to a skilled team of statisticians, epidemiologists and data-managers. Reporting to DNQD is mandatory due to the affiliation with RKKP. Data from DNQD will be available for researchers through an application process. Further, several validated population-based clinical registries exist and it will be possible to combine data from these with data from DNQD. These additional registries include the Danish Quality Database for Births, The Danish Fetal Medicine Database, the Danish Neonatal Screening Biobank and several databases with neurodevelopmental outcomes.

Each year DNQD will report nine indicators of newborn health: 1) perinatal and one-year survival for all newborns stratified by gestational age at birth (GA) 2) readmission rates 3) survival without major neonatal morbidity (very preterm newborns stratified by GA) 4) rates of breastfeeding at discharge from the NICU 5) skin-to-skin contact within the first six hours after birth 6) core temperature at admission at the NICU 7) normal weight at discharge from the NICU 8) neonconfort score within the first 24 hours of life 9) rates of treatment with antibiotics. From 2020 scores from the Ages and Stages Questionnaire at postmenstrual age 24 months is planned as indicator 10. The indicators are reported for all hospitals, and as compiled by the five Danish regions and at the national level. The first official report is due September 2019 for the year 2018.

DNQD will be the 4th Nordic newborn database reporting population-based outcomes. DNQD will be an important tool for benchmarking quality of care and, combined with other Danish databases, a unique resource for population-based research. We will present DNQD data 2016 to 2018, with a focus on survival and perinatal morbidity. Further, we will introduce the possibilities for research on DNQD data.

COI: None Declared
ID: 582
TITLE: HOME OXYGEN THERAPY FOR POPULATION OF INFANTS DISCHARGED FROM INTENSIVE CARE IN AUSTRALIA AND NEW ZEALAND (1995-2015)
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2
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4 Department of Paediatrics, Monash University, Melbourne, Victoria, Australia
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CONTENT:

Low-flow supplemental oxygen therapy facilitates discharge of infants with chronic lung disease from the NICU. The primary indication for home oxygen therapy (HOT) is chronic lung disease (CLD), of prematurity. Other neonatal indications for home oxygen therapy include congenital heart disease, pulmonary hypertension or neuromuscular disease. As HOT requires considerable by multiple discipline and investment of clinical resources, there is a need to better understand the prescribing pattern for infants being discharged from the NICUs.

Anonymised demographic and clinical data was obtained from the ANZNN registry which audits outcomes of infants treated in the NICU. The population of admissions from 1995 to 2015 was studied. Analyses (including logistic regression) were performed using Stata I/C 14.2.

Of the 174,722 infants, 5633 (3.2%) were discharged on oxygen therapy. 61% were male. 68% (3857/5633) of these were infants 32 weeks gestation, representing 16% of HOT group; and 763 did not have CLD with other indications for oxygen therapy. Annual rate of HOT was median of 3.2% (2.3 -4.7) with no significant yearly trend. Significant risk factors were growth restriction OR 1.4 (95%CI 1.3-1.5), gestation (weeks) OR 0.9 (95%CI 0.89-0.93), pneumothorax OR 1.4 (95%CI 1.2-1.6), INO use OR 2.1 (95%CI 1.9-2.4) and CLD OR 59 (53-66).

Preterm infants with remain the main group discharged on home oxygen, while late preterm/term infants even without CLD remain an important group. The rate of home oxygen at discharge appears to be stable over the past two decades in the ANZNN.

COI: None declared
ID: 588

**TITLE:** PREDICTORS OF CHRONIC LUNG DISEASE IN PRETERM INFANTS <32 WEEKS FROM AUSTRALIA AND NEW ZEALAND BETWEEN 1995 AND 2015 - IDENTIFICATION OF NON-LINEAR TRENDS

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**CONTENT:**

Health systems change over time may be associated with chronic lung disease of prematurity, and this has not been well studied. Quantifying risk factors would also assist clinicians in identifying the highest risk infants.

Demographic and clinical data were obtained from the ANZNN registry which audits outcomes of infants treated in the NICU in Australia and New Zealand. The study population were infants admitted from 1995 to 2015 with gestational age ≤32 weeks. Multivariate logistic regression and restricted cubic spline models were used, and data analysis performed in Stata V14 (Stata Corp, College Station, Tx, USA). Level of significance was set at 5%.

Of 85,477 infants, 55% were male and 71% singletons, with LSCS as most common mode of delivery (38%). Median birthweight was 1.3 kg (IQR: 0.98-1.6), mean(SD) GA was 29(2.4) weeks. Mean Apgar score at 5-min was 7.9 (SD=1.7). 11,962(17.1%) babies had CLD. In the multivariate analysis, the following factors were significantly and independently associated with CLD: birthweight, GA, 5-min Apgar, IUGR, INO use, NEC, antenatal steroids, twin births, gender, method of birth, surfactant therapy, need for ventilation and year of birth. Female infants had 31% reduction (95% CI: 28%-35%) in odds of CLD as compared to males (p<0.001). There was a dose-response relationship between antenatal administrations of corticosteroids with CLDs, with OR for incomplete 7 days OR=1.5. A gradual decline in the odds ratio of CLD until 2005, when subsequently the odds ratio showed an increase.

We have presented a number of independent risk factors which can be used by clinicians to risk-stratify babies. Cubic spline analysis shows there was a systemic shift in the odds of oxygen therapy from 2005 after risk adjustment, indicating structural changes in the management of infants treated at NICUs over the years.

**COI:** None declared
ID: 691

TITLE: NON IMMUNE HYDROPS FETALIS: FETAL OUTCOME IN A SINGLE CENTER

AUTHORS: Heiko Milera 1; Anja Fruth 2; Christine Lindner 3; Stephanie Essmann 4; Antje Jahn 5; Mareike Selig 6; Jennifer Winter 7; Christoph Kampmann 8; Julia Winter 9; Eva Mildenberger 10; Catharina Whybra 11

AFFILIATIONS: Department of Neonatology, University Medical Center of the Johannes Gutenberg University Mainz, Germany

CONTENT:

Nonimmune hydrops fetalis (NIHF) is defined as the presence of ≥ 2 abnormal fetal fluid collections in the absence of red cell alloimmunization. NIHF is a nonspecific symptom and the end-stage of a wide variety of disorders. The condition reveals a high morbidity and mortality in spite of advances in prenatal diagnostic techniques, early detection, and individualized management. Nevertheless, in a high number of cases the underlying etiology remains unexplained.

The underlying etiology and factors associated with mortality of 90 patients with NIHF treated in our centre from January 2007 to December 2018, were retrospectively assessed. The etiologic classification of NIHF was based on criteria previously reported in a systematic review using 13 classification groups.

All 90 patients were subclassified into one of the diagnostic categories: cardiovascular (10%), hematologic (2%), chromosomal (39%), syndromic (12%), lymphatic dysplasia (3%), inborn errors of metabolism (7%), infections (3%), thoracic (3%), urinary tract malformations (0%), extra thoracic tumors (0%), twin-to-twin transfusion syndrome (0%), gastrointestinal (3%) and idiopathic (17%). The largest etiological group was the group of chromosomal abnormalities comprising 35/90 cases. 34 cases were caused by aneuploidy and 1 case by triploidy. Mortality rate of fetuses with NIHF due to aneuploidy at gestational ages below 18 weeks was 100%. Within the group of idiopathic NIHF, prenatal ultrasound and echocardiography was performed in all 15 cases. Additionally, fetal karyotyping was carried out in 10 cases. Diagnostic testing for metabolic diseases was accomplished in only 4 cases.

NIHF diagnosed early in gestation is due to aneuploidy in most cases and is associated with poor outcome. In the future, new techniques in genetic analysis will be needed to reduce the high rate of unexplained cases of NIHF and to improve counselling. A standardized multicenter prospective trial can hopefully ameliorate diagnosing the causes of idiopathic NIHF in the future.

COI: None declared
ID: 823

**TITLE:** SOCIODEMOGRAPHIC FACTORS ASSOCIATED WITH HEALTH LITERACY IN A LARGE SAMPLE OF MOTHERS OF NEWBORN CHILDREN: CROSS-SECTIONAL FINDINGS FROM A BIRTH COHORT (KUNO-KIDS HEALTH STUDY)

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**CONTENT:**

Health literacy can be defined as a person’s capabilities to make sound decisions regarding health and determinants of health. It is considered an important public health goal and of particular relevance when people are starting a family. However, health literacy of new mothers has not been studied so far in Germany.

Health literacy and various sociodemographic variables were assessed among 2182 mothers of newborns who take part in an ongoing birth cohort study (KUNO-Kids health study). Health literacy was measured by the HLS-EU health care scale (Sørensen, 2013) from which an index (range 0-50) was derived with higher values indicating higher health literacy. Sociodemographic variables which were associated with health literacy in univariable linear regression analyses were included in a multivariable regression model.

Almost 40% of mothers had a limited health literacy level. The mean health literacy index was 35.5 (SD=2.2). In multivariable regression, higher education was associated with higher health literacy (β = .12, p<.001) and giving birth for the first time was associated with lower health literacy (β = -.08, p=.001), respectively.

Albeit the mean level of health literacy was high, there was a substantial amount of mothers experiencing problems in dealing with the health care system – this applied above all to first-time mothers and mothers with low education. An adaption of professional practices in paediatric health care is necessary since many parents have difficulties navigating through the health care system as it is currently designed.

**COI:** None declared