Berzelius symposium 89

Life Cycles: Human Reproduction, Growth, and Development

23–24 April 2014 in Malmö · Sweden

Programme · General information

Poster abstracts · Lectures abstracts

Svenska Läkaresällskapet

Welcome to the symposium on Life Cycles: Human reproduction, growth, and development

Various aspects of reproduction are in focus, not only for individuals longing for parenthood but also for science and society at large. For example, problems related to overcoming infertility have been on the medical agenda since more than 30 years following the introduction of methods for in-vitro fertilization.

The support for healthy pregnancies, safe deliveries, and protection of normal growth development of new-borns are main topics for the "*Reproductive health*" strategy launched by the World Health Organization (WHO). Another important aspect is how to support the development of an emotional attachment between parents and offspring and to promote children's and their caregivers' mental health based on insights from developmental psychology.

As society and social structures are changing on a global scale this also impacts on the structure of families, which is also in social and legal transition. The number of children per women is decreasing while the mean age of parents when having their first child is increasing, so is the proportion of families with only one parent or with two same-sex parents living with the child. All these trends are of great importance for medical, social, psychological and cultural aspects of reproductive life.

It is our ambition that the 89th Berzelius symposium, held in Malmö, Sweden, will provide an opportunity to mirror these developments linked to reproductive life and also to discuss a research agenda for the future. Moreoever, this is timely and important as epidemiological research findings indicate that the health status of newborns and young children is of fundamental importance both for somatic and mental health later in life.

Welcome to the symposium in April 2014!

ULF KRISTOFFERSSON · PETER M NILSSON · ELIA PSOUNI
For the Organizing Committee, representing the "Centre of Excellence for Reproduction and Perinatal Sciences" (CERPS) at the Lund University and Skåne University Hospital in Lund and Malmö, Sweden

The symposium is arranged by The Swedish Society of Medicine
EpiHealth: Lund and Uppsala Universities
Center of Excellence for Reproduction and Perinatal Sciences (CERPS)

Main sponsor Ferring A/S

CERPS
- Centre of Excellence for Reproduction and Perinatal Sciences

Reproduction is a key event of our life and there is now growing evidence indicating that deviations from normal foetal or perinatal development may have serious implications, not only for childhood health but also for healthy adulthood and aging.

It is, therefore, obvious that studying reproduction, foetal and perinatal life is of a crucial importance for better understanding of mechanisms behind major pathologies as e.g. metabolic and cardiovascular disturbances, cancer, psychiatric and neurodegenerative diseases and also for development of more efficient prevention and treatment strategies for these diseases.

Studying reproductive, foetal and perinatal events in relation to subsequent disease risk is not an easy task. A multitude of pre- and post-conceptional factors - including environment, lifestyle and genetic predisposition - may interfere with normal early development and the time lag between the "exposure" and the clinical signs of disease is decennia rather than years.

Therefore, a multi-disciplinary approach including epidemiologists, basic scientists, clinicians, psychologists, sociologists, experts in ethics and even other disciplines of science is necessary in order to solve the mystery of the impact of transgenerational and early life exposure on human health.

At different faculties of Lund University and at the hospitals of the Region of Skane there is a strong scientific and clinical interest in issues related to reproduction, foetal and perinatal life. Therefore, in order to expose and strengthen Reproductive and Perinatal Science in the academic and clinical environment of Skane, a group of researchers and clinicians gathered together to establish a Centre of Excellence for Reproduction and Perinatal Sciences – CERPS.

In the framework of CERPS we intend to initiate innovative cross-disciplinary research, promote educational activities and regularly organize internationally recognized symposia with focus on transgenerational research on gene-lifestyle-environment interaction in relation to reproduction, foetal peri-and neonatal growth and the impact of those factors on the health of the offspring during the entire life course

This Berzelius symposium is the fist large event organized by CERPS but we hope that, in the future, the CERPS symposia will become a "must" for everyone interested in Reproduction and Perinatal Sciences.

Epidemiology for health (EpiHealth)

Sweden has possibly the longest history of population-based data collection in the world. Therefore it should come as no surprise to see that Sweden is the birthplace of an ambitious project called ”Epidemiology for health”, Epihealth for short.

As its name suggests, Epihealth aims to improve understanding and etiology of both chronic non-infectious and infectious disease processes via state-of-the-art epidemiologic research. Two of the oldest universities in Sweden, Uppsala and Lund, have agreed to join forces to achieve this aim, with a steering committee of 11 members from both Lund and Uppsala driving the project forwards. Epidemiology, however, is not just a tool used by other disciplines but is also a science in its own right; therefore Epihealth does not intend to be just another data collection agency. Epihealth will also provide a base to develop and teach the very latest in epidemiologic methodologies and techniques to advance the discipline further.

There are three major focus areas for Epihealth:

1. Basic Science epidemiology: To research the etiology of chronic and infectious diseases via further development of biomarkers and gene-level interactions.
2. Applied and Clinical Epidemiology: To develop monitoring systems for cost-effectiveness of healthcare delivery and prevention programmes.
3. Epidemiologic Infrastructure: The research and development of state-of-the-art epidemiological infrastructures (for example, registries, biobanks and technology platforms).

These will build upon already existing national epidemiologic infrastructures, such as national health quality registers, population-based cohorts and biobanks. Epihealth will also develop new national and international research data registers and biobanks creating an ”easy access” infrastructure for research both in Sweden and abroad.

Epihealth is not just a pipedream; funding for 2010-2014, to the tune of 52 million SEK was granted from The Swedish Research Council (”Vetenskapsrådet”) in late 2009. Work to turn the Epihealth concept into reality has started with the sourcing of a suitable infrastructure for Epihealth in Southern Sweden, creating a fully functional website and establishing a committee to formally run Epihealth.

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Programme

Wednesday, 23 April 2014

12.00–13.00 Registration

13.00–13.15 Welcome and introduction.
Peter M Nilsson, Department of Clinical Sciences, Lund University
Opening addresses: *Kerstin Nilsson*, President, the Swedish Society of Medicine
Gunilla Westergren-Thorsson, Dean, Faculty of Medicine, Lund University

13.15–13.30 Presentation of Centre of Excellence in Reproductive and Perinatal Science, CERPS
Aleksander Giwercman, Department of Clinical Sciences, Lund University

13.30–15.00 **Session 1**
Families in transition – Society in transition

Chair: *Inger Hallström,* Department of Health Sciences, Lund University

- The changing reproductive life of humans.
  Jenny Gunnarsson Payne, Södertörn University College, Stockholm

- New possibilities for childbearing.
  Nils-Eric Sahlin, Department of Medical Ethics, Lund University

- New families and HBTQ.
  Ingela Steij Stålbrand, Department of Psychology, Lund University

15.00–15.30 **Coffee and Poster viewing**

15.30–17.00 **Session 2**
Late reproduction in the modern/urban society

Chair: *Ulf Kristoffersson,* Department of Laboratory Medicine, Lund University

- Late reproduction: Demographic perspective.
  Tomas Sobotka, Vienna Institute of Demography, Austria

- Paternal age at conception and disease risk in offspring.
  Christina Hultman, Karolinska Institute, Stockholm

- Maternal age, health and reproduction.
  Karin Källén, Department of Laboratory Medicine, Lund University

17.00–17.30 **State-of-the Art**

Chair: *Nils-Otto Sjöberg,* Department of Clinical Sciences, Malmö

Assisted Reproduction - where are we now and where are we heading?
Kersti Lundin, Reproductive Medicine, Sahlgrenska University Hospital and Department of Clinical Sciences, Gothenburg University

17.30–18.00 **Selected poster abstracts**
Chair: *Kerstin Nilsson*, President, the Swedish Society of Medicine

19.00 The City of Malmö invites you to a symposium dinner at the Old City Hall.
Pre-reservation is mandatory.

Thursday, 24 April 2014

09.00–10.30 **Session 3 · Families, children and health**

Chair: *Anna Rignell-Hybom,* Department of Laboratory Medicine, Lund University

- Transgenerational epidemiology.
  Peter M Nilsson, Department of Clinical Sciences, Malmö
- Early Life Conditions and Sickness Absence During Adulthood
  Jonas Helgertz, Centre for Economic Demography, CED, Lund University
- Early life programming of adult health.
  Ilona Koupil, CHESS, Stockholm University/Karolinska Institute

10.30–11.00 **Coffee and Poster viewing**

11.00–12.30 **Session 4 · Early development conditions, attachment and the family**

Chair: *Maria Råstam,* Department of Clinical Sciences, Lund University

- Perinatal risk factors and later health.
  Mikael Norman, Department of Pediatrics, Karolinska Institute
- Parent–child interactions, emotion regulation and coping with health adversity.
  Elia Psouni, Department of Psychology, Lund University
- Environmental toxins and vitamin D deficiency as potential risk markers for development of autism/ADHD. *Peik Gustafsson*, Lund University

12.30–13.30 **Lunch and Poster viewing**

13.30–15.00 **Session 5 · New trends in infertility treatment**

Chair: *Aleksander Giwercman,* Department of Clinical Sciences, Lund University

- The Ovarian Hyperstimulation Syndrome free clinic.
  Paul Devroey, Centre for Reproductive Medicine, UZ Brussel, Belgium
- Modern aspects of Polycystic Ovarian Syndrome
  Stephen Franks, Faculty of Medicine, Imperial College, London, UK
- Does increased life expectancy justify postponing menopause in women?
  Claus Yding Andersen, Laboratory of Reproductive Biology, Rigshospitalet Copenhagen, Denmark

15.00–15.30 **Coffee and Poster viewing**

15.30–16.50 **Session 6 · State-of-the-Art Lecture**

Chair: *Peter M Nilsson,* Department of Clinical Sciences, Lund University

Developmental origins of adult disease – today's findings and future directions. *Johan Eriksson,* Departement of Public Health, Finland

What are the important issues for reproductive and perinatal science in the next ten years?

Panel discussion.

Chair: *Nils-Otto Sjöberg,* Department of Clinical Sciences, Lund University

Johan Eriksson, Ilona Koupil, Karin Källén, Claus Yding Andersen, Mikael Norman, Elia Psouni

16.50–17.00 Wrapping up and Farewell. *Ulf Kristoffersson, Elia Psouni, Peter M Nilsson*

General information

Jubileumsaulan – the conference hall

Malmö City Hall

Symposium Venue

23–24 April 2014 at the Jubileumsaulan, Medicinskt forskningscentrum (MFC), Skåne University Hospital at Jan Waldenströms gata 1 in Malmö.

Lunch and coffee

Lunch on April 24 and coffee on 23–24 April are included in the participation cost and will be served outside the Jubileumssalen.

Symposium dinner on 23 april at 7 p.m.

The City of Malmö invites you to the Old City Hall on a symposium dinner. (Included in the conference fee.) Pre-reservation is mandatory and you will need a ticket for the dinner.

Abstracts from the symposium

All congress documents will be handed out to the participants at the desk outside the symposium hall from 12 a.m on Wednesday 23 April, 2014.

Press Conference

Wednesday 23 April at 12–12.50. For more information please contact Björn Martinsson, bjorn.martinsson@med.lu.se

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Elia Psouni, Department of Psychology

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Symposium website

http://www.sls.se/lifecycles

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Speakers abstracts

The changing reproductive life of humans
From new reproductive technologies to new reproductive relationships

Jenny Gunnarsson Payne, Södertörn University, Stockholm

In June 2012, the International Committee Monitoring Assisted Reproductive Technologies (ICMART) reported that it is now esitimated that as many as 5 million children have been born in the world thanks to assisted reproductive technologies. In relation to the publication of these results, Dr. Richard Kennedy, general secretary of the International Federation of Fertility Societies, was quoted to have called this a "great medical success story", and reminding us that "The number of babies born through ART is now about the same as the population of a US state such as Colorado, or a country such as Lebanon or Ireland". Although the sheer quantity of people that have been born as a result of IVF-technology is in itself impressive, this presentation takes its starting point in the question raised by Cambridge anthropologist Sarah Franklin, namely: what else does it mean that we today live in an era "after IVF"? One thing that it certainly means is that in the age "after IVF", sexuality and reproduction are becoming increasingly dis-connected from one another. The fact that fertilization can now take place outside of the female body has afforded not only a variety of ways to include more than two "reproductive parties" in the reproductive process, but has also made possible a radical upheaval of both the temporal and the spatial aspects of reproduction: today, it is technologically possible to extend the reproductive life span by applying procedures such as gamete donation and cryopreservation; and to conceive a child, reproductive parties no longer needs to be located in the same place at the time of conception. Moreover, for the first time in human history, it is possible to distinguish not only between "social" and "biological" motherhood, but also between various modalities of biological motherhood, such as genetic motherhood, gestational motherhood, and, some would argue, even mitochondrial motherhood. Such thoroughgoing transformations have significance that go far beyond "the great medical success story" that is IVF – indeed, this transformation is also a cultural transformation. This presentation, shall introduce what can be considered the most prevalent cultural changes that have occurred as a consequence of these new technologies, and discuss how this has changed the ways in which it is today possible not only to treat infertility and create new families, but also the ways in which it is now possible to create, understand and practice biological kinship relationships.

New possibilities for childbearing

Nils-Eric Sahlin, Department of Medical Ethics, Lund University

The lecture will focus on new methods and techniques in reproduction medicine. For example uterus transplantation, artificial germ cells, mitochondrial transfer, analysis of fetal DNA in maternal blood. Some risks and benefits, pros and cons, will be identified and the ethical problems outlined and discussed.

Families in transition – Society in transition
New families and HBTQ

Ingela Steij Stålbrand, Department of Psychology, Lund University

Changes in legislation related to a multitude of possible family relationships, and advances in reproduction using medical technology, leads to "new" groups becoming more visible within society as a whole and particularly in health care settings. This calls for a raised awareness of different conditions, in order to prevent ill treatment and discrimination. Ingela Steij Stålbrand gives an overview of the situation from an LGBT perspective. Examples of questions to be discussed include: How is the situation for different groups and individuals? What do we know and where are the knowledge gaps? Which are the norms that guide us and influence our thoughts, feelings and behaviors? How we can work with a more inclusive approach within the health care sector?

Late reproduction: Demographic perspective

Tomáš Sobotka, Vienna Institute of Demography, Austria

I combine demographic, medical and survey data to give a current perspective on late reproduction, focusing especially on European countries. Across Europe, there is remarkable stability in reproductive preferences and an ideal of a two-child family strongly dominates. However, the plans for having children are increasingly shifted to higher childbearing ages, which may become a limiting factor for realising them. Ever more women and men remain childless into their late 30s and surveys indicate that an increasing number of them consider having children in the future. The widening gap between biologically optimal age for childbearing and the age when many couples plan to realise their plans fuels debates about the dangers of postponing parenthood, which are increasingly common in medical literature. However, the decision to postpone reproduction is strongly supported by reliable contraception, expanded education, strong labour market involvement of both men and women, high economic uncertainty at younger ages, and in many countries also family policies and a prolonged co-residence of young adults with parents. For many prospective parents who delay childbearing assisted reproduction features as a potential solution to their age-related infertility. I show the mixed picture of an increasing relevance of assisted reproduction for late reproduction combined with its inability to help fulfilling childbearing desires among a high share of late-to-be-parents. More data and research are needed to get better evidence on the strategies couples pursue when planning children at higher ages, their motivations, successes and failures, and, more broadly, the impact of postponing parenthood on involuntary childlessness and fertility rates.

Short bio sketch

Tomáš Sobotka is research group leader ("Comparative European Demography") at the Vienna Institute of Demography, Austrian Academy of Sciences and the Wittgenstein Centre for Demography and Human Global Capital. Currently he leads an ERC-funded project analysing fertility and reproduction in Europe in the early 21st century (EURREP, www.eurrep.org). He holds a PhD in demography from the University of Groningen, the Netherlands. His research focuses on fertility in low-fertility settings, fertility data and measurement, population and family change in Europe and assisted reproduction. Tomáš Sobotka has collaborated extensively with researchers from the fields of population studies, sociology and reproductive medicine. He has helped launching and expanding several data repositories, including the Human Fertility Database (HFD, www.humanfertility.org) and Human Fertility Collection (www.fertilitydata.org).
More details and list of publications are available at
http://www.oeaw.ac.at/vid/staff/staff_tomas_sobotka.shtml

Paternal age at conception and disease risk in offspring

Christina Hultman, Karolinska Institute, Sweden

We are currently investigating the hypothesis that risk of psychiatric disorders in the offspring increases with advancing paternal age and advancing grandparental age. After controlling for parity, maternal age, socioeconomic status, and family history of psychotic disorders, we have found evidence of an association between paternal age and risk of bipolar disorder in the offspring of older fathers. The offspring of men 55 years and older were 1.37 (95% confidence internal [CI], 1.02–1.84) times more likely to be diagnosed as having bipolar disorder than the offspring of men aged 20 to 24 years. The paternal age effect in bipolar disorder might be most evident in patients with an early onset (<20 years; odds ratio, 2.63; 95% CI, 1.19–5.81).

For infantile autism, we have demonstrated a strong monotonic relationship between increasing paternal age and risk of autism in offspring. Pooled results of meta-analysis of multiple large data sources provide substantial evidence consistent with this effect. It has been suggested that parental traits related to the autism phenotype may explain the association between paternal age and autism. Such traits (e.g., shyness) could manifest as reduced ability for social interaction and may result in an older paternal age. A family-based analysis compared paternal age in siblings with and without autism. The observed association between older paternal age and autism within such families suggests that deferred paternity due to genetic autism-related traits is unlikely to explain advancing paternal age effect in autism.

To further explore the link between paternal age and psychiatric disorders we have studied the effect of paternal age in a three generations perspective by linking the population-based Swedish Multi-Generation and the Patient Registers. For schizophrenia and autism, we found that older grandfather age was associated with an increased risk. Men who had fathered a daughter when they were 50 years or older were 1.79 times (95% CI, 1.35–2.37; $P < .001$) more likely to have a grandchild with autism, and men who had fathered a son when they were 50 years or older were 1.67 times (95% CI, 1.35–2.37; $P < .001$) more likely to have a grandchild with autism, compared with men who had fathered children when they were 20 to 24 years old, after controlling for birth year and sex of the child, age of the spouse, family history of psychiatric disorders, highest family educational level, and residential county. We interpret our results as additional support for genetic point mutations supposed to increase in the sperm with increasing paternal age.

Maternal age, health and reproduction

Karin Källén, associate professor
Reproduction epidemiology, Department of obstetrics and gynecology, Clinical Sciences, University of Lund

It is a fact that the mean maternal age at childbirth has increased the past four decades. However, what is more important for reproduction is the proportion of older women giving birth. In Sweden, the proportion of women over 35 years of age when giving birth increased from 6% in 1973 to 22% in 2012. This dramatic increase has important clinical obstetric implications.

Compared to younger women, women giving birth at the age of 35 or more have significantly more obstetric complications. The adjusted Odds Ratio (AOR) for preterm birth (<37 weeks), women 35 years or more versus women below 35 years of age, was 1.17 (95%CI: 1.15–1.19). The corresponding AORs for small for gestational age (SGA) and large for gestational age (LGA) were 1.38 (1.34–1.41) and 1.08 (1.06–1.10), respectively. Stronger associations between maternal age 35 years or more and complication could be seen for low Apgar score (<7 at 5 minutes) (AOR: 1.24; 95%CI: 1.22–1.27), and perinatal death (AOR 1.51; 95%CI 1.44-1.58). Women 35 years or more at delivery also suffered from pre-eclampsia more often than did younger women (AOR: 1.36; 95%CI: 1.33–1.39), and were significantly more often delivered by cesarean section (AOR: 1.89; 95%CI: 1.87–1.91).

Since decades, it is well known that the risk of giving birth to an infant with Down Syndrome (DS) increases with increasing maternal age. The increase increases exponentially, so again, the mean maternal age is of limited interest. What is important is the distribution of maternal age, and especially the proportion of women over 38 years. Without any antenatal screening for DS, the risk for giving birth to a child with DS is about 0.1% for a woman at 30 years of age, approximately 0.6% at 38 years, and nearly 1% at 40 years of age. However, in most Swedish counties, at least women 35 years or more are offered some kind of antenatal screening for DS. Due to the DS screening, the Swedish rate of DS among newborns has remained constant for the past two decades, despite the increasing proportion of women giving birth after 35 years of age.

Despite the increased risks for miscellaneous pregnancy complications, it should be remembered that most infants of older mothers are healthy and all are eagerly awaited. Thus, there is no need for any scaremongering. There are many factors to consider for couples when deciding when to start a family, and even if the trend of increasing maternal ages could slow down, the high proportion of women 35 years or more when giving birth is probably here to stay. It is, however, important to inform politicians and health authorities about the clinical implications, so that the obstetric units are well prepared, and could provide adequate obstetric care for the current population of pregnant women.

Where are we now and where are we heading?

Kersti Lundin
Reproductive Medicine, Sahlgrenska University Hospital, Göteborg, Sweden

In 2010 the Nobel Prize given to professor Robert Edwards and the focus was directed to the field of human Reproductive Medicine. This was 32 years after the birth of Louise Brown, the "test-tube baby" that was the result of many years of basic and clinical research.
Reproductive Medicine is still developing rapidly. Having started with in vitro fertilisation for women with fallopian tube defects and using a good quality sperm samples, it has now grown to involve using sperm from the testis, optimised and personalised stimulation schemes, egg and sperm donated from third party donors, "glue" to make the embryos adhere to the endometrium, continuous filming of embryos, embryo selection by delicate timing algorithms and genetic screening, and even borrowing another woman's womb to carry the baby.
The methods used for assisted reproduction have also spred to other areas, such as the cryopreservation of oocytes for non-medical ("social") reasons, fertility preservation and for the development of embryonic stem cells.

We are continuously optimising our performance and increasing our success rates, both in the handling of the patient and of the gametes and embryos. This has lead to transfer fewer embryos, with the same birth rates as before, resulting in considerably lowered multiple birth rates and healthier children. There is always progress to be made however, and current research is among other things looking at ways of improving the endometrial receptivity, and to find factors in the culture medium to optimise the selection of embryos. Also, the embryo culture is becoming more automated, with closed culture being performed in time-lapse incubators, and microfluidic platforms where the culture medium is automatically exchanged, being developed.

Transgenerational epidemiology

Peter M Nilsson, Dept. Clinical Sciences, Lund University, Skåne University Hospital, Malmö, Sweden, contact: peter.nilsson@med.lu.se

A number of disease conditions and quantitate traits tend to cluster in families, for example hypertension, obesity, cardiovascular disease and type 2 diabetes. This is an indication of hereditary traits linked to genetic factors, but also to shared environment and lifestyle – all aspects included within a positive family history of disease, often asked for during clinical consultations. At the same time modern epidemiology has found a missing heritability due to the inability of known genetic markers to explain more than a tiny proportion of the family clustering of disease risk or prediction of disease. This has for example been shown for type 2 diabetes, when a full score of genetic risk markers is only able to explain a minor proportion of the risk to develop new-onset type 2 diabetes.

This is why there is a need to do more family studies, also in a transgenerational perspective, in order to find out more about complex family traits of disease. One of the most well-known epidemiological studies in the world, the Framingham Heart Study (FHS), has included the screening of offspring to index subjects first screened in the late 1940´ies. The children (second generation) started to undergo screening in the 1970´ies and grand-children (third generation) in the 2000´ies. Most reports from this Framingham Offspring Study (FOS) has, however, been based on repeated measurements of risk conditions within one generation [1], but far less between generations due to the very limited number of phenotypic variables in the first generation. This is why there is a need of true transgenerational studies. These can be based on register linkage analyses, as for example in Sweden by use of the Multi-Generation Register encompassing several generations of Swedes born after 1932 [2]. The problem in national register studies is however the lack of individual data on risk factors, lifestyle and genetic markers. This is why more recently a number of family studies have been started across Europe. In the Netherlands there are the LifeLines Study in Groningen [3] and the Rotterdam Study in the Elderly in Rotterdam. In Iceland there is the Reykjavik Heart Study-AGES, and in the UK similar studies are planned for within the UK Biobank consortium. In Sweden, we have the Uppsala Family Study and more recently the Malmö Offspring Study (MOS) that started in March 2013 (www.med.lu.se/mos). In MOS, children and grand-children to index subjects in the Malmö Diet Cancer cohort, first examined 1992-1996, are now invited for physical examination, advanced phenotyping and collection of blood samples for advanced genotyping and omics. A new aspect is to include the examination of the gut microbiome by applying genetic screening for gut bacteria strains if feces samples. This information will be combined with data from a 4-day dietary recording to quantify the dietary intake in relation to host genetics and the gut microbiota pattern. The gut bacteria diversity has been linked to immune function, obesity and glucose metabolism. We hypothesize that similar patterns of microbiota will be shared within families due to environmental

factors (diet, lifestyle) as well shared genetic factors. The study is ongoing and data from the first year pilot study are expected. MOS is funded by the Swedish Research Council for five years and will hopefully bring new understanding of transgenerational effects in risk epidemiology.
A similar approach is applied in a new Danish study ("Next Generation"), about to start later in 2014.
In summary, there is a need to explore family studies in a transgenerational perspective to define and quantify factors that might contribute to explain the so called missing heritability of some specific chronic disease conditions. Register data alone are not enough, we need individual data to combine advance phenotyping and technical imaging with next generation genomics and other omics. The application of methods to study the oral and gut microbiome has the potential to bring new and deeper understanding of processes contributing to the cluster of common disorders within families at risk.

References:

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3. Stolk RP, Rosmalen JG, Postma DS, et al. Universal risk factors for multifactorial diseases: LifeLines: a three-generation population-based study. Eur J Epidemiol. 2008;23:67–74.

Early Life Conditions and Sickness Absence During Adulthood – A Longitudinal Study of 9,000 Siblings in Sweden

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This study examines the influence of health conditions experienced during the individual's first year of life on the incidence of sickness absence during adulthood. Using a sample of close to 9,000 biological siblings from 17 countries of origin and living in Sweden during the time period 1981–1991, sibling fixed effect models are estimated. This approach is combined with the use of an exogenous measurement of early life conditions, operationalized as the infant mortality rate. The link between early life conditions and later life outcomes is examined both with and without intermediary characteristics observed during the individual's childhood and adulthood, aiming for a better understanding regarding to what extent the effect of exposure to an early life insult can be mediated. The results suggest that exposure to worse health conditions during the first year of life is associated with an elevated risk of experiencing sickness absence during adulthood. An increase in infant mortality rate by ten per thousand is associated with a four percentage point higher probability of experiencing sickness absence. Despite the importance of adulthood socioeconomic status on sickness absence propensity, these factors do not mediate the influence from the health conditions experienced during the first year of life, suggesting that the association from early life conditions on sickness absence in adulthood operates as a direct mechanism. The link between early life conditions and sickness absence is only present for children to parents with primary schooling and not for individuals with more educated parents. These findings suggest that families with more abundant resources have the ability to protect their child from exposure to adverse health conditions during early life, or to cancel out the influence from an early life insult.

Early life programming of adult health

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Epidemiological and register-based studies from Sweden and other Nordic countries have made substantial contributions to the body of evidence on early life origins of psychiatric disease, cancer and circulatory disease in particular. Less is known about how the fundamental biological processes operate across generations, and how they interact with social and economic characteristics throughout the life course to influence later life conditions.

The 'developmental origins of disease' phenomenon suggests that a mismatch between fetal expectation of its postnatal environment and actual postnatal environment contribute to later adult disease risk and that the processes whereby environmental influences act during early development to shape disease risk in later life can have effects beyond a single generation. This may include non-genomic, epigenetic mechanisms involving regulation of either imprinted or non-imprinted genes as well as broader mechanisms related to parental physiology or behaviour.

The concept of developmental origins of disease has major biological, medical, and social implications. Two models have been proposed to explain the persistence of health inequalities in high income countries with extensive welfare arrangements. 'Social causation' models emphasize how social inequalities in early life can generate health inequalities later on while 'social selection' models emphasize the ways in which people may be socially mobile (or stable) partially on the basis of health-relevant characteristics. These characteristics can include health status itself ('direct health selection') or health determinants such as cognitive ability ('indirect health selection'). Social causation and social selection models both draw on a life course perspective and emphasize how early circumstances and exposures can shape later outcomes. Although often presented as alternatives, the two processes are in fact both likely to operate simultaneously to some extent.

Furthermore, there is growing evidence that early life biological and social characteristics can interact, such that the negative impact of biological risks (e.g. preterm birth upon lower cognitive ability) can be mitigated by a positive social environment (e.g. high parental education). These interactions illustrate that 'biology is not destiny', and highlight particularly important targets for health equity interventions (e.g. enriching the early educational environment of children from disadvantaged backgrounds).

Perinatal Risk Factors and Later Health

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There is increasing evidence that the early life environment sets the capacity of cardiovascular and metabolic pathways, and ultimately the limits to physiological challenges in later life. But what are the mechanisms and are they modifiable? Much research has focused on early adverse exposures such as under- or malnutrition, vitamin/micronutrient deficiency and drug exposure in fetal life, and cardiovascular and metabolic outcomes in infants, children and adults.

There has also been an increasing attention on preterm birth. Although mortality after preterm birth was high until a few decades ago, advances in perinatal medicine have resulted in almost universal survival, so the concept of prematurity nowadays is shifting from a pregnancy complication to a common developmental basis for a whole new generation of young adults. Although this progress is very welcome for women delivering preterm, their infants, and their families, there is an increasing concern because preterm birth has been identified as an emerging risk factor for arterial hypertension, diabetes and cardiovascular disease in later life.

Finally, we have started to examine the relation between the mode of delivery and activation of the immune system in the offspring. Recent epidemiological studies provide evidence that elective Cesarean section (CS) is associated with aberrant short-term immune responses in the newborn infant, and a greater risk of developing immune diseases such as asthma, allergies, type 1 diabetes, and celiac disease. However, it is still unknown whether CS causes a long-term effect on the immune system of the offspring that contributes to compromised immune health. With the dramatic increase in the rate of CS today, a greater emphasis should be placed on the discussion among both professionals and childbearing women on potential consequences of CS on the health of the offspring.

Parent-child interactions, emotion regulation and coping with health adversity

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Child chronic illness may cause deep, long-lasting crisis in affected families. Long-term influences on psychosocial wellbeing and further development are frequent, with behavioral and emotional problems threatening not only affected children's but also siblings' and parents' mental health. It is thus important to identify qualities that promote good adjustment and psychosocial wellbeing of both the affected children and their siblings and parents. Crucially, children's ability to manage emotions and adjust in times of difficulty is affected by the developmental environments they grow into and an important factor shaping these environments is the ways in which family members interact with each other. How parents react to their children's various emotions from the very beginning, parents' own emotion regulation strategies, as well as the emotional climate in the home, are known to affect these interactions. We also know that children benefit from parents' accepting and acknowledging their feelings and actively guiding and supporting their efforts to manage difficult feelings in an appropriate manner. But how do the child's thoughts and feelings about her/his relationship with the parent influence the interaction between child and parent? Although research highlights the importance of studying the interaction between family and child characteristics, little is known about how characteristics of the child moderate the relationship between parent-child interaction and children's capacity for emotion self-regulation.

Using a novel methodological approach that combines clinical, qualitative and quantitative measures, our studies aim at providing a deeper understanding of how parent-child interactions affect children's development of emotional self-regulation, socio-emotional adjustment and mental health. Reciprocal effects between parent and child have previously been almost completely overlooked. This is why we focus simultaneously on both the parent's and child's point of view, highlighting elements in the two parts' interaction that might organize feelings and behaviors in the common relationship and exploring how these elements affect the child's capacity to regulate difficult feelings and cope with health adversity. Such studies are scarce, particularly in situations where parenthood develops under stress, such as in the case of families experiencing child chronic illness. Crucially, we also try to address how mechanisms for good adjustment of the family vary depending on time of onset of the child illness/disability, for example comparing onset in the fetus or neonate to an onset later in life.

Does increased life expectancy justify postponing menopause in women?

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In contrast to freezing oocytes and embryos for fertility preservation, cryopreservation of ovarian tissue maintains the follicle as an intact unit. The follicle comprise the functional unit of the ovary, which upon transplantation has the capacity to restore the ovarian organ function in the sense that both endogenous hormone production and release of mature oocytes will take place. Thus, a woman having entered menopause who receive transplantation of frozen/thawed ovarian tissue will most likely experience menstrual cycles and regain fertility. Although the tissue may not work for extended periods of time, follicles will develop to the preovulatory stage, support oestradiol production and a functioning corpora luteum will produce progesterone during the luteal phase. A single preovulatory follicle per month is therefore in essence undertaking the organ function of the ovary, which is reflected by the fact that almost 90 % of the body's oestradiol during the preovulatory phase is produced by the dominant follicle. In the ageing ovary the fertility potential and the potential for producing sex hormones to some extent become dissociated. The hormone production is maintained relatively unchanged compared to younger years (i.e. the menstrual cycle levels of oestradiol and progesterone remain almost similar), whereas women in the forties experience reduced fertility probably reflecting aged oocytes.

A similar picture is observed in women who entered menopause and have frozen/thawed ovarian tissue transplanted. Despite quite regular menstrual cycles that restore the normal hormonal balance, they express a relatively low ovarian reserve with low levels of AMH and often, depending on age, they experience an attenuated pregnancy potential. However, the functional lifespan of transplanted frozen/thawed ovarian tissue is surprisingly long, often it is beyond five years with just a fraction of one ovary transplanted and there are examples of women who maintain regular menstrual periods for almost 10 years. Normal women may therefore be able to expand the hormonal cycle and their reproductive life by transplanting cortex pieces that were frozen when she was young.

Cortical tissue from one ovary is usually separated into around 25 pieces and frozen in individual ampoules. Since follicular recruitment in each of these 25 pieces of ovarian cortex appears to occur in a sequential fashion as in an intact ovary, an effective method for expanding the period of having endogenous hormone production may be at hand. Most importantly, ovarian tissue will start to work in most places of the body and can even be transplanted subcutaneously during local anaesthesia.

This possibility may become interesting in the future, because half of girls born in western countries nowadays are estimated to have life expectancy of more than 100 years. Many women will therefore in the future be without

menstrual cycles for around half of their lives. Some women may wish to prevent some of the sequelae that menopause induce and avoid the common risk of suffering from side-effects enforced by menopause, like osteoporosis and cardiovascular diseases, despite a prolonged period of menstrual cycles may slightly enhance the risk of breast cancer.
Therefore, women may in the future, without compromising their natural fertility, be able to prolong the period in which they experience circulating levels of sex steroids by having small pieces of frozen/thawed ovarian tissue transplanted, one by one, to augment utilisation of the huge pool of ovarian follicles that normally undergo degeneration. Although many women will not want to continue having menstrual cycles beyond the natural menopause this new technique may be viewed as female anti-ageing.

Modern aspects of Polycystic Ovarian Syndrome

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Polycystic ovary syndrome (PCOS) is the most common cause of anovulatory infertility, and also carries a greater risk of long-term health problems, notably type 2 diabetes. The increasing prevalence of obesity in the general population has an additional negative impact on both reproductive and metabolic consequences of PCOS. The aetiology of PCOS remains unclear but there is compelling evidence for a major genetic contribution to the syndrome. This may appear paradoxical given that one would have expected an inherited cause of infertility to result in a dwindling population of women with PCOS. The answer to this paradox may lie in the study of PCOS in the general population, in which a wider spectrum of presentation of women with symptoms of PCOS can be observed compared with the selected population that typically presents in endocrine or fertility clinics. Such studies show that although there may be a delay in conceiving, overall family size is only mildly compromised. Nevertheless, PCOS remains the single most important cause of anovulatory infertility, being the major cause of delay in conception in more than 80% of cases (and at least 20% of infertile couples overall). The mechanism of anovulation has not been fully elucidated but appears to involve both intrinsic and endocrine factors which contribute to disordered follicle development.

Developmental origins of adult disease – today's findings and future directions

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The global burden of non-communicable diseases and mental disorders is rapidly increasing. Much of the risk of these disorders is not explained by traditional risk factors and thus remains outside the scope of etiologically based prevention. The concept of Developmental Origins of Health and Disease (DOHaD) proposes that early life environmental adversities, e.g. materno-fetal metabolic disturbances and psychosocial stress, may, in part through changes in epigenomic patterns and gene expression, alter tissue and organ function, resulting in phenotypic differences.

Previous work, capitalizing on several large birth cohorts globally supports the DOHaD concept. While findings from these studies have been of utmost importance in underlining that many common diseases including cardio-vascular disease, type 2 diabetes and depression, have early life origins, a consensus within the DOHaD-field is that further epidemiological studies and follow-ups of the existing cohorts will not be sufficient to advance our understanding of disease etiology and to develop novel ways to prevent disease.

Animal data suggest that early programming can be reversed through reprogramming during a plastic phase of development. To move towards this goal in humans, we need to focus on major prevalent early life exposures and underlying mechanisms. The induction of reprogramming can probably be achieved by lifestyle interventions during pregnancy. This would augment healthy development across the lifespan in individuals at risk. The DOHaD concept may provide a base to understand disease etiology and prevention better.

Poster abstracts

Exposure to polychlorinated compounds and cryptorchidism; a nested case-control study

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Background
Cryptorchidism (undescended testes) is a common genital birth defect that affects 2–9% of all male new-borns. Over the last 40 years there have been reports of increased prevalence in some countries, for example the USA, the UK and the Scandinavian countries. This increase has in some studies been linked to fetal exposure to endocrine disrupters (EDC) whereas others have not seen this connection. In this study we analysed maternal serum samples for three different EDCs to investigate their effect on the risk for chryptorchidism in the offspring.

Method
Maternal serum samples taken during the first trimester of pregnancy from 186 cases (boys borne with cryptorchidism) and equally many controls matched for maternal age, birth year, parity and maternal smoking habits were retrieved from the Southern Sweden Maternity Biobank. The samples were analysed for 2,2',4,4',5,5'-hexachlorobiphenyl (PCB-153), p,p'-DDE and hexanochlorobenzene (HCB) using gas chromatography mass spectrometry.

Results
Wilcoxon signed-rank test gave a p-value of 0.714 for PCB-153, 0.514 for p,p'-DDE and 0.443 for HCB. The analysis results were also divided into quartiles based on the levels among the controls and odds ratios (OR) were calculated with logistic regression. ORs varied from 0.92 to 1.22 for PCB-153, from 1.22 to 1.52 for p,p'-DDE and from 0.74 to 1.02 for HCB, and no OR was statistically significant.

Discussion
We did not find any effect of maternal serum levels of PCB-153, p,p'-DDE or HCB during the first trimester of pregnancy on the risk for cryptorchidism in the offspring.

Fetal exposure to diethylhexyl- and diisononyl phthalate and human male reproductive function

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Background
Pthalate exposure during pregnancy is suggested to disturb male reproductive function, but human data are lacking.

Objectives
To study associations between prenatal exposure to diethylhexyl phthalate (DEHP) and diisononyl phthalate (DiNP), and young men's reproductive parameters.

Methods
Using regression models adjusted for abstinence time, maternal and paternal smoking, we studied associations between secondary DEHP/DiNP metabolites in maternal sera from pregnancy, and testicular size, semen quality and reproductive hormones of 112 men, 17-20 years old, from the general population.

Results
Men in the highest mono-4-methyl-7-carboxyheptyl phthalate (a DiNP metabolite) tertile, compared with those in the lowest, had 4.3 mL (95% CI: 0.89, 7.6 mL; $p = 0.014$) lower testicular volume, 30% (95%CI: 3.6, 63%; $p = 0.024$) higher follicle-stimulating hormone and 0.87 mL (95% CI: 0.28, 1.5 mL; $p = 0.004$) lower semen volume. Those in the highest mono-2-ethyl-5-hydroxylhexyl phthalate (a DEHP metabolite) tertile had 0.70 mL (95% CI: 0.090, 1.3 mL; $p = 0.025$) lower semen volume. Two DiNP metabolites had linear associations with luteinizing hormone ($p < 0.01$).

Conclusion
Prenatal phthalate exposure was negatively associated with semen volume and testicle size, and positively associated with follicle-stimulating- and luteinizing hormone.

Polymorphisms in the androgen receptor affect PSA levels

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Introduction

The androgen receptor (AR) mediates the effects of androgens by acting as a ligand-dependent transcription factor. It activates transcription of KLK3, which encodes for prostate specific antigen (PSA). Exon 1 of the AR gene (AR) holds two microsatellites (the CAG and GGN repeats) and a synonymous SNP, E211G>A (rs6152). The aim was to investigate if AR-haplotypes, consisting of rs6152 and 4 intronic SNPs as well as the CAG repeat, affect the risk of having PSA concentrations above clinically used cut-off limits.

Methods

Men without prostate cancer (PCa) history (n=1716) were selected from the population based EMAS, including 40-80 years old men from 8 different European centers, that had been genotyped for the 6 variants. Their haplotypes were constructed and worldwide haplotype frequencies were deduced by using data from "1000 genomes". Differences in CAG distribution was calculated using the Mann-Whitney U-test. Binary logistic regression was used to determine the odds ratio (OR) and 95% confidence interval (95%CI) for having a serum PSA concentration above 3 or 4ng/mL with age and center as covariates.

Results

Two haplotypes were found in EMAS, H1 and H2, present in 87% and 13% of the men, respectively. Men with H2 had significantly shorter CAG repeats than men with H1 (mean 20 vs. 23, $p<0.0005$) and were more likely to have a PSA value above 3, OR (95%CI):1.66 (1.11–2.49) and 4 ng/mL OR (95%CI): 1.96 (1.19–3.23). Carriers of <22 CAG were, however, not more likely than carriers of 22+ CAG to present with a PSA value above 3 ($p=0.265$) or 4 ($p=0.595$) ng/mL. In "1000 genomes", H1 and H2 frequencies in the European population resembled those in EMAS, while H1 was the only haplotype present in Asia. H2 was the most common haplotype in Africa.

Conclusion

Men with no reported PCa who are carriers of H1 were less likely to have a PSA above the clinical cut-off levels than carriers of H2. This information may prove valuable in PSA screening procedures.

Interactions between polymorphisms in the aryl hydrocarbon receptor signalling pathway and exposure to persistent organochlorine pollutants affect human semen quality

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Persistent organochlorine pollutants belong to a group of endocrine disruptors that have been suggested to affect male reproduction. Many dioxin-like organochlorines exert their effects by activation of the aryl hydrocarbon receptor (AHR) signalling pathway. We analysed whether single nucleotide polymorphisms (SNPs) in genes encoding AHR (AHR R554K) and AHR repressor (AHRR P185A) are associated with 21 parameters of male reproductive function, including sex hormone levels, semen quality, and markers of prostatic, epididymal, and accessory sex gland function, in 581 proven fertile men from Greenland, Poland and Ukraine. Additionally, we analysed gene-environment interactions between these SNPs and serum levels of 1,1-bis-(4-chlorophenyl)-2,2-dichloroethene (p,p'-DDE) and 2,2′,4,4′,5,5′-hexachlorobiphenyl (CB-153).
In the total cohort, interactions between variants in AHRR P185A and serum levels of CB-153 were significantly associated with two independent markers

of sperm chromatin integrity as well as the proportion of sperm expressing the pro-apoptotic marker protein Fas. In Greenlandic men, the minor AHR R554K allele was significantly associated with lower inhibin B levels. In these men, serum levels of inhibin B, sperm chromatin integrity, and seminal zinc levels were significantly associated with interactions between AHR R554K variants and serum levels of both p,p'-DDE and CB-153.
The data indicate that susceptibility to adverse effects associated with POP exposure on male reproductive health is dependent on polymorphisms in genes involved in AHR signalling and confirms the importance of the role played by AHR signalling in mediating the endocrine-disrupting effects of dioxin-like organochlorines on male reproductive function.

Non-help-seeking amongst women with postpartum depression (PPD)

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Background and aims: Postpartum depression (PPD) affects about 13% of all women giving birth. According to DSM-V, symptoms include depressed mood, loss of interest in pleasure, diminished ability to focus, energy loss, feelings of worthlessness and reoccurring thoughts of death. Research shows that many women are in addition tormented by guilt and shame for not fulfilling the expected role of a "good" mother. PPD is also known to have a farreaching negative impact on the mother-infant bonding, the continued development of the child and on the family as a whole. Sweden has one the most advanced plans for PPD screening and treatment. Yet, many women suffering PPD, worldwide and in Sweden, do not seek help for dealing with PPD. Importantly, non-help-seeking in relation to PPD has been shown to sustain the disorder, while professional help provides relief in depressive symptoms. It is therefore essential that the reasons why high numbers of women still do not seek, and consequently do not receive, help, are better understood so that this knowledge can be immediately applied in clinical practice.

Insecure attachment has been pointed out as one contributing factor in the development and maintenance of PPD. Early attachment experiences are internalized into working models for how other people will respond in terms of availability and trustworthiness. Thus, these attachment working models influence willingness to communicate symptoms and seek help. Insecurely attached mothers have been shown to be more likely to develop and sustain PPD. Particularly anxiously and fearfully attached mothers are significantly more likely to suffer from PPD than those with avoidant or secure attachment patterns. At the same time, research shows that insecurely attached individuals are generally less likely to seek help for mental health problems. Whether this also applies to non-help-seeking in women suffering from PPD is unknown, as most previous research has focused on women who either screened positively or sought help for PPD. The purpose of the present study was thus to assess if and how different insecure attachment features contribute to non-help-seeking patterns in women suffering from PPD.

Methods and materials: Women who had suffered, or were currently suffering from PPD (N=37), but who had not sought or received help, participated. Participants from all over Sweden were recruited. Attachment features were assessed by a narrative based method, the Attachment Script Assessment (ASA: Waters & Rodrigues-Doolabh, 2004) and a self-report questionnaire (ASQ: Feeney, Noller & Hanrahan, 1994). Non Help-seeking was assessed using a self-report questionnaire developed for the purposes of the current study. Women were also interviewed on reasons behind non-help-seeking as well as thoughts and feelings about sharing their difficulties.

Results and Discussion: Participants had a depression (EPDS: Cox, Holden & Sagovsky, 1987) mean score of 19.7, clearly indicating clinical post-partum depression. The mean age of the mothers was 32.5 years and 73% were primiparous. Results show that implicit attachment features, as determined by ASA, were significantly associated with severity of depression and reasons for non-help-seeking pertaining to "motherhood myths" (e.g. I didn't want to be seen as a 'bad mother'). On the other hand, explicit relational strategies, particularly avoidance of closeness, were associated with lack of trust as main reason for non-help-seeking (e.g. I don't trust that anyone really wants to help me). These results contribute essential knowledge on how implicit and explicit attachment features, respectively, influence women's willingness to be open about and seek professional help when suffering PPD. This information is essential for how to encourage more women to seek, and therefore receive, the help they need for dealing with this devastating disorder.

Early Childhood Health Promotion In Childcare Center: An integrative Review

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Early childhood is a very important period of life. Today almost of preschool child were taken care in child care center. Thus, child health promotion in childcare center should be explored. The purpose of integrative review was to synthesize and critically analyze child health promotion in childcare center through a systematic review.

Qualitative integrative review of studies about child health promotion in childcare center 2001–2011. Studies were systematically searching using varieties databases from both hand searching and internet. Data were organized and analyzed with a sample of 58 studies were explanatory research, descriptive research, experimental research, qualitative research, action research& participatory action research, mix method. The studied were in various issues including child health status, implications, role of key persons and factors related to child health promotion.

The majority of children were healthy but some of them were malnutrition and development delayed. Health problems were demonstrated including: dental caries, upper respiratory tract infection, intestinal infection, accident, stress and anxiety. Health promotion program for children including: promotion of nutrition and development, diseases prevention, dental care, accident prevention. Child care providers, parents, and childcare organizing committees were the key persons in child health promotion. Health promotion practice in child care center were growth and development promotion, diseases prevention and accident prevention. The strategies to promote early childhood health promotion were health education, training, caring, counseling, home visit and storytelling. Theory and concepts were used in child health promotion were following; Participation, Self efficacy, Local wisdoms, Brain based learning, Integrated bio psychosocial, massage, social support, Thorndike-learning theory, AIC (Appreciation influence control), PDCA (planning, doing, checking, acting), Economic sufficient and traditional care and traditional medicine.

In conclusion, the majority of studies on child health promotion has been focus on childcare provider and parents and described their perceptions of child health promotion. There is less research about the role of health personnel and innovation in child health promotion. Further research is required to examine the child health promotion by triangulation method and innovation in child health promotion by health personnel.

Key words: Childcare Center, early childhood, health promotion, integrative review

Educational mobility and obesity in three generations of Swedish men and women

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The purpose of this study was to investigate the impact of parental educational mobility on their adult offspring's risk of overweight/obesity (OWOB). Data was from the Uppsala Birth Cohort Multigenerational Study, based on a representative cohort born in 1915–1929 at the Uppsala University Hospital, Sweden (generation 1; G1). Our analytical sample included 5,122 women and 11,204 men who were grandchildren of G1 (G3) and with available anthropometric data. G3's OWOB (BMI≥25 Kg/m2) was based on self-reported, pre-pregnancy weight and height for women before their first birth (age 26.5 ± 4.4 years), and measured weight and height at conscription for men (age 18.2± 0.4 years). G1's, G2's, and G3's highest educational attainment was obtained from registries and classified into low, intermediate, or high based on corresponding sample distributions. Parental (G2) educational mobility was defined as change in education between their own and their highest educated parent (G1), classified into 5 categories: always advantaged (AA), upwardly mobile (UM), stable–intermediate (SI), downwardly mobile (DM), and always disadvantaged (AD). In most study subjects, educational attainment was available for both of G3's parents but for only one set of grandparents; therefore, mobility was assessed either through the paternal or the maternal lineage. We used hierarchical gender-stratified logistic regression models adjusted for G3's age, education, year of BMI collection, and lineage (paternal vs. maternal) and G2's year of birth and standardized disposable income.

Both men and women whose parents belonged to the UM (OR^{men}=1.4, 95%CI=1.2-1.7; OR^{women}=1.5, 95%CI=1.2-1.9), SI (OR^{men}=1.7, 95%CI=1.4-2.1; OR^{women}=1.7, 95%CI=1.3-2.2), DM (OR^{men}=1.5, 95%CI=1.2-1.8; OR^{women}=1.8, 95%CI=1.4-2.4), and AD (OR^{men}=2.0, 95%CI=1.6-2.5; OR^{women}=2.0, 95%CI=1.6-2.7) groups had statistically significantly higher odds of OWOB when compared to men and women whose parents belonged to the AA group, after adjusting for G3's age, year of BMI collection/measurement, lineage, and G2's year of birth. Adding G2's disposable income to the models attenuated these associations but all remained significant. Further adjusting for G3's own education further attenuated these associations and odds of OWOB in men whose parents belonged to the DM group were no longer significantly different from those whose parents belonged to the AA group; for women, associations lost significance for comparisons of the UM and the SI groups against the AA.

In conclusion, socioeconomic inequalities can have long-term consequences and impact the health of future generations. For OWOB in young cohorts, this inequality is not fully offset by upward educational mobility in their

parent's generation. Only part of the observed associations were explained through parental material resources and own attained education, suggesting that mechanisms underlying the intergenerational transfer of social inequality in health may include attitudes towards health that influence dietary and physical activity patterns early in life.

Development of Clinical Practice Guidelines for Healthcare Professional Supporting Women with Perinatal Loss

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Perinatal loss is situational crisis for both women and healthcare personals worldwide including Thailand. Perinatal loss is not only loss of a loved one through death but also symbolic loss of healthy women and good mothers. Culturally sensitive and compassionate are core competency of healthcare personals supporting women with perinatal loss to overcome this situation. This study aimed to develop the clinical practice guideline for health personals to care of women with perinatal loss. Participatory action research was employed as study approach. The clinical practice guideline (CPG) was developed by the researchers and 12 multidisciplinary healthcare personals. The process composed of four phases. Phase 1: health situational analysis at gynecological ward as plan process was conducted by researcher and healthcare team. Phase 2: the healthcare personals workshop and brainstorming were scheduled to develop and critique the draft of CPG as do process. Phase 3: CPG validation and pilot study were performed. The CPG was validated by five healthcare experts and content validity index was 1. The CPG was pilot implemented with perinatal lost women performing by 7 midwives and 5 obstetricians. The phase 4: research to practice was applied. The CPG was public pronounced by head of department and employed as routine care. The researchers involved all the process of study as facilitator. The study conducted at Mahasarakam provincial hospital, Thailand during the November 2011 to November 2012.

The results of the study were displayed as clinical practice guideline and healthcare personal compliance and satisfaction with the CPG. The CPG represented as 1) the guideline for healthcare personals supporting women with perinatal loss, 2) culturally sensitive care for women with perinatal loss as healthcare personals manual guide, 3) self-care practice manual for perinatal lost women, 4) perinatal grief assessment tool, 5) perinatal lost women's need assessment tool, and 6) baby symbol card for the women and families. One month after utilizing the CPG, 12 healthcare personals were compliance with the guideline and 90% of them were satisfaction of this with high level.

The recommendation is that the clinical practice guideline should be implemented for all women with perinatal loss from initial admission through discharge. The effect of this guideline on women adaptation to perinatal loss and grief should be further studied.

Reproductive epidemiology using a national database: WomMed

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Registers describing reproductive epidemiology provide knowledge about reproductive outcomes and, if linked to outcome registers, also on long-term health consequences for both mothers and their offspring. In using larger databases connecting these data, there is a hope to find the risk markers or risk factor patterns of importance for preventive action, for example supporting reproductive health. In Sweden, the availability of national health registers of high quality enables researchers to expand reproductive epidemiology. The Multi-Generation Register (MGR) has collected data from index subjects and their first and second degree relatives if index subjects were born in 1932 or thereafter. The data contains information on parents and siblings, including information on parents of adopted children. The register started collecting data in 1947 on persons 15 years or younger and is a national resource as it can be linked to other registers for epidemiological research. National census information has been collected for centuries but in 1938 a new law was enforced and modified in 1969 to include data about type of work, educational level, household income and place of residence, for all Swedish citizens. The Mortality Register started in 1961 and contains information on causes of death, both direct causes and contributing causes from the underlying disease. The In-patient Register for Hospitalizations supplies information on diagnoses and days of hospital care. This register was started in locally in 1964 but became a national register in 1987. The national Medical Birth Register (MBR) was started in 1973 but at that time only contained limited information on mothers and offspring, i.e. birth weight and length as well as gestational age. In 1982 additional information was available for pregnancy control, smoking in pregnancy, and data about fathers.
WomMed is a large database constructed by linking all these registers so that data can be collected and used for epidemiological research. This will enable researchers in reproductive epidemiology to further elucidate on risk factors and complications influencing women´s health, for example small-for-gestational age births [1]. The registers link information on many aspects of reproductive health, ranging from pregnancy complications and childbirth to family economy and structure, individual diagnosis and cause of death during follow-up. We recently carried out a study on parental cardiovascular risk related to number of children, sibling rank and birth sex ratio. This was based on information from approximately 8 million offspring in 3.9 million families, across three generations. A further aim is to examine the secular trends in the shifting birth sex ratio during the 20th century in Sweden.

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Civil unrest linked to intrauterine growth restriction in western Kenya

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Abstract
Risk factors associated with intrauterine growth restriction (IUGR) have previously been identified, but few studies have described the relationship between intrauterine growth restriction and maternal stress caused by exposure to civil unrest. Here, we investigate this relationship during the Mount Elgon crisis in western Kenya between 2006 and 2008, following a period of violence. Birth weight data was compared between three hospitals in an exposed area, Mount Elgon (n=570), and one hospital in a control area, Kimilili (n=530). In a sub-analysis, the most stress-exposed hospital, Bungoma West (n= 211), was compared to the control hospital in Kimilili. Adjustments were made for offspring sex, gestational age and parity. The difference in mean birth weight between the most stress-exposed hospital (Bungoma West) and the control hospital (Kimilili) was 91 g after full adjustment (p=0.041). In conclusion, epidemiological data suggest a significant relationship between exposure to civil unrest and intrauterine growth restriction causing lower birth weight.

The Helsingborg Birth Cohort of 1964–1967 – the study and present plans

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Introduction

Specific components of the intrauterine environment, such as the influence of maternal smoking during pregnancy, have been shown to affect risk factors of cardiovascular disease. To establish effects on adult health and disease long-term studies are needed, and fifty years ago a prospective cohort study was started. The study is presented with present research plans.

Material and methods

Information was collected on all pregnancies diagnosed in the Helsingborg area between February 1, 1964 and January 31, 1967, and ending in a delivery (after gestational week 27) at the Department of Obstetrics and Gynecology at Helsingborg Hospital, a port town with a mixed urban-rural population (78,000 in 1965) in southern Sweden.

At the initial early pregnancy visit, the women were asked to complete a questionnaire, and throughout pregnancy use another one. This, alongside perinatal information on mother and child, was assessed after the delivery before discharge. Examples of data collected with the standards of the time: smoking, medication, preeclampsia, placental weight and appearance, children's asphyxia, pulmonary complications, dysmaturity index and debilitas congenita.

Previous results

Deliveries of 4091 women remained after exclusion of twin deliveries (n=53) and repeated deliveries during the study period (n=218)[1]. Half of the women reported smoking at some time during pregnancy, 5% ceased smoking during pregnancy, and 9% smoked more than 10 cigarettes daily during the whole pregnancy[2]. In a national record linkage data was included from 4,060 women, of whom 56 children died neonatally and 10 children were not found[3].

Plans and prospects

Date of the last menstrual period preceding pregnancy is needed to complement the material, after a new ethical approval. Maternal smoking, gestational age at birth and weight deviation at birth is planned to be assessed in relation to national records of medication, morbidity and mortality.

The cohort, containing unique data and prevalence of smoking, will hopefully add valuable knowledge on specific developmental origins of health and disease. The Helsingborg Birth Cohort might be used to target study groups for future examinations regarding metabolic and vascular status, for example small-for gestational-age (SGA) status.

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Socioeconomic inequalities in health among Swedish men and women born 1915–2010: life course and intergenerational effects across the twentieth century

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Background: Socioeconomic inequalities in health have been observed worldwide, including in welfare states like Sweden. Our research goal is to explore how the socioeconomic environment interacts with health, growth and development in order to predict health and social outcomes across the life course and across generations.

Methods: The Uppsala Birth Cohort Multigenerational Study (UBCoS Multigen: www.chess.su.se/ubcosmg/) started with a representative cohort of 14,192 males and females born in Uppsala University Hospital from 1915–1929. This cohort has been combined with social and health data on all their descendants obtained from routine registers and additional data collected from church parish records, school archives, obstetric records and Census 1930. The resulting multigenerational study comprises over 150,000 individuals followed till end 2009/2010.

Results: Multiple UBCoS studies demonstrate associations between social and health characteristics across more than two generations. Our studies have also highlighted that early-life predictors of social outcomes show both important similarities and important differences between men and women and between generations. Based on data from the UBCoS Multigen, we have recently demonstrated that early-life biological and social disadvantage in our original cohort members predicts lower school achievement, educational continuation and income in later life, and that this in turn predicts lower socioeconomic position (SEP) in their children and lower school achievement and SEP in their grandchildren. These studies indicate the presence of multigenerational effects on social outcomes and suggest that these may operate via the social mobility of intervening generations.

Conclusions: The uniqueness of UBCoS Multigen stems from combination of routine registry data (available in Sweden since 1960) with manually collected social and health data stretching back to early 1900. We strongly believe understanding of intergenerational determinants of health and health inequality will not only clarify disease etiologies at individual level, but also generate evidence for effective policy interventions.

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The effect of smoking on key elements of the hypothalamic-pituitary-testis axis

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Globally, 22% of the world's population aged 15 years or older are smokers, and as a consequence, a large research effort has been made to discern the deleterious effects of tobacco smoke on human reproductive health. For example, smoking has in several studies been associated with a hampered sperm production. In clinical data on 1811 young currently smoking Danish men, there was a statistically significant trend between number of cigarettes smoked/day and increasing androgen insensitivity index (ASI; luteinizing hormone level*testosterone level). Heavy smokers also had a higher follicle stimulating hormone (FSH)*Inhibin B level.

On this backdrop, we hypothesized that smoking interferes with the hypothalamic-pituitary-testis axis and that the cigarette smoke constituent Benzo [a] pyrene (BaP) has a hampering effect on the androgen receptor (AR) that mediates the effects of testosterone and that this effect could be different between individuals, depending on the polymorphic glutamine tract (CAGn) in the AR.

To test this hypothesis, eukaryotic cells were co-transfected with a vector carrying ARs harbouring 16, 22 or 28CAG and a luciferase reporter gene. The cells were treated with 10 nM testosterone in the absence or presence of 0.1–1000 nM BaP, after which the luciferase activity was measured.

This study found that BaP in low doses did not affect the AR, whereas high doses hampered the AR up to 75%. Notably, in the absence of testosterone, as in women, high BaP had an activating effect on the AR.
In conclusion, this study showed an inactivation of the AR activity in the presence of testosterone by the cigarette smoke constituent BaP. This supports the epidemiological findings in currently smoking Danish men, which indicates a compensatory mechanism to counteract a possible inactivating effect on the AR by chemicals found in cigarette smoke.

Early parental Support in Child Healthcare. Parental groups – a challenge in a changing society

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Ninety-nine per cent of all parents visit child healthcare centres (CHCs) and almost all parents in Sweden are invited to parental groups organized by the child health service (CHS) during their child's first year, but only 40% choose to attend. The overall aim of this study was to elucidate the group-based early parental support provided by the Swedish CHS from the perspective of CHC nurses and parents. A total of 156 CHC nurses from 31 of 33 municipalities (Paper I) and 143 parents from 71 different parental groups at 27 CHCs (Paper II) in one Swedish county completed two different online questionnaires about their experiences of the parental groups provided by the CHS.

The findings showed that almost all CHC nurses managed several parental groups for both first-time parents and parents with more than one child. Specialized parental groups, e.g. groups for single parents, parents of twins and parents with a foreign background, were managed by half of the nurses and were more common at those CHCs organized as family centres. The nurses defined parental groups primarily as a place where parents could connect and create a network and secondarily as a place for education. Parents reported that the meetings were meaningful and felt that their role as parents was strengthened due to the parental groups. More than half of the parents had met someone who they socialized with outside of the meetings. Many of the topics addressed in the parental groups were found to be important by both the CHC nurses and the parents, but the parents desired a greater focus on topics such as parenting, child-related community information and sex and relationships. CHC nurses were found to be knowledgeable, committed and well-prepared, and parents felt that they could express their opinion and talk to the other parents as much as they wanted. The nurses however, felt that group leadership was a difficult and challenging task and expressed a need for education in group dynamics and group leadership.

To strengthen CHC nurses in their group leader role and further investigate the needs and preferences of the parents who do not attend parental groups might be a good way to develop and maintain high quality in parental groups.

Genetic impact on human ovarian hormone response

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Background: Women undergoing IVF (in vitro fertilization) are treated with gonadotropins to stimulate ovulation. Genetic variants, so called polymorphisms in the luteinizing hormone receptor (LHR) gene, have been reported to alter the LHR function and the women's sensitivity to LH. In this study, three polymorphisms were studied *in vitro* with respect to outcome of gonadotropin stimulation.

Methods: Human ovarian granulosa cells were collected from women undergoing IVF treatment at Reproductive Medical Centre, SUS, Malmö. The cells were sorted using flow cytometry and stimulated with Menopur® (Ferring Pharmaceuticals, Malmö, Sweden), a hormonal agent containing a mixture of recombinant FSH and LH in the concentrations 150mIU/ml rFSH and 150mIU/ml rLH. In order to analyse the cell response to the gonadotropins, cAMP-concentrations were measured in the culturing medium and adjusted to total protein content. The women were categorized with respect to age and body mass index and the association with the LHR variants S312N, S291N and insLQ was calculated.

Results: So far, 19 patients have been included in the study. The preliminary results indicate that women who are heterozygous for S312N or homozygous S312 may have higher sensitivity to LH, compared to those homozygous N312 (median 1.22 vs. 0.58 pmol cAMP/mg protein, p= 0.11), especially in women ≤30 years old (median 0.86 vs. 0.11 pmol cAMP/mg protein, p= 0.04). Body mass index did not affect the results.

Conclusion: Polymorphisms in the LHR are promising candidates for predicting gonadotropin stimulation outcome. However, more data is needed to confirm the results.

ReproHigh – a unique Oresund-collaboration within Reproductive Medicine

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Between 15 and 20 % of all couples experience infertility problems, thus, this condition, recognised by WHO as a disease is as common as e.g. diabetes. It represents not only a serious medical, but even social problem, the global costs of infertility treatment exceeding 2.5 billion USD. These costs are expected to increase due to environmental and life style related factors and since the access to advanced techniques of assisted reproduction (ART) is increasing in countries as e.g. India and China. As only 30 % of the IVF-treatments lead to a pregnancy, there is a need for developing more efficient, personalized and cost saving treatments. Furthermore, introduction of preventive measures, aiming to step the increase in consumption of ART, are advisable.

ReproHigh is collaboration between 8 clinical and research units within the Capital Region and Region Skane in Southern Sweden; Dept. of Urology, Herlev Hospital,Fertility Clinic, Rigshospitalet, Dept. Of Growth and Reproduction, Rigshospitalet, Dept. of Environmental and Occupational Medicine, Bispebjerg Hospital, Lab. of Reproductive Biology, Rigshospitalet, Molecular Genetic, Reproductive Medicine Unit Lund University, Reproductive Medicine Centre, Skane University Hospital Malmö, and Dept. of Occupational and Environmental Medicine, Lund University.

The goal for ReproHigh is to create a cross-border High Competence Centre (HCC) in Reproductive Medicine in order to strengthen clinical and research competitiveness and to contribute to economic growth through world class excellence in Reproductive Medicine. The High Competence Centre will be based on a multi-disciplinary concept that will meet the future demands of managing infertility problems. The high-level competences in Reproductive Medicine that exist in the Oresund Region are strengthened through an increase in cooperation across the Oresund and between the public and private health sectors.

ReproHigh is building on a previous project programme that has received economical support from Interreg IVA 2010-2013 ReproSund. In December 2013 ReproHigh was awarded by the "Oresund Award in Health" – given to promote groundbreaking collaborations in health research and clinical work.

Some of the achievements of ReproSund and ReproHigh are:

Formal collaboration agreement between the Capital Region of Denmark and Region Skane allowing free motility for some categories of patients with reproductive disorders. As a consequence of the agreement patients are now being exchanged between the clinics on both sides of Oresund, and patients have been offered treatments not readily available before this agreement. Another implication is an improved utilisation of economic resources of the society.

High competence centres for management of reproductive disorders, based on the synergistic competence within our Region. This will not only ensure access to world-class treatments to all patients in the Oresund Region but also attract patients from other countries and give improved options for research.

Clinics for fertility prediction and counselling increases the awareness of politicians and the society about the need and possibilities of prevention of infertility.

Initiation of joint PhD- and other research projects that ensures cutting edge translational research within reproductive medicine and makes the region attractive to international researchers and industrial collaboration.

"ReproYoung" a network of young scientists that will improve PhD training and help in recruitment of young researchers into the area of reproductive medicine.

Variants in the androgen receptor and estrogen receptor α genes are associated with low grade systemic inflammation

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Low grade systemic inflammation has been associated with several pathologies, including type 2 diabetes and metabolic syndrome, which are disorders linked to low androgenicity. Low serum testosterone concentration has also been associated with high TNFα as well as MIP-1α and MIP-1β, which are markers for low grade systemic inflammation. Androgen action is mediated via the androgen receptor (AR), which contains a polymorphic CAG-repeat that fine-tunes its function i.e. average length (CAG22) has the highest activity. Androgens are also converted to estrogen and variations in estrogen receptor α (ESR1) have previously been associated with sperm parameters and risk of being diagnosed with type 2 diabetes in hypogonadal men. This indicates that estrogen action also could play a role for disorders related to hypogonadism. Our hypothesis was that variations in the CAG-repeat length or in the ESR1 gene would influence low grade systemic inflammation.

The study population comprised of 38 subfertile men and 20 men from the general population, in average 37.3 years old (range 25.5-54.7 years). The inflammation markers: EGF, FGF2, IFNγ, IL-10, IL-12p40, IL-12p70, IL-13, IL-17, IL-1b, IL-1RA, IL-4, IL-6, IL-7, IL-8, IL-9, IP-10, MCP-1, MIP-1α, MIP-1β, TNFα had been measured using a bead-based immunoassay (Lincoplex-Millipore) and the genetic variants determined by direct sequencing. Genetic variants were tested regarding association with inflammatory markers by linear regression analysis. The CAG repeat was trictomised (CAG<22, 22-23, >23). For the rs2207396 variant in ESR1, carriers of an A-allele was compared to those homozygous for the more common G-allele. TNFα and MIP-1β was 50% and 56%, respectively, higher in men with CAG>23 compared to men with 22-23 repeats (p=0.013 and p=0.034, respectively). Furthermore, IL-9 was increased in men homozygous for the ERS1 G-allele compared to carriers of an A-allele (p=0.048).

Current study indicates that men with low AR activity have significantly higher levels of inflammatory markers than other men. Estradiol also seems to play a role in low grade systemic inflammation.

Reorganizing life – fathers' lived experience in the three years subsequent to the very preterm birth of their child

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Background
As an increasing number of preterm infants are surviving thanks to lifesaving neonatal care, more parents are living through the neonatal intensive care unit experience. Longitudinal studies examining the experiences of parents of preterm infants point to the increase risk for stress disorders resulting from the initial hospitalization of the child. Several researchers have investigated the experiences of mothers but there is currently a lack of studies that have focused exclusively on the father's experiences. In order to optimize the quality of care for parents and other family members and thereby support the family as a whole it is important to obtain increased knowledge about fathers' lived experience.

Aim
To illuminate fathers' lived experience in the three years subsequent to the very preterm birth of their child.

Method
This study is the second part of a longitudinal study following fathers of preterm children through the use of qualitative interviews. The first interview was conducted one to three months after their child's birth and this second approximately three years later. Open interviews with eight Swedish-speaking fathers were performed and analysed using a hermeneutic phenomenological method.

Findings
The fathers' lived experience was described as a process of reorganizing life. This process started the day their child was discharged from the hospital. The fathers' described a journey from the past to the present in which they adapted ordinary family life. The fathers started their story by looking back over the last three years and being in the past was associated with a feeling of struggling to endure. The initial time at home was hard and they had difficulty dealing with the new situation. They were prepared for the child's discharge but not prepared for what this actually implied. The fathers' were afraid of pushing siblings into the background and they also experienced a threat to the relationship with their partner as they did not find enough time or energy to support each other. As time went by the fathers started to experiencing empowerment. Re-establish their normal social life with family and friends was described as encouraging to the fathers'. Life started to normalize

and they were gaining strength through being able to manage their lives again as before. They described how important it was for them to be an important person in their infant's life and they felt happiness when they realized that their child needed them. They also tried to support their partner by providing her own leisure time. This was sometimes experienced as hard as the fathers mostly worked full-time. Being in present time was associated with building a secure base. They now had lived through the experience of having a child who was born very preterm and had adapted to ordinary family life. The initial time was not forgotten but it was an experience they had left behind them. At the same time they described they were still confronted with unprocessed experiences but they felt that it was possible to deal with these. They described they had grown stronger from having lived through this experience.

Conclusion

The findings reveal that fathers undergo a fragile process in the initial years following the birth of a very preterm infant. An improved understanding of their experiences may serve as a basis for the development of encouraging parent support programmes both during the child's hospitalization and subsequent to the child's discharge.

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Parental support during neonatal care – a way to increase parents wellbeing and reduce the risk for future ill health

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Background: Parents who begin their parenthood at a neonatal intensive care unit (NICU) are at risk of developing stress that is related to the loss of the expected parental role as well as worries about the child's survival and risk of future disabilities. Longitudinal studies examining the experiences of parents of preterm infants point to the increased risk for stress disorders resulting from the initial hospitalization of the child. Parental support aims, among other things, to strengthen the parents' in their parental role and in Sweden supporting parents are an important goal. Today we have knowledge, gained through nursing research, concerning the experiences of parents to infants admitted to the NICU and it is time to use that knowledge and move forward towards implementation in practice

Method: A group-based parental support program was introduced at a NICU in Sweden in 2013 as a part of a quasi-experimental study. Three paediatric nurses with extensive experiences of neonatal care were trained in supporting conversation and group leadership. Between December 2013 and February 2014 a pilot study including five parental groups were conducted in order to test the logistics and the support program. The parental groups was held every fortnight and lasted for 90 minutes. Parents to infants admitted to the NICU or neonatal home care were written and orally invited. The group sessions were held in a room outside the NICU. After being welcomed the parents were informed about the time available and thereafter asked to present themselves and their infant. The parents were then asked to bring up topics they wanted to discuss. In case of silence a topic guide was available for the group leaders including topics such as e.g. supportive developmental care, parental role and breastfeeding. The group leaders were offered clinical supervision.

Findings: Both mothers and fathers participated in the parental groups, the number of parents varied between two to nine at each session. At two occasions parents admitted to neonatal home care were present. The subject most commonly addressed were; the experiences of having a preterm infant, the parental role, thoughts about being discharge, treatment from the staff, how to handle the siblings and how to connect and create network with other parents at the NICU. The topic guide was never used. Preliminary findings from this pilot study indicate the importance for parents to connect to other parents during NICU stay. Parents also need a forum where they can discuss what they experience as important. The staff at the unit experienced the parents as being relaxed and more satisfied after they participated in the parental groups. The group leaders expressed that they were content with the education they received before starting the parental groups. They described it

as both easy and difficult to manage the groups. The difficulty was mainly to focus on acting as a facilitator for the communication among the parents and not as a teacher. They found the supervision they received as important. The logistics worked well.

Conclusion and future perspective: Early parental support during NICU care might be one way to facilitate vulnerable parents' adaptation and promote parent-infant relationship. This in turn will support the parents but also the family as a whole. In the quasi-experimental study the parental group intervention is combined with an individual supportive program starting in March 2014. Follow-up will occur; at discharge, 6, 12 and 24 months after the infants discharge as in the control-group. Different qualitative instrument measuring health-related quality of life, physical health, distress and parents' experiences of their parental role are used. Qualitative interviews are conducted with every fourth parents included in the study.

Maternal exposure to air pollution and the risk for the development of type 1 diabetes

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Genetic and non-genetic factors act probably together to initiate and accelerate development of Type1 Diabetes [T1D]. One suggested risk factor contributing to development of T1D is air pollution. The aim of the study was to investigate if maternal exposure during pregnancy to air pollution, measured as nitrogen oxides [NOx], traffic density and ozone, in a low dose exposure area was associated with her child developing T1D. In Scania, the most southern county in Sweden, 84 039 infants were born during the period 1999–2005. By the end of April 2013, 324 of those children were diagnosed with T1D. For each of those T1D children three control children were randomly selected and matched for HLA genotype and birth year. Individually modelled exposure data at residence during pregnancy were assessed for nitrogen oxides [NOx], traffic density and ozone. Ozone as well as NOx exposures were associated with T1D. When the highest exposure quartile was compared to the lowest quartile an odds ratio of 1.70 (95% confidence interval [CI] 1.01 to 2.87) was observed for ozone in the second trimester and 1.57 (95% CI 1.06-2.34) for NOx in the third trimester. This study indicates that living in an area of elevated levels of air pollution during pregnancy may be a risk factor for T1D. The major strengths of this study is that we in a population-based prospective study have been able to, for the first time, analyze the association of air pollution during pregnancy and risk of childhood development of T1D after controlling for the genetic risk of disease.

Maternal smoking during pregnancy and daughters' risk of gestational diabetes and obesity

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Background
Adverse health effects of prenatal exposure to maternal smoking may persist until adulthood. For example, Norwegian women exposed to tobacco smoke in utero were at higher risk of developing gestational diabetes (GDM), and whether this association is present elsewhere is an open question.

Aims
To study the risk of developing gestational diabetes in women who were exposed to tobacco smoke in utero. Secondary aims were to assess the risk of obesity and non-gestational diabetes.

Methods
Data were retrieved from the Medical Birth Register of Sweden for women who were born in 1982 (smoking data first registered) or later and who had given birth to at least one child; 80 189 pregnancies were included. The associations between in utero smoking exposure (three categories: non-smokers, 1–9 cig/day [moderately exposed], and >9 cig/day [heavily exposed]) and subsequent gestational diabetes (n=291), non-gestational diabetes (n=280) and obesity (n=7309) were assessed.

Results
The adjusted odds ratios (aOR) of gestational diabetes were increased among women who were moderately (aOR 1.63, 95% confidence interval (CI): 1.24–2.13) and heavily exposed (aOR 1.52, CI: 1.12–2.06). The corresponding odds ratios of obesity were (aOR 1.36, CI: 1.28–1.44) and (aOR 1.58, CI 1.48–1.68), respectively. A reduced odds ratio for non-gestational diabetes was seen in the offspring of heavy smokers (aOR=0.66, CI: 0.45–0.96).

Conclusion
Women exposed to smoking during fetal life were at higher risk of developing gestational diabetes and obesity.

Mothers' and their Children's Health (MatCH) study: understanding disparities in health and health service utilisation among young Australian families

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In 2012, the Australian Institute of Health and Welfare highlighted key issues and persistent disparities in the health and development of the nation's children, including:

- More than a third of all children (37%) have at least one long-term condition (lasting 6 months or more), such as asthma or allergies.
- One in four children (24%) aged 2–15 years are overweight or obese, rising to one in three (31%) for children living in disadvantaged areas.
- In 2009, one in four children (24%) were assessed as developmentally vulnerable at school entry, again increasing to one in three (32%) for children living in disadvantaged areas. Similarly children in rural and remote areas are at higher risk for some health outcomes and face further issues regarding access to health services.

To address the inter-generational cycle of adversity children cannot be considered in isolation. Instead their conditions reflect a history and interaction of factors operating within families and across the wider social context, with maternal influence recognised as having a critical role, from the in-utero environment through infancy and beyond.

The Mothers' and their Children's Health (MatCH) study is a new study funded by the Australian National Health and Medical Research Council. It investigates the extent that the history of maternal health and wellbeing and characteristics of the family environment lead to disparities in child health, development, and health service utilisation (HSU), not just for each child – but in understanding the variation in outcomes across all the mother's children.

MatCH builds on the highly successful Australian Longitudinal Study on Women's Health (ALSWH) with comprehensive survey data on three cohorts gathered over 17 years. Each mother from the 1973–78 cohort of ALSWH will be invited to participate in a survey of every child in her family. The MatCH study also uses record linkage for HSU data for children and to augment data already gathered for mothers from administrative databases, such as Medicare Australia. It is expected to comprise more than 5,000 mothers aged 35–40 years in 2013 and 8,000 children aged 0–17 years.

The comprehensive approach of the MatCH study, drawing on 17 years of maternal data, represents an unparalleled opportunity for a detailed understanding of the interplay of factors in families that place children at risk of poor outcomes. It will provide guidance for a more integrated and targeted approach to the delivery of preventive and primary health care for all Australian families.

Transition to parenting in single-mothers-by-choice: A pilot study

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Background and aims

Becoming a parent is associated with intensive development, as transition to parenthood involves psychological processes that are preparing the individual to become a caregiver. According to attachment theory, our internal working models of attachment are constructed by individual mental representations built by the experiences we have together with our attachment figures (parents) during our early childhood. Depending on how the parent meets the child's needs, mental representations of the relationship to the parent and of one self in this relationship are formed, constituting the basis for the child's representations of self and others, as well as ways of relating to beloved others. Experiences within our family of origin are thus especially important, as they contribute to creating consistency in our ways of relating, from childhood to adulthood. Having positive models of self and others is associated with feeling sufficient in one's relationships, being comfortable with intimacy and mutual dependency, and, during transition to parenthood, being able to develop representations of oneself as caregiver and capacity to be sensitive and responsive to the child's needs. All this has been studied extensively in attachment research but almost all research has focused on women within couple relationships.

Much less is known concerning these processes when parenting is not embedded in a relationship. What is transition to parenthood like for single-mothers-by-choice? How do women's experiences and expectations relate to their internal working models of attachment? The aim of this ongoing study at the Department of Psychology, Lund University, is to explore working models of attachment in relation to becoming a single mother by choice.

Methods and Materials

In a pilot study, 11 Swedish women with young children or expecting children through donor insemination (DI) were interviewed with the Adult Attachment Interview (AAI: George et al., 1984) and filled in a self-report attachment questionnaire assessing anxiety and avoidance of nearness in close relationships (ECR-R: Fraley et al., 2000). They also communicated their experiences of other people's and society's reactions to their choice of parenting, and themselves as parents. Interviews lasted, on average, 2 hours.

Results and Discussion

The average age of participating women was 37 years (range 28–43 years), all single and living in single-parent households. Women had education corresponding to 3 years College or University studies. 8 women (73%) reported that their choice of single-mothering was accepted by their immediate environment (friends, family, co-workers) and 7 (64%) reported that also their children's peers and parents showed acceptance for their choice and

parenting. However, only 5 women (45%) felt that social authorities they came in contact with, including the health-care system, accepted their way of becoming a parent and even fewer reported no difficulties in contacts with teachers and administrators at their children's school/preschool. These results show that although women experience acceptance by their nearest surroundings, they report difficulties in relation to the child's preschool/school and the wider network that comes along when the child becomes older. Interestingly, degrees of insecurity in the mothers' internal working models of attachment were associated with more reported difficulties, in line with the general notion that maternal thoughts and feelings about herself as parent impact on how the transition to parenthood is experienced and resolved. These findings constitute a first glimpse of empirical evidence on single mothers' by choice transition to parenthood, suggesting that there need not be any differences in how these women specifically experience transition to parenting. Therefore, fundamental knowledge from attachment theory concerning the transition to parenting may be used also in working with single-mothers-by-choice.

The effects of parental substance abuse on their offspring´s wellbeing and parental functions

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Objective
Adult children of substance abusing parents appear to have an increased risk for a variety of negative outcomes including depressive symptoms, anxiety disorders, antisocial behavior and symptoms of ADHD, but little is known how this influences their parental function and what it is like to grow up with parental substance abuse.

Method
Study I. 197 parents who were treated at the Infant psychiatric Clinic, Viktoriagården, participated in the study. All parents were assessed with HAD, AUDIT, DUDIT, SPSQ and their children were assessed with parts of Vineland Adaptive Scales. They also answered structured questionnaires about their childhood conditions.

Study II. Out of 197 assessed parents, 53 had experienced parental substance abuse in their family of origin. Nineteen out of these 53 were consecutively selected for semi-structured, in-depth interviews. The interviews were analyzed with directed content analysis.

Result
The presented results are to be seen as preliminary.
Study I. Parents in the study, and especially those women who had substance abusing parents in their family of origin, had more symptoms of anxiety, hyperactivity and parental stress.
Study II. Those interviewed described family-of-origin experiences marked with neglect and chaos, and that they felt neither loved or acknowledged by their substance-abusing parent. The majority of informants described that they early in their lives had developed a parental role in the family and as a consequence had lost their childhood. Both men and women described distinctly how their parent's substance abuse had a severe negative impact on their affect regulating system and on their own parenting functions.

Conclusions
To prevent the intergenerational transmission of the effects of substance abuse it is important to identify these parents who have pronounced needs and to give them targeted treatment and support at Primary Health Care Centers and Infant Psychiatric Clinics.

Who was Berzelius?

Jöns Jacob Berzelius, one of the most prominent natural scientists of the 19th century, was born in 1779 in Väversunda, in the county of Östergötland in southern Sweden, a region with rich cultural traditions.
Orphaned at an early age, he went to several foster-homes and received his schooling in nearby Linköping. After graduating in medicine at the University of Uppsala, he moved to Stockholm, where he became assistent master without pay at the so-called »Surgical School«, and earned his keep by working as a doctor for poor people. At the age of 28 he became professor of medicine and pharmacy.

In 1808 Berzelius was one of the seven men who founded The Swedish Society of Medicine »For the perfection of science through mutual mediation of knowledge and collective experience, for the promotion of friendly confidence between doctors«.

Berzelius have enriched our knowledge of nature of life phenomena, established the atomic weights of most of the known elements, presented his electrochemical theory for the understanding of the nature of chemical compounds and laid the foundation for the sciences of the chemistry of rock types. He also found that elements combine with each other according to fixed numerical relationships. In addition to this, in his striving for order and method, with his talent for simplicity and clarity in expression, he created the chemical symbolic language in 1813, which since that time has been an essential instrument of chemistry.
With time he became a practised lecturer but preferred to express himself in writing and this he did superbly. Impressive are the great scientific works where he also demonstrated his interest and ability to spread knowledge about the latest advances of natural sciences.

Berzelius delight in research and debate was united with a great humility before the great scientific questions. Both his attitude and artistery of formulation is illustrated by the following passage in his Manual of Cheamistry (vol 3, 1818):

»All our theory is but a means of conistently conceptualizing the inward processes of phenomena, and it is presumable and adequate when all scientifically known facts can be deduced from it. This mode of conceptualization can equally well be false and, unfortunately, presumable is so frequently. Even though, at a certain period in the development of science, it may match the purpose just as well as a true theory. Experience is augmented, facts appear which do not agree with it, and one is forced to go in search of a new mode of conceptualization within which these facts can also be accomodated; and in this manner, no doubt, modes of conceptualization will be altered from age to age, as experience if broadened, and the complete truth may perhaps never be attained. But even if the goal can never be reached, let us never abondon our endeavor to get closer to it.«

Parts of this text is found in: Berzelius – Creator of the chemical language, by Carl Gustaf Bernhard, the Royal Swedish Academy of Sciences

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