



UMEÅ UNIVERSITET

Umeå University Medical Dissertations, New Series No 2291

---

# ASTHMA EPIDEMIOLOGY

## Prognosis of asthma with onset in childhood and in adulthood

The Obstructive Lung Disease in Northern Sweden  
Thesis XXVI

**Linnéa Almqvist**

### Akademisk avhandling

som med vederbörligt tillstånd av Rektor vid Umeå universitet för avläggande av  
medicine doktorexamen framläggs till offentligt försvar i Aulan, Sunderby sjukhus,  
Luleå, fredagen den 17 maj, kl. 09:00.

Avhandlingen kommer att försvaras på svenska.

Fakultetsopponent: Professor Catarina Almqvist Malmros,  
Institutionen för medicinsk epidemiologi och biostatistik, Karolinska Institutet,  
Stockholm, Sverige.

Department of Public Health and Clinical Medicine, Sustainable Health

**Organization**

Umeå University  
Department of Public Health and Clinical  
Medicine, Sustainable Health

**Document type**

Doctoral thesis

**Date of publication**

26 April 2024

**Author**

Linnéa Almqvist

**Title**

Asthma epidemiology – Prognosis of asthma with onset in childhood and in adulthood

**Abstract**

**Aim:** to update the knowledge on the epidemiology of asthma with onset in childhood and adulthood as well as examine the importance of risk factors in early childhood and clinical characteristics on the incidence and prognosis of asthma. **Methods:** The thesis is based on the epidemiological research program Obstructive Lung Disease in Northern Sweden (OLIN) studies. Pediatric cohort: recruited in 1996 (age 8y, n=3430, 97% of invited) and followed annually by questionnaire about asthma, allergy and risk factors until 19y and a postal questionnaire at 28y. Clinical examinations included skin prick tests (SPT at 8, 12 and 19y) and spirometry (19y). Adult cohort: 309 adults (age 20–60y) with asthma onset in the last 12 months were recruited 1995-99 and re-examined in 2012-14 (n=205). Structured interviews, spirometry and SPT were performed at recruitment and follow-up and bronchial hyperreactivity (BHR) at recruitment. **Results:** The asthma incidence rate was 10-13/1000/year in childhood and adolescence and 6/1000/year in young adulthood. Several risk factors in early life were associated with asthma onset in childhood, adolescence and young adulthood, e.g. family history of asthma, <3 months breastfeeding, rhinoconjunctivitis and positive SPT at 8y, while low birthweight, maternal smoking during pregnancy, severe respiratory infections and eczema were associated with onset in childhood and adolescence. Among those with asthma at 8y, 62% still had asthma at 28y and this was associated with positive SPT, rhinoconjunctivitis, severe respiratory infection in childhood, and bronchial hyperreactivity (BHR) in adolescence. Coexistence of asthma, rhinitis and eczema increased by age, especially among those with a positive SPT. However, having all three conditions was uncommon. In the 15y follow-up adult onset asthma, 89% had persistent asthma. Better lung function at recruitment and less severe BHR was associated with remission. Remission rate of adult onset asthma was <1% per year. **Conclusions:** The incidence of asthma was high during childhood and adolescence and then decreased in young adulthood. Factors in early life that were associated with incident asthma during childhood were still associated with the incidence in adult age. Among those with asthma onset by 8 years, 62%, still had asthma as young adults. The coexistence of asthma, rhinitis and eczema varied from 8 to 28y without following a specific pattern, only a small proportion reported having all three conditions. Remission of adult onset asthma was rare.

**Keywords**

Asthma, eczema, rhinitis, epidemiology, incidence, remission, relapse.

**Language**

English

**ISBN**

print: 978-91-8070-325-3  
PDF: 978-91-8070-326-0

**ISSN**

0346-6612

**Number of pages**

74 + 4 papers