Maternal Smoking during Pregnancy and Asthma in Children and Young Adults


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Background

Asthma is the most common disease in children. Asthma is an inflammatory disease of the airways characterized by variable and recurrent symptoms such as wheeze, cough, chest tightness and shortness of breath ranging from intermittent to severe life threatening disease. Recent decades have witnessed a doubling of the prevalence of asthma.

Objectives

To prepare for our HEI funded studies on ambient air pollution and asthma (exposure modelling is ongoing), we examined the associations between maternal smoking during pregnancy and asthma incidence. We examined different definitions of asthma since the severity can range from intermittent to severe disease.

Methods

We obtained data on asthma, smoking and other personal, home and neighborhood characteristics from all children born in Denmark from 1997 to 2016. We used the personal identification (CPR) numbers to link individual-level information from Denmark’s population-based registers with extensive data from two prospective birth cohorts (Fig. 2).

Preliminary Results

Results reported here are preliminary as we are in the process of cleaning data and reducing missing values. We include, at this stage, a total of 1,160,063 children (Fig. 3), but this number is expected to be slightly smaller as geocoding of the residential addresses failed for 2%.

Fig. 3. Study population flowchart.

Maternal smoking during pregnancy and asthma.

References

WHO 2016; Carr and Bleeker, Eide et al 2006; Peat et al 2003; Thatcher et al 2017

Acknowledgement

The Health Effects Institute funds the study (HEI, Rosenblith award 2017).

Fig. 1. Simplified illustration of the relationships between ambient air pollution, home neighborhood, home and personal characteristics and asthma development risk. Dotted lines indicate potential effect modification.

Fig. 2. Asthma definitions and study populations. The three last mentioned asthma phenotypes were defined in order to compare our results with the findings from the MeDALL project.

Fig. 4. Asthma prevalence at age 11 years* and asthma hospitalisations at age 11 years.

* Only children born in 1996 (N=49,025) were included in this analysis. Exclusion for age 11 years of 0.75%.