

# **Asthma in young children: Epidemiology, burden of asthma and effects of a parental information program**

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## **Abstract**

*Background:* The prevalence of asthma is usually estimated on the basis of the results of questionnaires. A comparison with prevalence according to medical records has not been reported before. Adherence to medical advice and prescriptions are generally poor in chronic diseases like asthma. There is a lack of intervention studies to improve adherence.

*Aims:* 1: To perform an epidemiological analysis of the asthma prevalence and the use of the healthcare system in a Swedish region. 2: To compare the parental assessment of children's asthma according to a questionnaire with physicians' diagnosed asthma. 3: To perform an intervention with additional information and support to parents of preschool children with newly diagnosed asthma in order to improve adherence. 4: To evaluate the effects on quality of life and separately analyse the answers of the mothers and the fathers. 5: To analyse any remaining intervention effects after 6 years.

*Methods:* Firstly, all outpatient clinics had computerised patient records and thus these visits could be studied as well as admissions to hospital for asthma. In 1999 a questionnaire was answered by 75% of the parents of 6 295 children 1-6 years of age. Secondly, a controlled, prospective intervention study where the parents of 60 children were randomised to either a control group (CG) or to an intervention group (IG) which had group meetings in close connection to the diagnosis. Outcome was measured by questionnaires and by classification of the children according to clinical examination, blood tests, symptoms and medication. Adherence rate was calculated with the help of diaries and weighing the inhalers used. Fathers and mothers answered separately the Paediatric Caregiver's Quality of Life Questionnaire. Children were followed up after 6 years and objective measurements of lung function were added to the other parameters.

*Results:* The burden of asthma was mainly handled by the outpatient clinics. According to the parental questionnaire 5.9 % had asthma in 1999, according to the medical records 4.9%. With register diagnosis as gold standard the sensitivity of the questionnaire was 77%. The questionnaire identified half of the children with a medical record of asthma. Forty percent of the children claimed by their parents to be asthmatic had no medical record of asthma. One third of the children with newly diagnosed asthma had risk of developing persistent asthma. The intervention resulted in an improvement of the parents' view on adherence issues and on adherence per se. The children in the IG had less exacerbation days despite having lower inhaled steroid doses. There were no major gender differences in indices of quality of life, but according to individual questions mothers were more affected by their children's asthma. After 6 months the mothers in the IG showed improvements in all indices. At the 6 year follow-up 71% still had asthma. The IG had fewer contacts with nurses than the CG and they had lower inhaled corticosteroid (ICS) doses. The IG parents still had a more positive view on adherence questions and their quality of life was better. The children who were older than 2 years of age at inclusion had a higher risk of developing persistent asthma. Intermittent ICS was used by 81%. The lung function was preserved. The burden on the health care system was low. Hospital admittances due to asthma in the region are the lowest in the country.

*Conclusions:* A parentally completed questionnaire provided an acceptable estimation of the prevalence of asthma in children 2-6 years of age compared to asthma registered in medical

records although in half of the cases the individual child was not identified. Straightforward and timely information to parents of children with asthma has long-term positive effects which can be mediated through equalization of the parent's roles in handling their child's asthma. The hospital admissions due to asthma are very few, possibly as a result of the intervention and improved medical care in the paediatric outpatient clinics. Asthma diagnosed before age 2 has a better prognosis. Most children with a high risk of persistent asthma can be successfully treated with intermittent ICS.

Key words: Asthma, Pre-school children, Prevalence, Questionnaires, Quality of life, Intervention.