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Review

A systematic review of asthma case definitions in 67 birth cohort studies

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Abstract

Background

Birth cohort studies are a valuable source of information about potential risk factors for childhood asthma. To better understand similarities and variations in findings between birth cohort studies, the methodologies used to measure asthma require consideration.

Objective

To review and appraise the definitions of “asthma” used in birth cohort studies.

Methods

A literature search, conducted in December 2017 in the MEDLINE database and birth cohort repositories, identified 1721 citations published since 1990. Information extracted included:

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study name, year of publication, sample size, sample age, prevalence of asthma (%), study region, source of information about asthma, measured outcome, and asthma case definition. A meta-analysis evaluated whether asthma prevalence in cohorts from Europe and North America varied by the studies' definition of asthma and by their data sources.

Results

The final review included 67 birth cohorts, of which 48 (72%) were from Europe, 14 (21%) from North America, 3 (5%) from Oceania, 1 (1%) from Asia and 1 (1%) from South America. We identified three measured outcomes: "asthma ever", "current asthma", and "asthma" without further specification. Definitions of "asthma ever" were primarily based upon an affirmative parental response to the question whether the child had ever been diagnosed with asthma by a physician. The most frequently used definition of "current asthma" was "asthma ever" and either asthma symptoms or asthma medications in the last 12 months. This definition of "current asthma" was used in 16 cohorts. There was no statistically significant difference in the pooled asthma prevalence in European and North American cohorts that used questionnaire alone versus other data sources to classify asthma.

Conclusion

There is substantial heterogeneity in childhood asthma definitions in birth cohort studies. Standardisation of asthma case definitions will improve the comparability and utility of future cohort studies and enable meta-analyses.

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Keywords

Asthma; Birth cohorts; Case definition; Children

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