

# Sex-Related Allergic Rhinitis Prevalence Switch from Childhood to Adulthood: A Systematic Review and Meta-Analysis.

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## Abstract

**BACKGROUND:** A sex-related switch in the prevalence of asthma from childhood (male predominance) to adulthood (female predominance) has been described, but for allergic rhinitis this remains unclear. We aimed to examine sex- and age-group-specific differences in allergic rhinitis prevalence by systematically evaluating studies from across the globe.

**METHODS:** A systematic search of MEDLINE and Embase for population-based cross-sectional studies was performed regardless of the language of publication. The search was restricted to the present millennium (2000 to June 2014). Study quality was defined by the sampling method, response rate, sample size, and data collection method. To assess sex differences in the prevalence of self- or parent-reported symptoms of rhinitis, calculated pooled estimates of the male-female ratio (MFR) were obtained using random-effects model meta-analyses due to heterogeneity. A meta-regression analysis was also performed.

**RESULTS:** Out of 6,539 publications identified, 67 cross-sectional population-based studies (291,726 males and 301,781 females) were included in our meta-analysis. In children (<11 years of age) significantly more boys than girls had rhinitis symptoms (MFR 1.21, 95% CI 1.17-1.25), whereas in adolescents (11 to <18 years of age) males were significantly less often affected than females (MFR 0.90, 95% CI 0.85-0.95). No sex-specific prevalence difference was observed in adults (MFR 0.96, 95% CI 0.83-1.17). These findings were consistent in all continents except in Asia, where the male predominance remained beyond childhood.

**CONCLUSIONS:** The male predominance of rhinitis prevalence in childhood changed towards a female predominance in adolescence across the globe, except in Asia. Longitudinal studies are needed to confirm these cross-sectional data and examine possible determinants and underlying mechanisms.