

Heritability of cough across two generations: the RHINESSA study

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Background: Chronic cough is common in the general population, but heritability of cough has not been studied.

Aim: To evaluate if individuals with cough are more likely to have offspring who develop cough, and if the type of cough is of importance for any association.

Methods: Analysis of the RHINESSA Generation Study (Respiratory Health In Northern Europe, Spain and Australia) including parents (initially aged 30-54) answering detailed questionnaires year 2000, then again 2010. Offspring (≥ 18 years) answered similar questionnaires in 2012-2019. Cough was defined as productive or non-productive. Mixed-effects logistic regressions were used, adjusting for the following offspring variables; age, gender, BMI, smoking history, education level, current asthma, rhinitis, nocturnal gastroesophageal reflux; as well as parent gender and smoking history; with random effects for center and family.

Results: In total, 7,155 parents and 8,176 offspring were included. Among parents with non-productive cough, 11% of their offspring reported non-productive cough, compared with 7% of offspring to parents without non-productive cough (adjusted odds ratio (aOR) 1.59 ([95%CI] 1.20 – 2.10)). Among parents with productive cough, 14% of their offspring reported productive cough, compared with 11% of offspring to parents without productive cough (aOR 1.34 (1.07 – 1.67)). However, no parent – offspring associations were found between productive cough – non-productive cough.

Conclusions: Parents with chronic cough are more likely to have offspring with chronic cough, suggesting cough to be a heritable trait. The type of cough seems important, as the parent's type of cough is only associated with the same type of cough in the offspring.