

Table 5. Reduced Model for Relative Risk of Allergic Rhinitis in Study Participants (10,893 persons)

Variable*	OR	(95%CI)	p-value
Next of kin ever having had allergic rhinitis			
Maternal grandmother	1.9	(1.1, 3.3)	0.02
Paternal grandmother	2.7	(1.8, 4.1)	< 0.001
Father	4.3	(3.5, 5.3)	< 0.001
Mother	4.0	(3.2, 5.0)	< 0.001
Brother or sister	4.8	(4.1, 5.8)	< 0.001
Gender			
Male	1.8	(1.6, 2.1)	< 0.001
No. of persons smoking at home			
1	0.9	(0.8, 1.1)	0.29
> 1	1.2	(1.0, 1.5)	0.06
Student Smokes			
Yes	0.5	(0.3, 0.9)	0.01
Educational level of parents (years)			
7-9	1.3	(1.1, 1.6)	0.01
> 9	1.9	(1.6, 2.3)	< 0.001

* Effect test $p < 0.05$.

been well documented.^{9,10,14,15} However, most epidemiological studies examined only the associations between parental history of allergic rhinitis and children's disease status. In this study, we further investigated the relationship among the next of kin and study participants with respect to the reporting of allergic rhinitis. Our results show a strong association between allergic rhinitis and the next of kin in a multiple logistic regression except for the grandfathers on both sides. These data indicate a new hypothesis to study whether there is any hereditary difference in the risk of developing allergic rhinitis between paternal and maternal inheritance. The relationship found between children reporting allergic rhinitis and the history of grandfathers having had such a disease requires further research for its underlying mechanism. The variable, "siblings of the participants," was retained in the multiple logistic regression although it was not likely a reasonable risk factor for the development of allergic rhinitis of study subjects. Nevertheless the highest OR between the reporting of allergic rhinitis and a history of all relatives having this disease was found with siblings. The similarity of growth and living environment among siblings appears to be the most plausible ratio-

nale resulting in such an association, which in turn suggests the importance of environmental factors in the development of allergic rhinitis.

Previous studies have suggested that the number of cockroaches in a residence contributes to the development and reporting of childhood allergic rhinitis.² In our study, although the OR for reporting allergic rhinitis increased as the number of cockroaches seen in the most recent month in the residence increased, the association was not statistically significant. We speculate that this result is partly due to the fact that the survey was performed in winter, not a prime season for cockroach activity.

The presence of standing water in a residence is considered to be a surrogate variable for the degree of domestic dampness. Damp housing and moldy growth may affect health directly through biologically active chemical emissions or microbiological pollution.¹⁴ Yet, either factor alone did not demonstrate a statistical significance in this study. We used "standing water" to represent the level of dampness in homes, and whether that is the reason for this finding remains to be further clarified. In addition, both factors seem to contribute to raising atopic disease prevalence rates after