

Thumb-sucking or nail-biting in childhood led to a reduction in atopic sensitisation but not asthma or hay fever

STUDY DESIGN

Design: Prospective longitudinal population-based birth cohort study.

STUDY QUESTION

Do children who have oral habits (thumb-sucking or nail-biting) have a lower risk of developing atopic sensitisation, asthma and hay fever?

Setting: Dunedin, New Zealand, participants born in 1972–1973.

Cohorts: A birth cohort of 1037 participants was asked multiple questions at multiple time points. For this study, ‘oral habits’ (frequently sucked their finger/thumb or bit their nails) were assessed at 5, 7, 9 and 11 years.

Table 1 Prevalence of atopy at age 13 years according to oral habit

	History of oral habits (%)	No history of oral habits (%)	p Value
Atopic sensitisation/positive skin prick test (n=328)	38	49	0.009
Asthma (n=95)	13.3	12.8	0.8
Hay fever (n=219)	29.6	29.9	0.9

Table 2 Atopic sensitisation and type of oral habit

Outcomes	Thumb-sucking or nail-biting, OR (95% CI)	Thumb-sucking, OR (95% CI)	Nail-biting, OR (95% CI)
Atopic sensitisation/positive skin prick test at 13 years (n=724)	0.64 (0.45 to 0.90)	0.64 (0.42 to 0.97)	0.70 (0.47 to 1.10)
Atopic sensitisation/positive skin prick test at 32 years (n=935)	0.62 (0.45 to 0.86)	0.69 (0.47 to 1.00)	0.71 (0.49 to 1.02)

Outcomes: 11 or 12 panel skin prick testing at age 13 and 32 years. Atopic sensitisation was defined as having ≥ 1 positive response to an allergen. Asthma was diagnosed from respiratory assessments at age 9 years or onwards and compatible symptoms or treatment in the last 12 months. Hay fever was diagnosed by report at age 13 or 32 years.

Follow-up period: 38 years. Assessments at 3, 5, 7, 9, 11, 13, 15, 18, 21, 26, 32 and 38 years old.

Patient follow-up: 1037 participants were included in the study; 724 had skin prick testing at age 13 years and 946 at age 32 years.

MAIN RESULTS

The prevalence of atopic sensitisation at age 13 was lower among children who had an oral habit compared with those who did not, but not at 32 years old. Children with only two oral habits were less likely to be atopic than those with one habit. There was no association between oral habits and asthma or hay fever (see [tables 1 and 2](#)).

CONCLUSION

Children who bite their nails or suck their thumbs have a lower risk of developing atopic sensitisation at age 13 years but not at 32 years, nor is there a reduction in the prevalence of asthma or hay fever.

Abstracted from: Lynch SJ, Sears MR, Hancox RJ. Thumb-sucking, nail-biting, and atopic sensitization, asthma, and hay fever. *Pediatrics* 2016;138:e20160443.

The hygiene hypothesis (biome diversity, biome depletion) accounts for many but not all of the environmental and other epigenetic factors that determine the risk of developing allergy. This study shows that the seemingly innocuous acts of nail-biting and thumb-sucking are likely to contribute to protection against later allergic disease and is supportive of a Swedish study of hand versus machine dish washing¹ that showed decreased allergic disease when dishes were hand-washed. In addition to the suggestion that there is oral exposure to an increased range of pro-inflammatory agents, the tolerogenic nature of dendritic cells in the oral cavity could also be promoting specific tolerance to ingested allergens² (used in sublingual-specific immunotherapy). The authors avoided investigating food allergy and this is probably wise as self-reporting of food allergy is unreliable³ and there is a higher rate of false positive skin tests to food allergens than aeroallergens. It would be intriguing to see if thumb-sucking could offset the

increase in food allergy associated with probable cutaneous introduction of foods via damaged skin in eczema.

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REFERENCES

- Hesselmar B, Hicke-Roberts A, Wennergren G. Allergy in children in hand versus machine dishwashing. *Pediatrics* 2015;135:e590–7.
- Allam JR, Duan Y, Winter J, *et al.* Tolerogenic T cells, Th1/Th17 cytokines and TLR2/TLR4 expressing dendritic cells predominate the microenvironment within distinct oral mucosal sites. *Allergy* 2011;66:532–9.
- Verrill L, Bruns R, Luccioli S, U.S. Food and Drug Administration. Prevalence of self-reported food allergy in U.S. adults: 2001, 2006, and 2010. *Allergy Asthma Proc* 2015;36:458–67.



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