Adult Food Allergy

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Overview

Epidemiology

Oral food challenge

Management

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Learning Objectives

1. Upon completion of this learning activity, participants should be able to discuss the epidemiology of adult food allergy.

2. Upon completion of this learning activity, participants should be able to discuss considerations of OFCs in adults.

3. Upon completion of this learning activity, participants should be able to discuss efficacy of therapies for adult food allergy.

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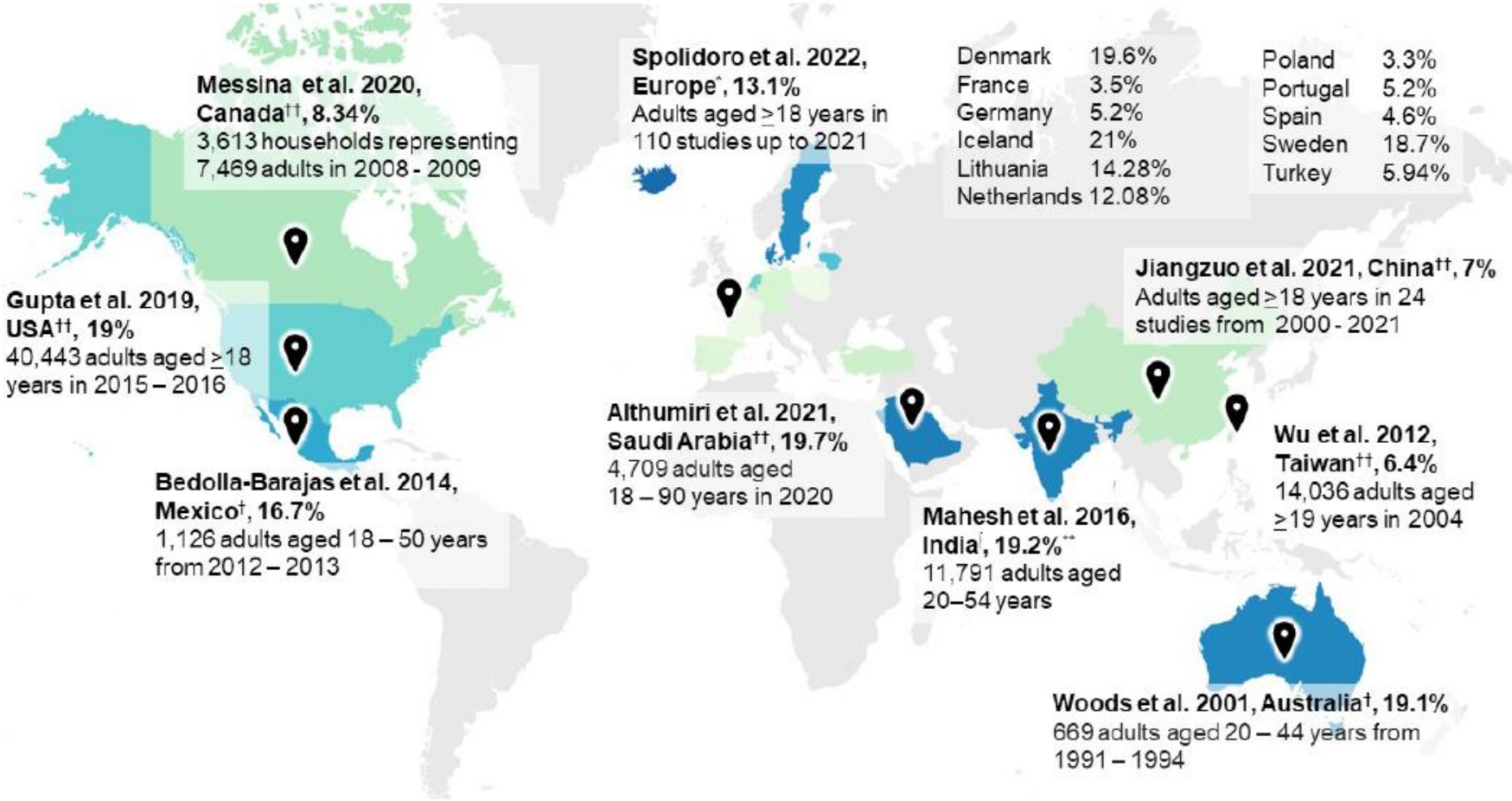
Global Epidemiology



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Unhapipatpong et al. APJAI 2022; 40(4): 308.

U.S. Epidemiology

Table 2. Overall and Age-Specific Prevalence of Specific Food Allergies Among All US Adults

	Prevalence, % (95% CI)					
Specific Food Allergy	All Ages	18-29 y	30-39 y	40-49 y	50-59 y	≥60 y
Any food allergy	10.8 (10.4-11.1)	11.3 (10.5-12.2)	12.7 (11.8-13.7)	10.0 (9.2-10.9)	11.9 (11.0-12.8)	8.8 (8.2-9.4)
Peanut	1.8 (1.7-1.9)	2.5 (2.2-2.8)	2.9 (2.5-3.3)	1.8 (1.5-2.1)	1.4 (1.1-1.7)	0.8 (0.7-1.0)
Tree nut	1.2 (1.1-1.3)	1.6 (1.3-1.9)	1.7 (1.4-2.1)	1.1 (0.9-1.4)	1.2 (0.9-1.5)	0.6 (0.4-0.7)
Walnut	0.6 (0.6-0.7)	0.8 (0.7-1.1)	0.9 (0.7-1.3)	0.6 (0.5-0.8)	0.7 (0.5-0.9)	0.3 (0.2-0.4)
Almond	0.7 (0.6-0.8)	0.9 (0.7-1.2)	1.0 (0.7-1.3)	0.7 (0.6-1.0)	0.7 (0.5-0.9)	0.3 (0.2-0.4)
Hazelnut	0.6 (0.5-0.7)	0.7 (0.5-0.9)	0.9 (0.6-1.2)	0.6 (0.4-0.8)	0.6 (0.4-0.8)	0.3 (0.2-0.4)
Pecan	0.5 (0.5-0.6)	0.6 (0.5-0.8)	0.8 (0.5-1.1)	0.6 (0.5-0.8)	0.5 (0.4-0.8)	0.5 (0.4-0.8)
Cashew	0.5 (0.5-0.6)	0.8 (0.6-1.0)	0.8 (0.6-1.1)	0.5 (0.4-0.7)	0.5 (0.3-0.7)	0.2 (0.1-0.3)
Pistachio	0.4 (0.3-0.5)	0.6 (0.4-0.8)	0.6 (0.4-0.8)	0.5 (0.3-0.6)	0.4 (0.3-0.6)	0.1 (0.1-0.2)
Other tree nut	0.2 (0.1-0.2)	0.1 (0.1-0.2)	0.1 (0.0-0.2)	0.3 (0.2-0.6)	0.2 (0.1-0.5)	0.1 (0.1-0.2)
Milk	1.9 (1.8-2.1)	2.4 (2.0-2.9)	2.3 (1.9-2.8)	2.0 (1.6-2.4)	1.9 (1.6-2.2)	1.9 (1.6-2.2)
Shellfish	2.9 (2.7-3.1)	2.8 (2.4-3.2)	3.6 (3.1-4.2)	2.5 (2.2-3.0)	3.3 (2.8-3.8)	2.6 (2.2-3.0)
Shrimp	1.9 (1.8-2.1)	1.8 (1.5-2.1)	2.5 (2.1-3.0)	1.8 (1.4-2.1)	2.2 (1.8-2.6)	1.6 (1.3-1.9)
Lobster	1.3 (1.2-1.4)	1.2 (1.0-1.5)	1.6 (1.3-2.0)	1.3 (1.0-1.5)	1.4 (1.1-1.7)	1.1 (0.9-1.3)
Crab	1.3 (1.2-1.5)	1.2 (1.0-1.5)	1.6 (1.3-2.0)	1.3 (1.0-1.6)	1.6 (1.3-2.0)	1.1 (0.9-1.4)
Mollusk	1.6 (1.4-1.7)	1.6 (1.3-2.0)	2.0 (1.7-2.5)	1.3 (1.1-1.7)	1.7 (1.4-2.0)	1.2 (1.0-1.5)
Other shellfish	0.3 (0.2-0.3)	0.3 (0.1-0.5)	0.1 (0.1-0.2)	0.3 (0.2-0.4)	0.3 (0.2-0.5)	0.3 (0.2-0.4)
Egg	0.8 (0.7-0.9)	1.1 (0.7-1.5)	1.1 (0.9-1.3)	0.7 (0.5-0.9)	0.8 (0.6-1.1)	0.5 (0.3-0.7)
Fin fish	0.9 (0.8-1.0)	1.1 (0.9-1.4)	1.0 (0.8-1.2)	0.8 (0.6-1.1)	1.0 (0.7-1.3)	0.6 (0.4-0.7)
Wheat	0.8 (0.7-0.9)	1.0 (0.7-1.3)	1.0 (0.8-1.3)	0.8 (0.6-1.0)	0.7 (0.5-0.9)	0.6 (0.4-0.8)
Soy	0.6 (0.5-0.7)	0.7 (0.5-0.9)	0.8 (0.6-1.0)	0.6 (0.5-0.8)	0.7 (0.5-0.9)	0.4 (0.3-0.6)
Sesame	0.2 (0.2-0.3)	0.3 (0.2-0.4)	0.3 (0.2-0.5)	0.2 (0.1-0.4)	0.3 (0.2-0.5)	0.1 (0.0-0.2)

Female predominance

Comorbid medication allergy

Comorbid latex allergy

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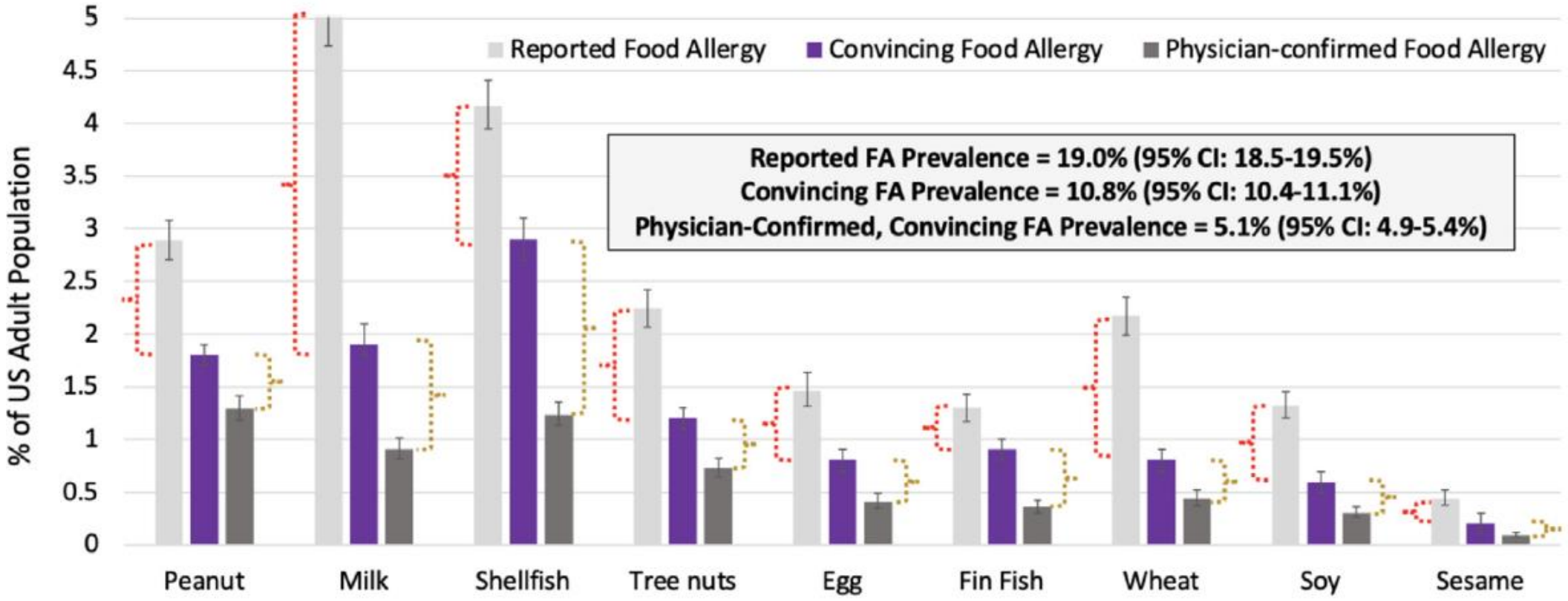
Gupta et al. JAMA Net Open 2019; 2(1): e185630.

U.S. Epidemiology



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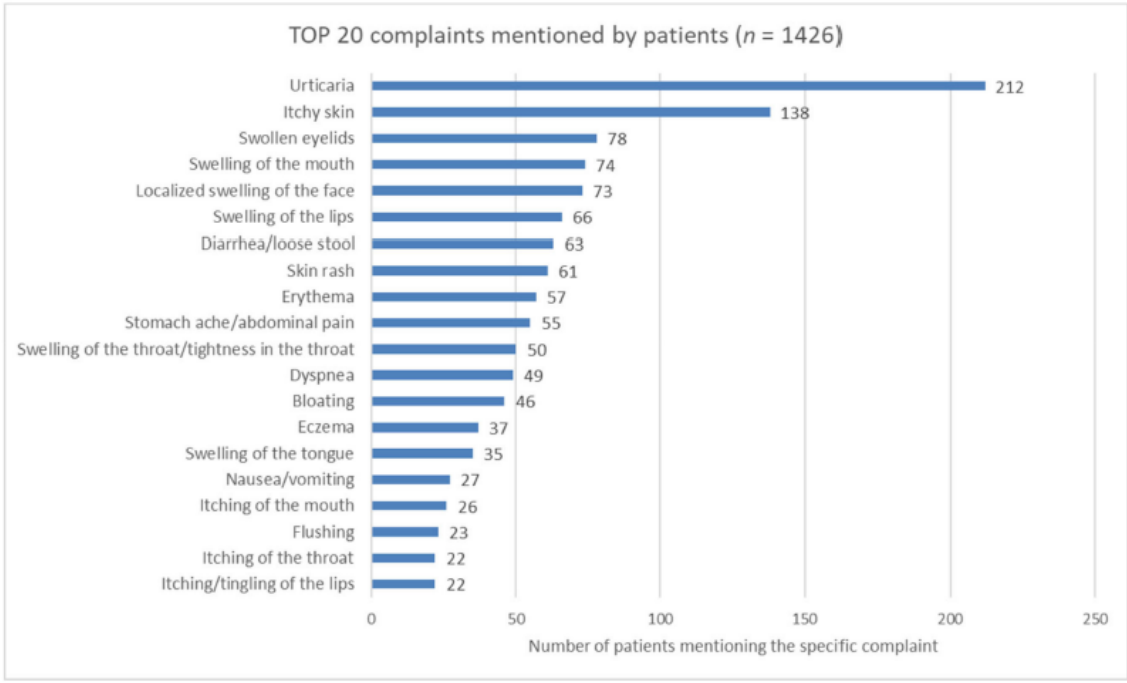
Warren et al. Ann All Asthma Immunol 2023; 130: 276.

Prospective FA Evaluations

Allergen	Positive SPT n (% of population)	Reported food illness n (% of population)	Positive SPT and reported food illness n (% of population)	κ* (P)
Cow's milk	3 (0.7%)	22 (4.8%)	0	—
Peanut mix	26 (5.7%)	5 (1.1%)	2 (0.4%)	0.37 (0.10)
Shrimp	17 (3.7%)	15 (3.3%)	4 (0.9%)	0.16 (0.27)
Egg white	8 (1.8%)	6 (1.3%)	1 (0.2%)	0.09 (0.64)
Whole grain wheat mix	10 (2.2%)	6 (1.3%)	0	—
Total	64 (14.4%)[a]	54 (11.8%)[b]	7 (1.5%)	



5/501 (1%) diagnosed with IgE mediated FA

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Woods et al. Euro J of Clin Nutrition 2022; 56: 31., Solymosi et al. Nutrients 2020; 12: 3725.

Over-diagnosis

Table 3 | Terms related to overdiagnosis

Term	Definition	Comments
Overdiagnosis	The diagnosis of a condition that would not cause clinical harm during the patient's lifetime[6]	Can result from appropriate or unnecessary testing
Overuse (or overutilization)	The provision of health services that are more likely to harm than to benefit the patient[82]	A fundamental quality problem
Overtreatment	A therapeutic intervention for which potential harm outweighs potential benefit[83]; can refer to excessive intensity of a treatment that may otherwise be appropriate[84]	Can be a subcategory of overuse or represent overly aggressive treatment that may not meet the definition of overuse
Overmedicalization	Reinterpretation of human experiences as medical problems, without net clinical benefit[4]	A social phenomenon that can lead to or result from overdiagnosis, overtreatment, and overuse
Misdiagnosis	An incorrect diagnosis of an illness or problem[85]	A type of medical error
Misuse	The provision of an appropriate service where a preventable complication interferes with patient benefit[82]	A fundamental quality problem related to patient safety
Disease mongering	Encouragement of overmedicalization by outside forces to maximize profits	A strategy pursued by the drugs industry to create or broaden drug markets
Low value care	The provision of health services that are wasteful or provide little or no benefit to patients[86 87]	Implies cost inefficiency; term often used vaguely

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Kale and Korenstein. BMJ 2018; 362: k2820.

Over-diagnosis

Table 1 | Drivers of overdiagnosis*

Category	Factor	Example
Broadening disease definitions	Lowering of diagnostic thresholds	Changes that defined CKD at a higher creatinine clearance led to diagnosis of CKD in 25-35% of people over age 65, few of whom will progress to end stage renal disease[15 16]
	Recognition of risk factors as pre-diseases	Pre-diabetes is highly prevalent (eg. prevalence nearly 36% in China); many patients are treated with drugs.[17] Only about a third will progress to true diabetes over 10 years[9 18]
Technology	Use of advanced technology for diagnosis	Increasing use of CT, ultrasound, and MRI over time lead to a dramatic rise in the incidence of incidentally detected thyroid cancer, with no concurrent change in mortality[19]
	Use of more sensitive screening tests	Digital mammography is more sensitive than film mammography in some groups but tumors detected have better prognosis, suggesting overdiagnosis[20 21]
Public health interventions	Widespread screening	Population based breast cancer screening results in 1-10% of cancers; this represents overdiagnosis (in European countries)[22]
Culture of medical care	Value of diagnosis for its own sake	Both patients and physicians feel anxious when problems are not labeled with a diagnosis[23]
Clinician cognitive errors	Overestimation of benefit of therapy in mild or low risk disease	Widespread treatment of hyperlipidemia in patients who are otherwise at low risk of cardiovascular disease, with little potential benefit[24]
System factors	Financial incentives for more testing	"Executive physicals" that include multiple unnecessary tests generate revenue for hospitals and are heavily marketed to companies and individuals[25]
		In the US, ownership of imaging equipment by physicians is associated with more testing and higher costs, with similar clinical outcomes[26]
Evidence limitations	Lack of clarity regarding disease spectrum in studies of diagnostic accuracy	CTA is highly sensitive for diagnosing pulmonary embolism, but studies included all emboli, even small ones that may be clinically unimportant,[27] leading to a near doubling of the incidence with little change in mortality and a rise in bleeding complications[28]

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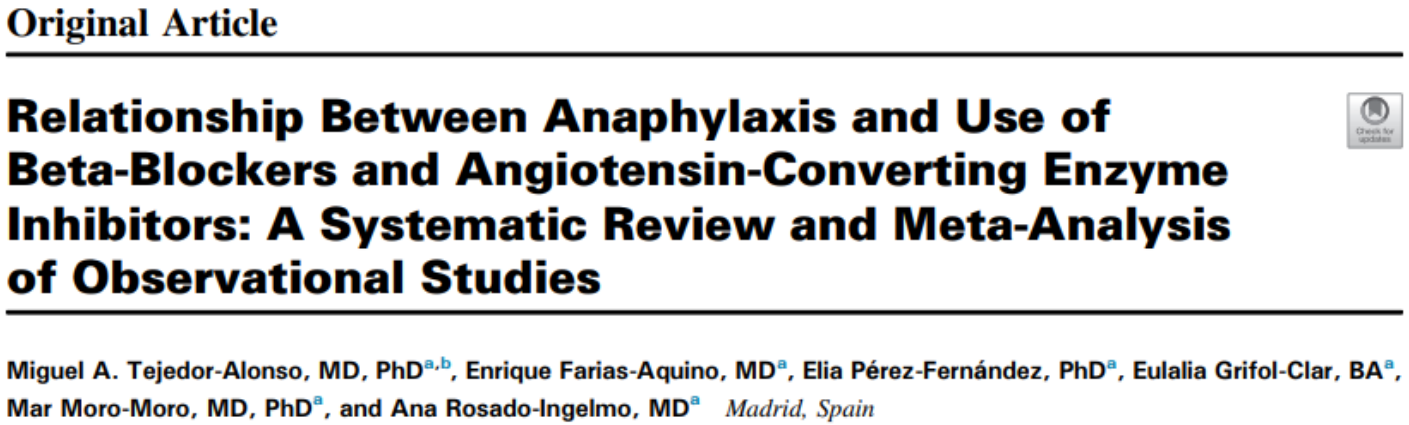
Kale and Korenstein. BMJ 2018; 362: k2820.

Oral Food Challenges

n = 501	
Reacted	37 (7.4%)
Objective reaction	23 (4.6%)
AH ± Systemic Steroid	31 (83.8%)
Epinephrine	3 (8.1%)

Medications that may interfere with interpretation of OFC
Antidepessants
ACE inhibitor
Beta blocker
NSAIDs
Biologics



Original Article

Relationship Between Anaphylaxis and Use of Beta-Blockers and Angiotensin-Converting Enzyme Inhibitors: A Systematic Review and Meta-Analysis of Observational Studies

Miguel A. Tejedor-Alonso, MD, PhD[a,b], Enrique Farias-Aquino, MD[a], Elia Pérez-Fernández, PhD[a], Eulalia Grifol-Clar, BA[a], Mar Moro-Moro, MD, PhD[a], and Ana Rosado-Ingelmo, MD[a] *Madrid, Spain*

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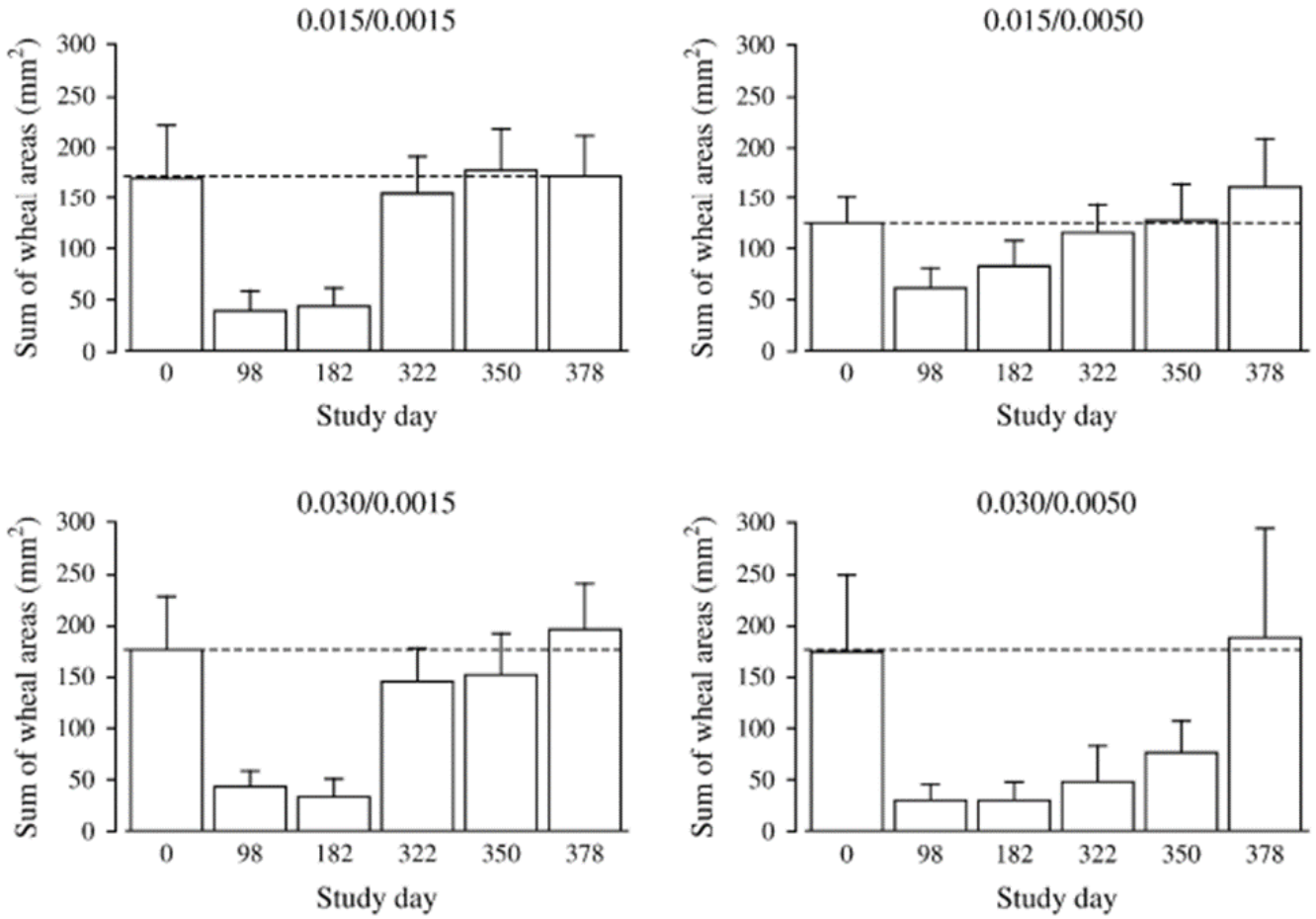
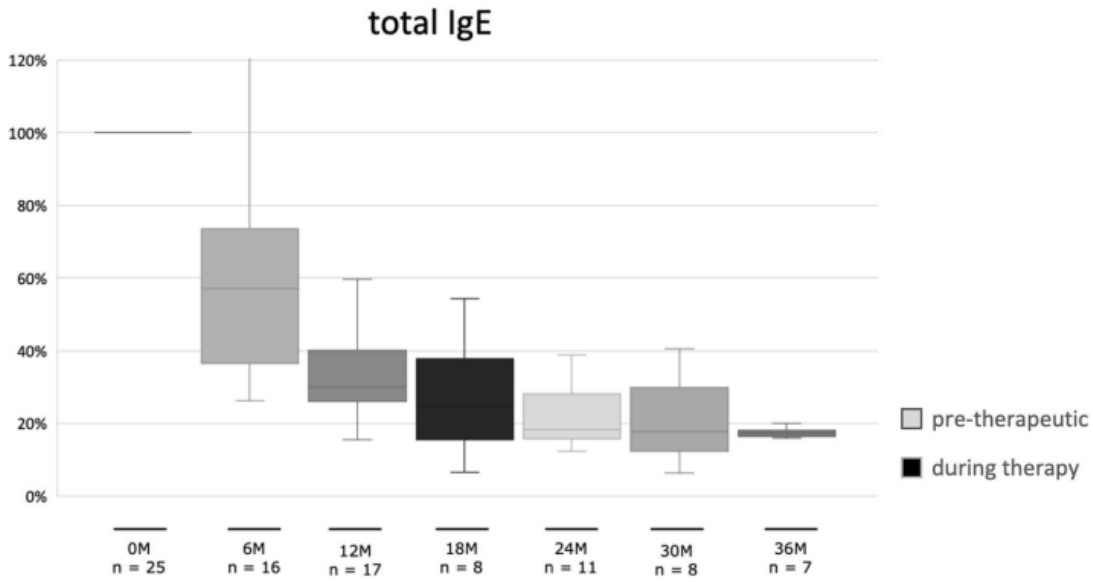
Ringus et al. JACI 2025; 155(2): AB38., Tejedor-Alonso et al. JACI IP 2019; 7: 897.

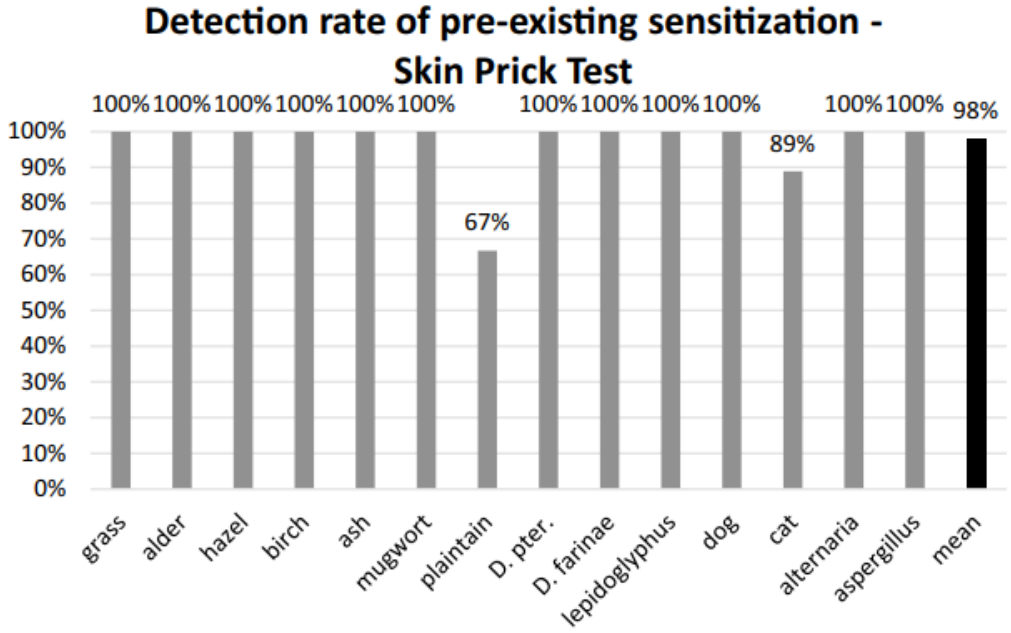
Omalizumab and IgE Testing



Corren et al. JACI 2008; 121: 506.

Dupilumab and IgE Testing





		Patch test during dupilumab (PT2)					
		–	+	++	+++	?+	Total
Patch test prior to dupilumab (PT1)	+	25	6	0	0	3	34
	++	12	7	1	0	0	20
	+++	0	0	2	0	0	2
Total		37	13	3	0	3	56

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Huber et al. Euro Arch Oto Rhino Lary 2024; 281:4183., de Wijs et al. Clin Exp All 2021; 51(7): 959.

Diagnosis is not the end, but the beginning of practice.

Martin Fischer, MD

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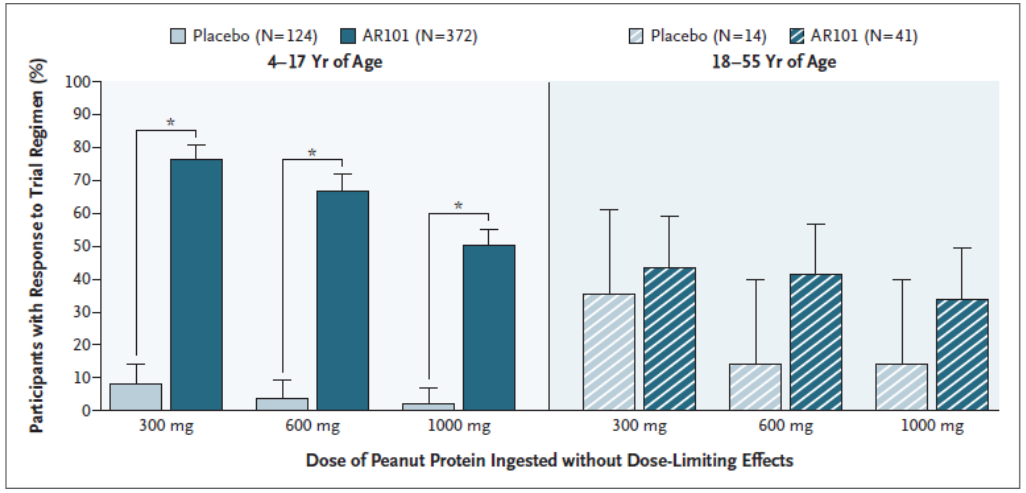
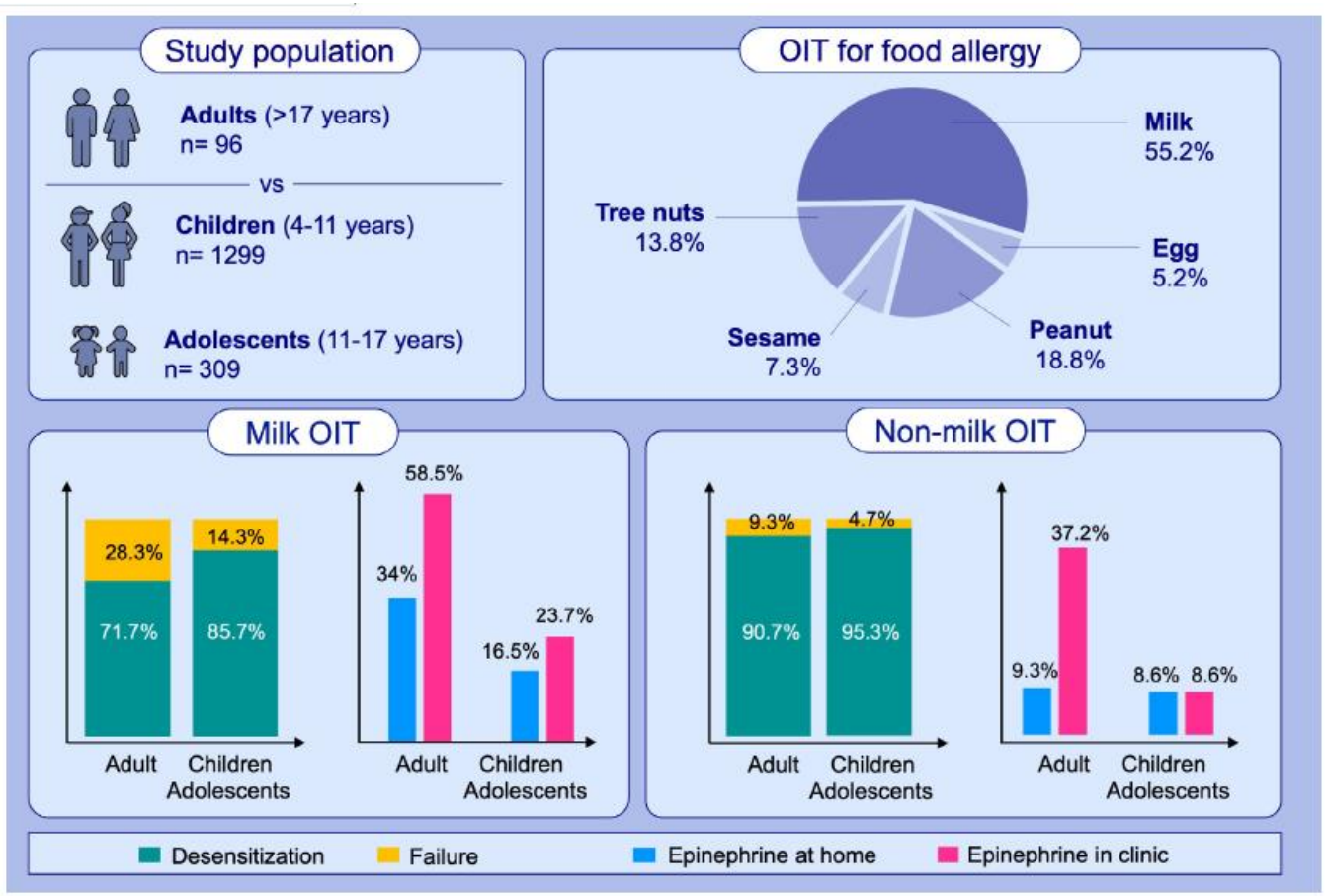
Adult Oral Immunotherapy





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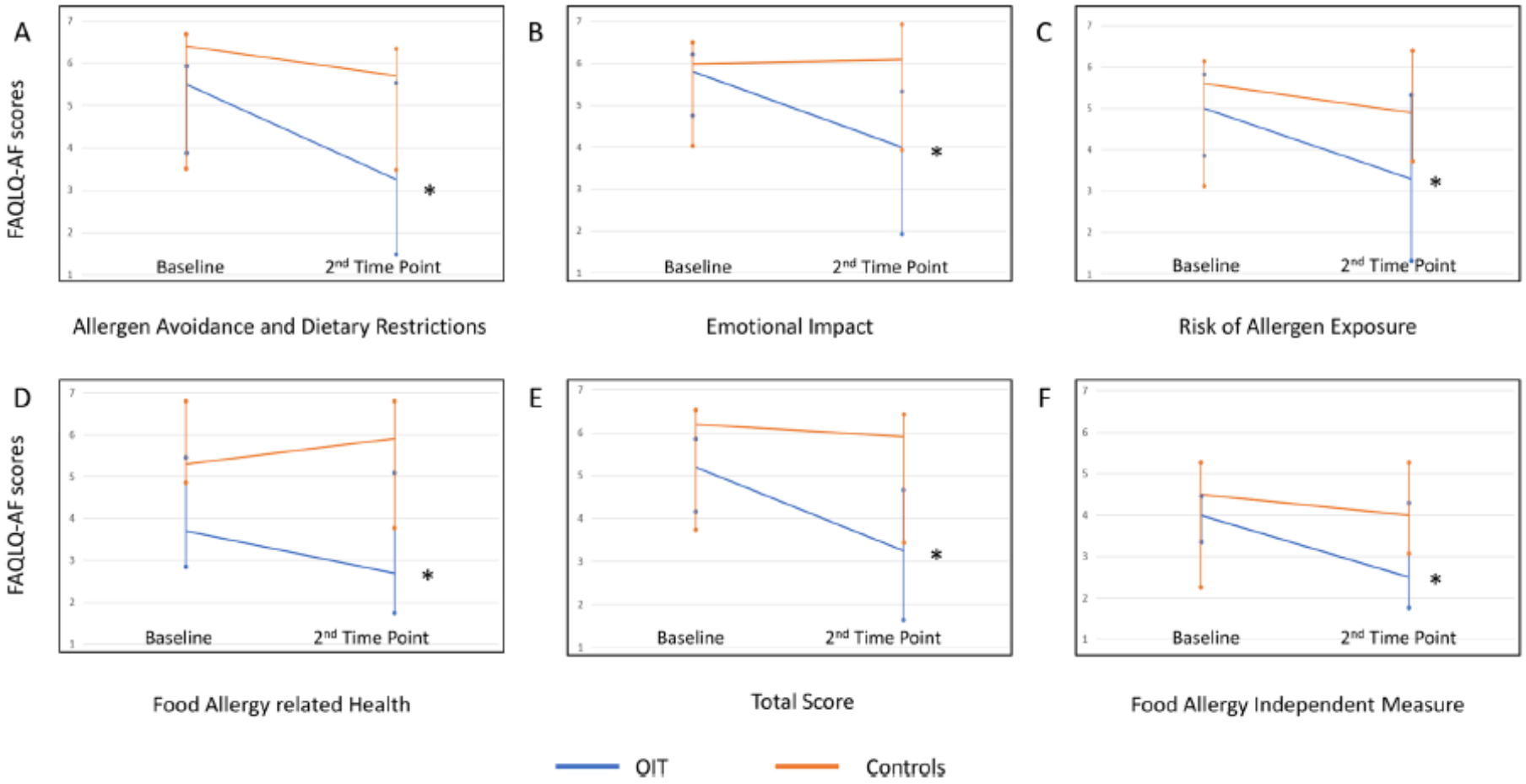
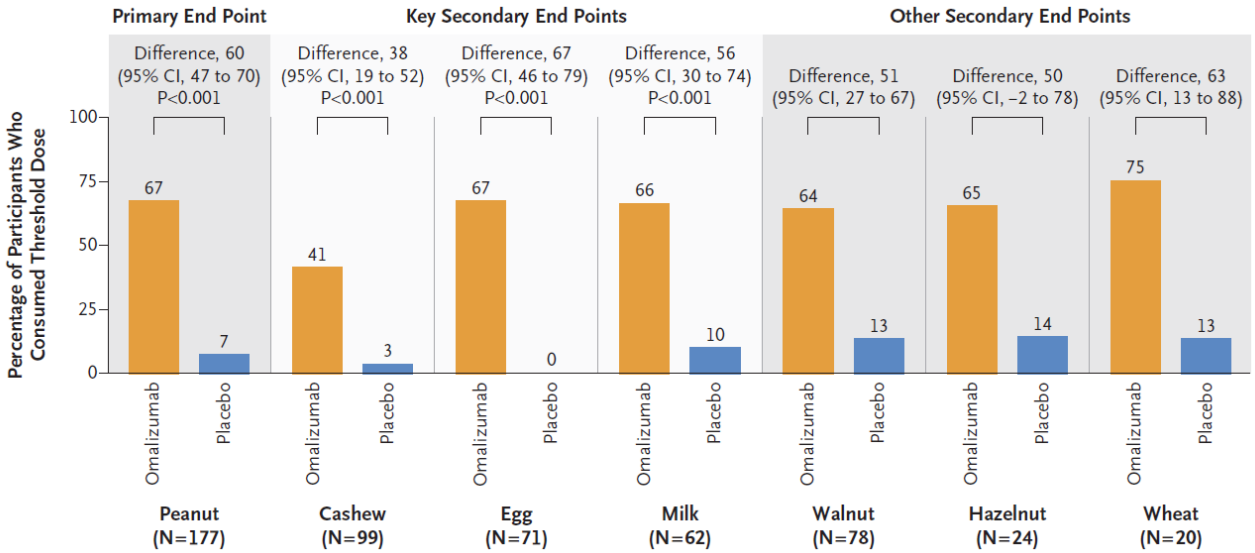
Vickery et al. NEJM 2018; 379(21): 1991., Epstein-Rigbi et al. Allergy 2023; 78: 803.

Oral Immunotherapy and Adult QoL



Epstein-Rigbi t al. AACI 2024; 20: 53

Omalizumab



RANDID*	Stage	Food Protein	Success†
Y1	Stage 1	Peanut	Yes
		Cashew	Yes
		Hazelnut	Yes
Y1	OLE	Peanut	Yes
		Cashew	Yes
		Hazelnut	Yes
Y2	Stage 1	Peanut	No
		Cashew	No
		Walnut	Yes
Y3	Stage 1	Peanut	No
		Egg	Yes
		Cashew	No

* RANDID is a random designator added for this display only. It differentiates which events occurred within the same person.
†Success is defined as tolerating ≥ 600mg peanut protein or ≥ 1000mg other food protein without dose-limiting symptoms.

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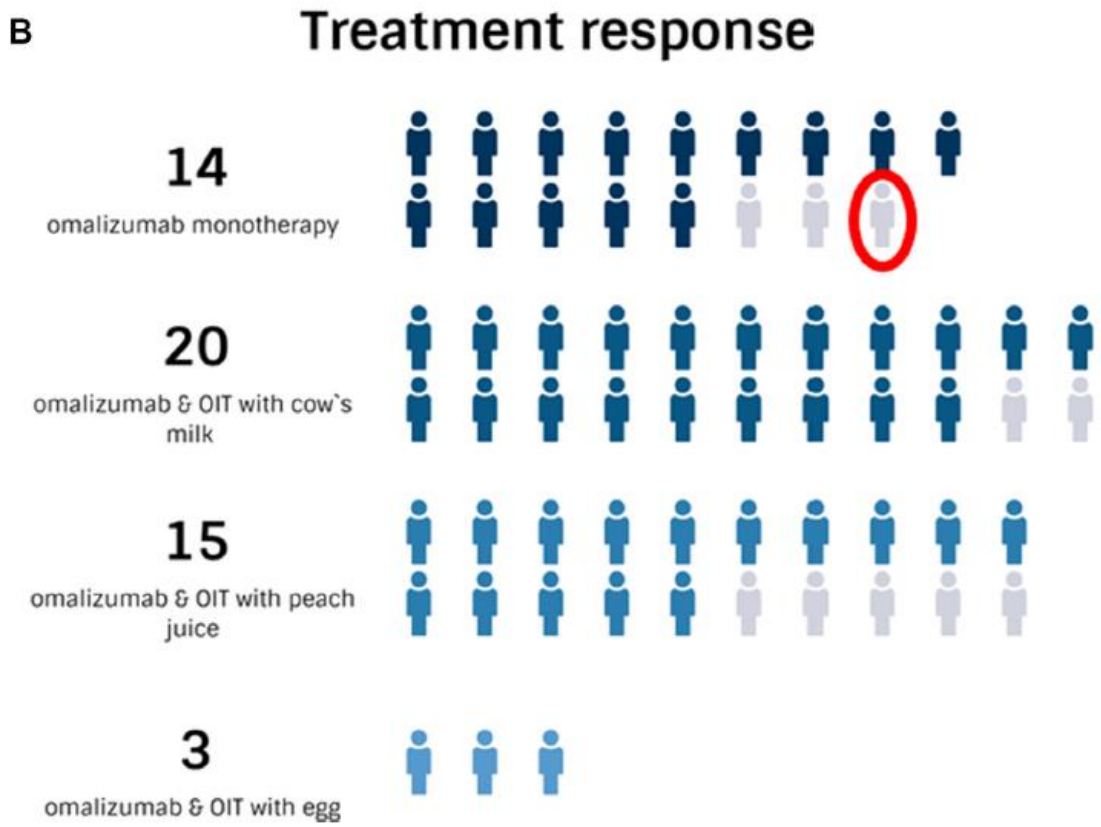
Wood et al. NEJM 2024; 390(10): 889.

Real World Results of Omalizumab

	Entire cohort N = 62	Spain N = 52	Germany/Switzerland N = 10
Age in years			
Mean age	30.6	29.4	37.4
Median age	27	25.5	35
Min.-max. age	9-59	9-59	19-58
Gender: n (%)			
Female	39 (62.9%)	33 (63.5%)	6 (60%)
Atopic history: n (%)			
Food allergy	62 (100%)	52 (100%)	10 (100%)
Allergic rhinoconjuctivitis	43 (69.4%)	37 (71.1%)	6 (60%)
Asthma	34 (54.8%)	28 (53.8%)	6 (60%)
Atopic dermatitis	7 (11.3%)	5 (9.6%)	2 (20%)
Chronic spontaneous urticaria	5 (8%)	2 (3.8%)	3 (30%)
IgE levels (kU/l)			
Mean IgE levels (kU/l)	606.6	635.1	435.3
Median IgE levels (kU/l)	289	289	361
Tryptase levels (µg/l)			
Mean tryptase levels (µg/l)	4.4	4.4	4.7
Median tryptase levels (µg/l)	3.97	3.69	4.51



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Alexiou et al. WAO 2025; 18: 101048.

Epicutaneous Immunotherapy

	Sample size	RR (95% *CI*)	I^2
Desensitization			
Allergen type			
Milk	38	7.12 (0.80–63.45)	0%
Peanut	1082	3.37 (2.39–4.75)	13%
Age			
> 11 years	147	1.11 (0.48–2.58)	0%
≤ 11 years	935	3.84 (2.39–6.16)	34%
Duration of treatment			
≥ 52 weeks	1082	3.37 (2.39–4.75)	13%
< 52 weeks	38	7.12 (0.80–63.45)	0%
Local adverse reactions			
Allergen type			
Milk	38	2.29 (0.51–10.17)	0%
Peanut	1285	3.09 (2.23–4.29)	0%
Population			
Children only	1149	2.96 (2.11–4.14)	0%
Adult and children	174	4.07 (1.48–11.19)	0%
Duration of treatment			
≥ 52 weeks	792	3.10 (1.88–5.13)	24%
< 52 weeks	531	2.87 (1.63–5.04)	0%
Systemic adverse reactions			
Allergen type			
Milk	20	2.04 (0.08–49.68)	Not applicable
Peanut	1285	2.00 (1.13–3.53)	0%
Population			
Children only	1131	2.51 (1.15–5.48)	0%
Adult and children	174	1.57 (0.71–3.51)	0%
Duration of treatment			
≥ 52 weeks	792	2.22 (1.08–4.54)	0%
< 52 weeks	513	1.76 (0.68–4.56)	3%

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Xiang et al. Syst Revs 2025; 14: 4.

Summary

Adult food allergy is likely over-diagnosed

OFCs warrant special considerations in adults

Limited but reassuring data for OIT and omalizumab in adult food allergy

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Thank You

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