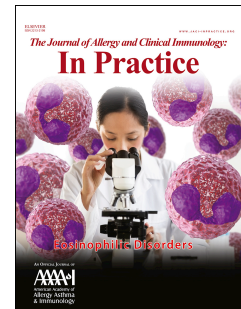


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Treatment expectations in food allergic patients referred for oral immunotherapy.

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Word count: 996 words

Clinical Implications box: Families referred for OIT have diverse expectations toward treatment. These should be explored in a shared decision-making process to ensure personal treatment objectives are defined accordingly.

Key word: Oral immunotherapy, IgE-mediated food allergy, treatment expectations, treatment goals, treatment objectives, shared decision-making.

The recent introduction of oral immunotherapy in clinical practice has opened the door to new personalized approaches to food allergy that are no longer limited to the single option of strict avoidance. This creates a new challenge for clinicians, who will need to support patients and families in determining which management option is right for them. Debate around OIT in the last decade has led to a consensus that this decision should be established through a shared-decision making approach^{1,2} that recognizes the unique expertise of patients and caregivers on their specific experience of illness, social circumstances, attitude to risk, values and preferences³.

A key step in shared decision-making is establishing patients' goals toward therapy. This is particularly important in the context of OIT, where the likelihood of success largely depends on how that success is defined (e.g. development of sustained tolerance vs achievement of protection against trace exposure). Interestingly, while the sustained tolerance is an important outcome in the medical literature, interviews with patients have revealed that many are not seeking a cure but would be satisfied with the protection provided by ongoing desensitization^{1,4,5}. Knowing families' expectations can lead to more personalized discussions and ensures that the perspective of patients and the health care providers are fully aligned.

The objective of this study was to investigate families' expectations toward OIT. The first 1107 application forms referred to one academic center from 2017 to 2019 for OIT treatment outside a research setting were reviewed. The application form included

61 general questions on demographics, allergic history with number of allergies and
62 reactions, as well as the Food Allergy Quality of Life Questionnaire (FAQLQ). It also
63 included an open-ended question asking: “What are your expectations towards oral
64 immunotherapy treatment?” The open-ended design was specifically chosen to avoid
65 prompting responses from the applicant, which they may not have otherwise provided
66 (acquiescence bias).

67
68 Answers were analyzed using a content analysis software (Wordstat, Provalis Research).
69 Words or word groups appearing at least three times in the complete dataset were
70 included in the dictionary and categorized into themes. Responses for which a specific
71 theme was not automatically identified in this initial round were reviewed manually to
72 further expand and refine the dictionary. Categories built by two independent assessors
73 were compared and discrepancies resolved through discussions. Frequency analysis was
74 performed to describe overall word and theme occurrence. Association between theme
75 occurrence and patient characteristics were analyzed using chi-square test or student’s
76 T test, as appropriate, with SPSS. This project was approved by the institution’s ethics
77 committee.

78
79 Following the initial analysis, 83 of the 1107 participants were excluded either because
80 they had not provided an answer or they did not answer the question (e.g. “we hope to
81 be selected”). Table 1 presents the characteristics of the 1024 patients included in the
82 semantic analysis. The most frequently written word groups were “quality of life” (89

times) and “allergic reactions” (88 times), followed by “anaphylactic shock” (68 times) (Figure 1).

Texts were then classified into eight sub-themes, themselves grouped into three main themes (Figure 1). About 61% of applicants expected OIT to decrease the risk associated with accidental allergic reactions, either by decreasing the risk of those occurring (38%) or by making them less severe if they occurred (43%). About 73% of applicants expected OIT to alleviate the burden of food allergy on their daily lives, by simplifying their diet (45%), by decreasing the feeling of fear (30%), by decreasing social limitations (24%) or by providing them with a feeling of normalcy (20%). Finally, 23% mentioned the hope that OIT would promote or accelerate the resolution of their food allergy. Only 7% of participants’ answers mentioned the resolution of their food allergy as their only goal.

These results are in line with previous qualitative studies indicating that many patients and caregivers show interest in a non-curative therapy^{2,5,6,7,8,9}. A majority of patients are expecting OIT to have a concrete impact on their daily lives, either in terms of risk management or in terms of opportunities. This suggests that these patient-centered outcomes should be considered when defining treatment success in both clinical practice and research.

When considering associations with individual characteristics, parents expecting OIT to improve social limitations, to reduce fear or to lead to a more normal life generally

reported a greater deficit in food-related quality of life at baseline (average FAQLQ of 4.34 vs 3.89, $p < 0.0005$). They were also more likely to report multiple food allergies (OR 1.68, CI 95% 1.24-2.28, $p = 0.001$) or allergy to a staple food (OR 1.54, CI 95% 1.14-2.08, $p = 0.005$). In contrast, those with a prior history of anaphylaxis were more likely to mention reduction in risk (OR= 1.51, CI 95% 1.15-1.98, $p = 0.003$) or in severity of eventual accidental reactions (OR= 1.49, CI 95% 1.14-1.95, $p = 0.004$) as their main expectation from treatment. This supports the notion that prior experience and personal context contribute to shape patients' expectations toward treatment.

Parents of toddlers (≤ 3 years old) were also more likely to expect food allergy resolution as an outcome of OIT, compared to parents of older children (OR 1.54, CI 95% 1.12-2.11, $p = 0.007$), which is indeed more likely to occur in this population¹. It was also reported more frequently in patients with single food allergies (OR 1.44, CI 95% 1.04-1.98, $p = 0.03$). Because the referral forms were filled prior to any contact with families, realistic expectations toward resolution are likely attributable to the education provided by the referring allergists. This, however, may not be generalizable to the rest of the food allergic population that has not been referred for OIT and therefore may have a lower degree of OIT literacy.

In conclusion, we used a semantic analysis software to explore treatment expectations in a large sample of patients referred for OIT and found a wide diversity in reported themes, which correlated with patient experience and individual context. This

127 underscores the need to explore patients' personal goals in a shared decision-making

128 process prior to OIT and to ensure treatment objectives are defined accordingly.

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170 Tables

Patient characteristic	n=1024
Median Age at Enrollment, in years (IQR)	6.7 (3,7-10,2)
Male	641 (62%)
Multiple allergies (≥ 2)	800 (78%)
Ubiquitous Allergy	358 (35%)
Food allergens	
Peanut	793 (77%)
Tree nuts	495 (48%)
Egg	360 (35%)
Tolerates cooked forms	135 (13%)
Milk	209 (20%)
Tolerates cooked forms	39 (4%)
Wheat	49 (5%)
Sesame	196 (19%)
Legumes	110 (11%)
Seafood	131 (13%)
Fish	158 (15%)
FAQLQ average score ($\pm$ SD)	
All dimensions	4.2 $\pm$ 2.1
Emotion dimension	3.8 $\pm$ 1.6
Anxiety dimension	4.2 $\pm$ 1.9
Social dimension	4.7 $\pm$ 1.8
Previous anaphylaxis	311 (30%)

171

172 **Table I – Patient characteristics.** FAQLQ: Food allergy Quality of life questionnaire; IQR:

173 Interquartile range; SD: Standard deviation.

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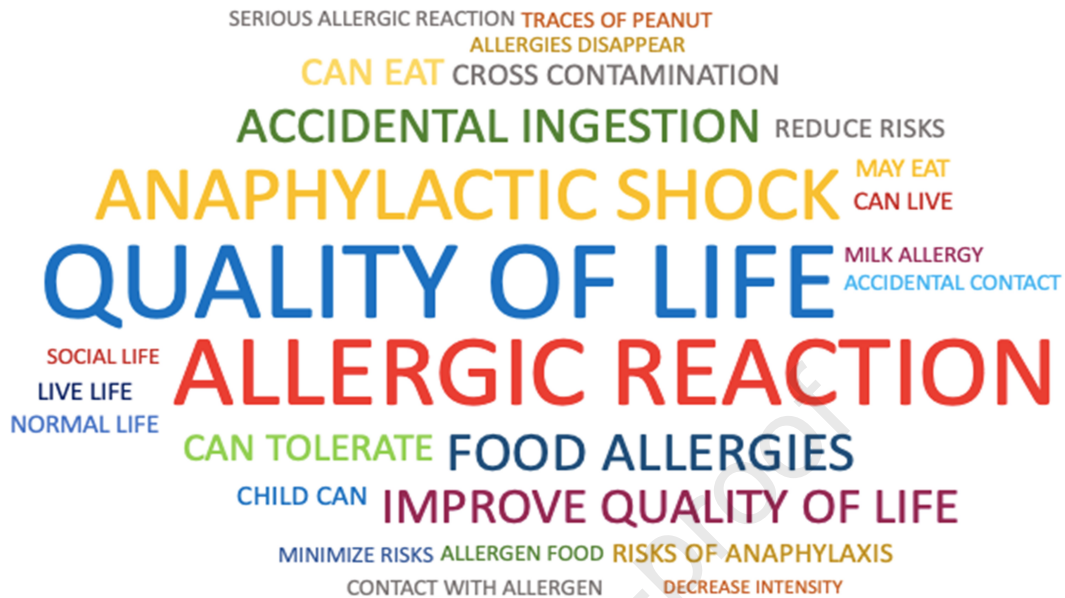
Figure legends

Figure 1: Thematic analysis of patients' expectations toward oral immunotherapy.

Panel A presents the word cloud with most frequently reported word groups appearing in larger characters. Panel B indicates the frequency of co-occurrence of the major themes.

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A



B

