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ORIGINAL ARTICLE

## Validation of a Spanish version of the EuroPrevall Food Allergy Quality of Life Questionnaire-Parental Form

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### **KEYWORDS**

Food allergy; Children; Parents; Questionnaire; Quality of life; Spanish; Validation

### Abstract

*Background*: Food allergy can have a major impact on quality of life of children and their parents. Questionnaires have been developed to measure the impact of this disorder. We aimed to validate the EuroPrevall questionnaire on Food Allergy-Quality of Life Questionnaire, Parent Form (FAQLQ-PF) and the Food Allergy Independent Measure (FAIM), translated into Spanish. *Methods*: The internal consistency of the FAQLQ-PF and the FAIM, translated into Spanish (Spain) and completed by the parents of 74 children with IgE-mediated food allergy, were evaluated with Cronbach's alpha. To test construct validity of the FAQLQ-PF, its correlation with the FAIM was also calculated. To assess their discriminant validity, we compared the values of both depending on the number of offending foods and for children with and without anaphylaxis. *Results*: The values of Cronbach's alpha for the three domains in the FAQLQ-PF were over 0.9. The value of alpha for FAIM questions was below 0.6, which was attributed to the wording of one question. When this question was removed, alpha increased to over 0.70. There was a significant correlation between the FAQLQ-PF score and the FAIM. There were significantly poorer FAQLQ-PF scores in children with more food allergies and worse FAIM in those who had had anaphylaxis.

*Conclusions:* The Spanish version of the FAQLQ-PF had a good internal consistency, good construct validity and validity to discriminate patients with more food allergies and anaphylaxis. It can be used as a tool to evaluate and monitor the quality of life in families with food allergic children.

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### Introduction

Food allergy has been on the increase in the last decades, both in children and in adults.<sup>1</sup> Severity is very variable, ranging from mild oral allergy syndrome to life-threatening reactions and, thus, mortality is not exceptional. This causes stress and limitations in life patterns on patients with food allergy and also in their families.

Tools have been developed to measure and monitor the impact of food allergy, and they are also useful to evaluate the effect of therapeutic measures such as techniques of desensitisation or other forms of immunotherapy.

EuroPrevall was a project to study different aspects of food allergy in Europe, funded under the Framework Programme FP6 of the European Union.<sup>2</sup> This initiative developed several questionnaires on quality of life in food allergy (FA-QoL).<sup>3-6</sup> The questionnaires have been translated and validated in several languages.<sup>7-12</sup> The aim of our study was to validate the questionnaire on Food Allergy-Quality of Life Parent Form (FAQLQ-PF) and the Food Allergy Independent Measure (FAIM) translated into Spanish (Spain).

### Material and methods

As the FAQLQ-PF and the FAIM are intended for clinical work and communication between patients and health professionals, the English version was translated into Spanish by one of the authors, a paediatric allergist with extensive experience and daily clinical contact with children with food allergy and their parents. The initial version was reviewed by the rest of the authors, and the final version was agreed upon by all of them. The final version is available in the online supplement.

The questionnaire was completed by parents of 0-12year-old children with food allergy. These had been diagnosed with active IgE-mediated food allergy as they had symptoms compatible with a food allergic reaction together with a positive skin prick test and/or serum specific IgE. The questionnaire was completed in our outpatients' clinic when children attended for a challenge with one of the culprit foods, and prior to knowing the outcome of the challenge. There was no selection of patients based on age, food or severity, so the whole spectrum of food allergy could be present.

Parents completed the questionnaire following the instructions therein, with no influence of the authors. Parents were instructed to ask only if there was something they did not understand; just one question arose, in which the father of one of the patients asked what anaphylaxis was.

The FAQLQ-PF consists of 30 questions, divided into three domains: Emotional Impact (13 questions), Food Anxiety (8 questions), Social/Dietary Restrictions (9 questions), scored with a Likert scale from 0 to 6, with higher values associated to poorer quality of life. The classification of questions according to domain is shown in Tables E1 to E3 in the online supplement. Some of the questionnaires are intended for parents of children of all ages (Section A), some only for those 4–12 years of age (Section B), and others for those 8–12 years (Section C). The mean score of the questionnaire was calculated dividing the sum of values by the number of answered questions.

Section D part 2 included FAIM (Food Allergy Independent Measure), a tool that has been developed and proposed to evaluate construct validity of FA-QoL questionnaires and has shown good face validity, relevance and reliability.<sup>13</sup> There is a set of four questions about parents' feelings, and a set of the same questions about children's feelings according to parents' opinions, that is, parents answer what they think that the children feel. Section D also included information about sex, age, number and type of eliciting foods, type and severity of reactions. The use of the questionnaire was allowed by the Ethics Committee of our centre and anonymity of answers was warranted.

To test the internal consistency of the FAQLQ-PF and FAIM, Cronbach's alphas were calculated. The corrected item-total correlations were also calculated, as well as Cronbach's alpha if an item was deleted. The correlations of questions within each domain were assessed. To evaluate construct validity of the FAQLQ-PF, the correlation of the mean score of all domains with FAIM values was determined. The non-parametric Kruskal–Wallis test was used to compare values according to the number of offending foods and the presence of anaphylaxis, both for the FAQLQ-PF and the FAIM, to assess their discriminant validity. The software programme SPSS 15.0 (Chicago, Ill, USA) was used.

### Results

The sample comprised parents of 74 children (47 male, 27 female) with IgE-mediated allergy to food, with a mean  $\pm$  SD age of 6.46  $\pm$  3.2 years (range from eight months to 12 years and one month). Seventeen (23%) had been diagnosed with anaphylaxis. Twenty-five children (33.8%) were allergic to one food, and 49 (66.2%) had allergy to two, or up to eleven foods. The questionnaires were completed by 66 mothers, seven fathers, and in one case gender was not recorded.

Value of Cronbach's alpha for the whole questionnaire (30 questions on three domains) was very high, 0.970. The values of alpha when each item was deleted had very little changes (0.967–0.970) and the corrected item/total correlation varied from 0.407 to 0.906. In general, the recommendation is to remove one item from the questionnaire if Cronbach's alpha has a marked increase and the corrected item/total correlation has a value <0.30.

The values of alpha for the subscales of the domains on Emotional Impact (0.927), Food Anxiety (0.906) and Social/Dietary Restrictions (0.944) were also very high, with no relevant changes when each question was deleted (Table 1). The values for each individual item are shown in the online supplement (Tables E1–E3).

The correlations between questions within each domain are shown in Tables E4–E6. All pairs of questions in the domain of Social/Dietary Restrictions had significant correlations (r 0.366-0.956). A very high correlation (r > 0.80) could mean that the information provided by the two questions in the pair is very similar (multicollinearity) and removal of one of them should be considered. These high correlations appeared in the following pairs of questions: ''limitations in family holidays vs. visiting restaurants'', ''food activities at school vs. social activities at others' homes'', ''food activities at school vs. limitations in family outing activities'', ''exclusion in food activities vs.

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