

CORRESPONDENCE

Prevalence of food allergen-free diets in school canteens in Hortaleza district, Madrid

To the Editor,

In the last 15 years, food allergy (FA) prevalence has doubled worldwide (1). Therefore, it is one of the allergy areas where most developments have occurred in recent years (2). Its importance is, first, because it affects a significant percentage of the population, especially children. In Spain data on the current prevalence in the general population is not yet available, but FA is increasing, as the number of diagnoses has doubled in just over a decade, from a prevalence of 3.6% in 1992 to 7.4% in 2005, according to the results of epidemiological studies 'Alergológica' conducted by the Spanish Society of Allergology and Clinical Immunology (SEAIC) (3).

In the majority of patients, the FA diagnosis was established on the basis of a positive case history together with the presence of specific IgE. With this approach, food allergy has probably been over-diagnosed taking into account the diagnostic performance of skin prick test and specific IgE (without a 100% positive predictive value even with a positive case history) (4–6).

FA, for the sufferer, and for parents in the case of children, is perceived as a permanent risk, with the resulting lower quality of life of these patients (7).

A quarter of European children suffer from some type of FA, but their teachers are not trained to prevent and treat these life-threatening episodes (8).

Within preventive medicine, and in the field of food security factors, emphasis must be placed on improving consumer information in general and for allergic patients in particular (1).

In relation to food security, the Health Authorities do not have a system for collecting events related to food allergies that occur in catering and especially in the school environment, as is the case for the data on outbreaks of food poisoning (9).

Taking this into account, we carried out this study to show FA-free diet prevalence in schools and kindergartens in the Hortaleza District during the period 2009–2013, as reported by specialists.

A structured questionnaire on special diets was applied in different school years during the period 2009–2013. Special diet by means of FA-free diets was recorded on the basis of clinical reports by specialists. 5.24% FA-free diets were reported in the last year of the surveyed schools with upward trend year on year ($p < 0.016$) (total studied period 4.31%), fig. 1. The most common allergenic foods declared by allergists were egg (32.78%), fruits (21.04%), nuts (17.87%), milk (17.08%), fish (13.92%) and legumes (10.54%) (upward trend for nuts, $p < 0.003$). Milk and egg were the most common foods in patients <6 years of age, whereas fruits, nuts, and legumes were the most prevalent foods in patients over 6 years, Table 1. Significant differences were shown in FA-free diet prevalence in

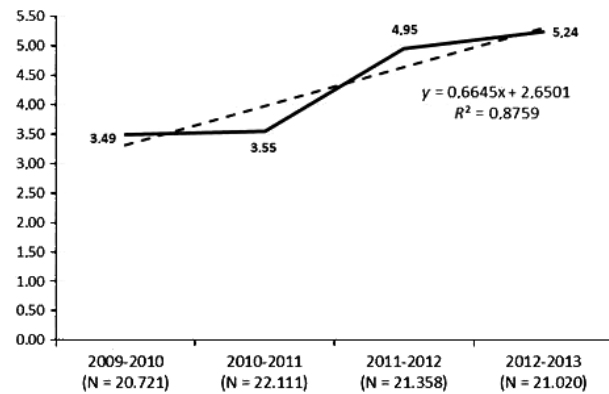


Figure 1 Prevalence (%) of food allergen-free diets in school canteens in Hortaleza district, Madrid, Spain.

private schools ($p < 0.001$), Table 1. Prevalence of FA-free diets in the Hortaleza District schools is high, similar to the Spanish Alergológica 2005 report. In private schools, the prevalence of FA-free diets was higher than in public and subsidized schools.

For this analysis, the prevalence of FA-free diets was assessed by a positive response on the basis of a specialist's report case including all FA declared. We have found that the upward trend in the prevalence of FA-free diet as a special diet in Hortaleza District school canteens in the last year of the survey is similar to that observed in Alergológica 2005 study for children (3). The reasons for this increase may be due to higher awareness, better diagnostic tests, changes in dietary habits, etc., but have not been established. However, we consider that the survey improved this condition specialist's medical reports as a consequence of this as a surveillance requirement, achieving a greater awareness of this condition.

These results are in line with previous studies that show an increase in the prevalence of tree nut and peanut allergies, and in severe allergic reactions induced by foods (10).

These results also indicate that the socioeconomic gradient is a factor that could influence a higher risk of developing this condition, as has been shown previously (3).

This year, the application of Regulation 1169/2011 of the EU information on food labeling of packaged foods in relation to allergens will come into effect, and the responsibility of traders in the food industry will become a major concern. This could change Hazard Analysis Critical Control Point (HACCP) policies, as this is an individual pathology, where food security in relation to episodes caused each year is not considered 'food-borne outbreak'. Traditionally HACCP programs have been designed to control food safety, preferentially oriented to microbiological hazards.

Table 1 Food allergen-free diets with different reference food groups stratified by gender, age, type of school and school year*

	Gender		Age (years)		Type of school					School year				Total FA-free reference group prevalence				
	Male	Female	p-value	<3 years	>3 - <6	>6 - <15	>15	p-value	Public	Subsidizes	Private	p-value	2009-10	2010-11	2011-12	2012-13	p-value	
Egg	680 (35.02%)	523 (30.27%)	0.002	108 (55.67%)	572 (48.03%)	492 (24.30%)	31 (11.92%)	<0.001	196 (33.91%)	499 (33.45%)	508 (31.76%)	0.495	256 (35.36%)	272 (34.61%)	321 (30.34%)	354 (33.12%)	0.092	1,203 (32.78%)
Fruits	401 (20.65%)	371 (21.47%)	0.542	11 (5.67%)	145 (12.17%)	549 (27.11%)	67 (25.77%)	<0.001	121 (20.93%)	339 (22.72%)	312 (19.50%)	0.09	148 (20.44%)	151 (19.21%)	227 (21.46%)	246 (22.32%)	0.401	772 (21.04%)
Nuts	354 (18.23%)	302 (17.48%)	0.553	5 (2.58%)	211 (17.72%)	402 (19.85%)	38 (14.62%)	<0.001	90 (15.74%)	268 (19.96%)	297 (18.56%)	0.315	100 (13.81%)	130 (16.54%)	208 (19.66%)	218 (19.78%)	0.003	656 (17.87%)
(excluding pea nuts)																		
Pea nuts	29 (1.49%)	36 (2.08%)	0.176	-	22 (1.85%)	42 (2.07%)	1 (0.38%)	0.058	10 (1.73%)	18 (1.21%)	37 (2.31%)	0.066	9 (1.24%)	11 (1.40%)	17 (1.80%)	28 (2.54%)	0.127	65 (1.77%)
Fish	274 (14.11%)	237 (13.72%)	0.731	30 (15.46%)	159 (13.36%)	281 (13.88%)	41 (15.77%)	0.693	75 (12.98%)	198 (13.27%)	238 (14.88%)	0.338	108 (14.92%)	115 (14.63%)	141 (13.33%)	147 (13.34%)	0.67	511 (13.92%)
Shellfish	106 (5.46%)	115 (6.06%)	0.128	2 (1.03%)	48 (4.03%)	151 (7.46%)	20 (7.69%)	<0.001	26 (4.50%)	98 (6.57%)	97 (6.06%)	0.206	48 (6.63%)	57 (7.25%)	54 (5.10%)	62 (5.63%)	0.216	221 (6.02%)
Milk	336 (17.30%)	291 (16.84%)	0.711	78 (40.21%)	244 (20.49%)	284 (14.02%)	21 (8.08%)	<0.001	102 (17.65%)	235 (15.75%)	290 (18.13%)	0.199	112 (15.47%)	148 (18.83%)	178 (16.82%)	189 (17.15%)	0.38	627 (17.08%)
Legumes	218 (11.23%)	169 (9.78%)	0.155	7 (3.61%)	102 (8.56%)	232 (11.46%)	46 (17.69%)	<0.001	60 (10.38%)	170 (11.39%)	157 (9.81%)	0.356	83 (11.46%)	87 (11.07%)	102 (9.64%)	115 (10.44%)	0.613	387 (10.54)
Vegeta bles	59 (3.04%)	67 (3.88%)	0.163	5 (2.58%)	33 (2.77%)	65 (3.21%)	23 (8.85%)	<0.001	21 (3.63%)	52 (3.49%)	53 (3.31%)	0.927	21 (2.90%)	34 (4.33%)	33 (3.12%)	38 (3.45%)	0.592	126 (3.43%)
Meat	30 (1.54%)	62 (3.59%)	<0.001	-	24 (2.02%)	58 (2.86%)	10 (3.85%)	0.028	11 (1.90%)	25 (1.68%)	56 (3.50%)	0.003	21 (2.90%)	23 (2.93%)	25 (2.36%)	23 (2.09%)	0.592	92 (2.51%)
Cereals	13 (0.67%)	11 (0.64%)	0.902	-	3 (0.25%)	17 (0.84%)	4 (1.54%)	0.038	4 (0.69%)	11 (0.74%)	9 (0.56%)	0.828	4 (0.55%)	4 (0.51%)	8 (0.76%)	8 (0.73%)	0.89	24 (0.65%)
Musta rd and other spices	1 (0.05%)	6 (0.35%)	0.04	-	2 (0.17%)	3 (0.15%)	2 (0.77%)	0.16	-	4 (0.27%)	3 (0.19%)	0.455	0 (0.00%)	1 (0.13%)	1 (0.09%)	5 (0.45%)	0.108	7 (0.19%)
Cocoa	29 (1.49%)	12 (0.69%)	0.022	-	8 (0.67%)	28 (1.38%)	5 (1.92%)	0.067	7 (1.21%)	10 (0.67%)	24 (1.50%)	0.088	6 (0.83%)	13 (1.65%)	10 (0.95%)	12 (1.09%)	0.409	41 (1.12%)
Additives	4 (0.21%)	5 (0.29%)	0.61	-	3 (0.25%)	6 (0.30%)	-	0.721	2 (0.35%)	5 (0.34%)	2 (0.13%)	0.432	3 (0.41%)	4 (0.51%)	1 (0.09%)	1 (0.09%)	0.162	9 (0.25%)
Anisakis	3 (0.15%)	3 (0.17%)	0.886	-	-	4 (0.20%)	2 (0.77%)	0.041	-	-	6 (0.38%)	0.02	1 (0.14%)	1 (0.13%)	1 (0.09%)	3 (0.27%)	0.753	6 (0.16%)
Other food	3 (0.15%)	8 (0.46%)	0.088	-	-	6 (0.30%)	5 (1.92%)	<0.001	2 (0.35%)	3 (0.20%)	6 (0.38%)	0.66	1 (0.14%)	4 (0.51%)	3 (0.28%)	3 (0.27%)	0.61	11 (0.30%)
Total food allergen-free diets	1,942 (52.92%)	1,728 (47.08%)	0.002	194 (5.29%)	1,191 (32.45%)	2,025 (55.18%)	260 (7.08%)	<0.001	578 (15.75%)	1,600 (43.60%)	1,492 (40.65%)	<0.001	724 (19.73%)	782 (21.42%)	1,058 (28.83%)	1,102 (30.03%)	0.016	3,670 (100.00%)

*Some students have more than one food allergen-free diet (polisensitized patients). Significance level p<0.05.

This kind of survey could help to improve awareness on FA for all food safety stakeholder policies and, from the point of view of public health, for specialist sanitary inspectors in hygiene and food safety of all administrations, to extend information and adopt appropriate criteria when new cases of FA are presented.

School canteens represent a good source of information regarding FA trends in children.

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