



Food Allergy Management in Adults: Elimination Diets, Nutritional Risk and Where Dietetic Input Changes Outcome

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Abstract

A substantial share of the nutritional harm attributed to food allergy is borne by people who do not have one. More than 20 per cent of adults and children alter their diets because of perceived food allergy, and in one series of children treated with milk elimination the confirmed prevalence of milk allergy was 4 per cent against 24.2 per cent prescribed the diet. In a household survey, 17 per cent reported adverse food reactions and close to three quarters of those altered family eating habits, in the absence of professional diagnosis or recommendation. Where allergy is confirmed, elimination raises risk of inadequate calcium, vitamin D, iron and protein intake, and unsupervised milk avoidance has been linked to reduced bone mineral density. A disease-specific quality of life instrument devotes an entire domain of its 29 items to avoidance and dietary restriction.

Keywords: Food allergy; Elimination diet; Nutritional risk; Quality of life; Dietetic input

Introduction

Elimination of the food involved remains the cornerstone of food allergy management, and it is not without nutritional risk [1,2]. Guidance describes the goal as preventing acute and chronic allergic reactions through allergen elimination while planning balanced nutrition on an individualised basis [1].

Most of the nutritional literature concerns children, in whom growth provides a visible endpoint. Growth is not an issue in adults, but elimination of staple foods can reduce nutrient intake and affect overall health, and adults with food allergies may find it difficult to meet current dietary recommendations [1,3].

This review examines how much elimination is undertaken without confirmed allergy, what nutritional risk follows where allergy is confirmed, what burden the diet imposes beyond nutrients, and where dietetic input is described as altering the result.

Objective

This review sets out to establish four things from the published literature. First, the extent of dietary restriction undertaken for perceived rather than confirmed food allergy. Second, which nutrients are placed at risk by elimination and in whom. Third, what is measured about quality of life on these diets. And fourth, what specific functions dietetic input is described as performing.

Literature Review

How much elimination is undertaken without confirmed allergy: More than 20 per cent of adults and children alter their diets because of perceived food allergy [4]. In a study of children with atopic dermatitis treated with milk elimination diets, the actual prevalence of milk allergy at 4 per cent was significantly lower than the proportion prescribed such diets at 24.2 per cent, which the reviewing authors describe as confirming excessive application of strict dietary control (Figure 1) [4] (Table 1).

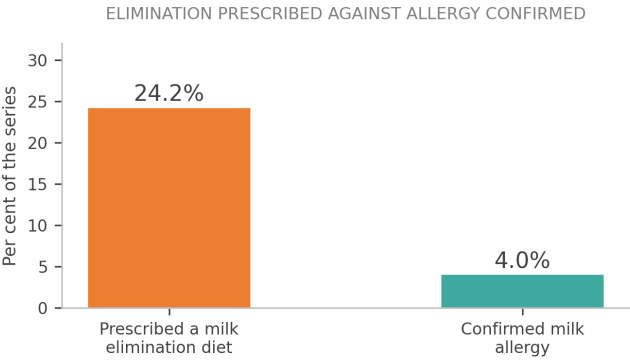


Figure 1: Elimination prescribed against allergy confirmed [4]

Changes made without professional advice: A survey of mothers regarding food allergy found that 17 per cent reported issues with adverse food reactions in their household, and that nearly three quarters of those altered their family's eating habits as a result, despite the absence of professional diagnosis or recommendation (Figure 2) [4]. The reviewing authors present these findings together as evidence of restriction extending well beyond diagnosed disease [4].

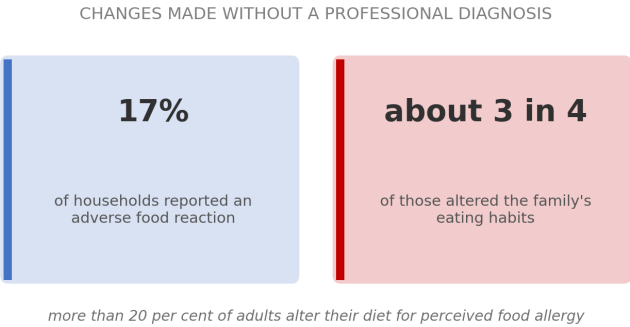


Figure 2: Changes made without a professional diagnosis [4]

What raises nutritional risk: A review of nutritional management tabulates the factors that may increase risk: cow's milk allergy, multiple food allergies, the type of disorder including food protein-induced enterocolitis syndrome, eosinophilic oesophagitis and atopic dermatitis, elimination of foods of high nutritional value, age of onset, feeding difficulties, additional non-allergy dietary restrictions, inadequate substitution or supplementation within the elimination diet, and inability to manage food avoidance (Figure 3) [1].

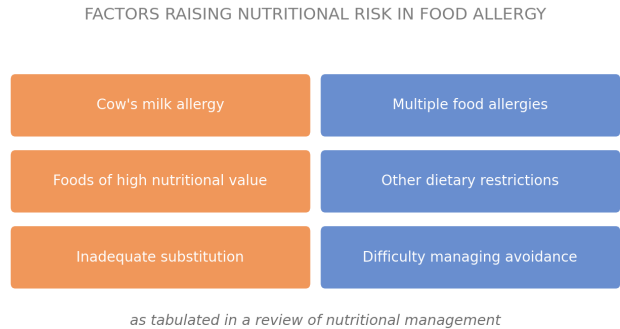


Figure 3: Factors raising nutritional risk in food allergy [1]

Which nutrients are affected: Elimination diets carry risk of vitamin D, calcium, iron and protein deficiency [5]. Unsupervised milk avoidance has been linked to poor calcium intake, poor bone health, loss of bone mineral density and to rickets (Figure 4) [3]. Where allergy developed in childhood and persists into adult life, the result may be a lifetime cumulative exposure to nutritional deficiency, and in older people avoidance of milk, egg and fish may contribute to inadequate protein intake at an age when requirements are higher [6].

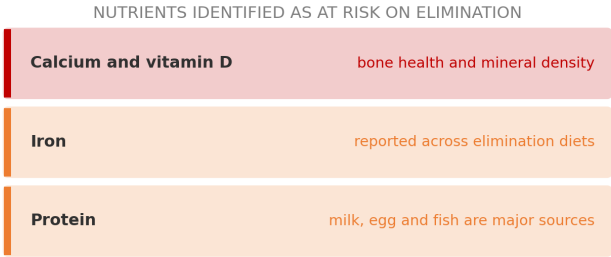


Figure 4: Nutrients identified as at risk on elimination [3,5,6]

Table 1: Restriction undertaken and consequences reported

Population or context	Reported finding
Adults and children generally	Over 20% alter diet for perceived allergy [4]
Children on milk elimination	24.2% prescribed against 4% confirmed [4]
Households reporting reactions	About three quarters altered eating [4]
Unsupervised milk avoidance	Reduced bone mineral density [3]
Persisting childhood allergy	Cumulative lifetime exposure [6]

Multiple restrictions compound: Single food avoidance is often straightforward, while multiple food restrictions usually present greater nutritional challenges, and factors such as religious observance or vegetarian and vegan eating matter in the original assessment [2]. Inadequate intake of specific nutrients may be exacerbated by anxiety about avoiding even minimal exposure to the allergen [6].

What is measured about quality of life: A disease-specific food allergy quality of life questionnaire developed for adults contains 29 items across four domains: allergen avoidance and dietary restrictions, emotional impact, risk of accidental exposure, and food allergy related health (Figure 5) [7]. It was applied to adults objectively diagnosed with allergy to at least one staple food, cow's milk, hen's egg or wheat, recruited from an outpatient allergy clinic on a convincing history supported by specific immunoglobulin E analysis [7].

Table 2: Components described in the reviewed management literature

Table 3: What is and is not established about dietary management in adults

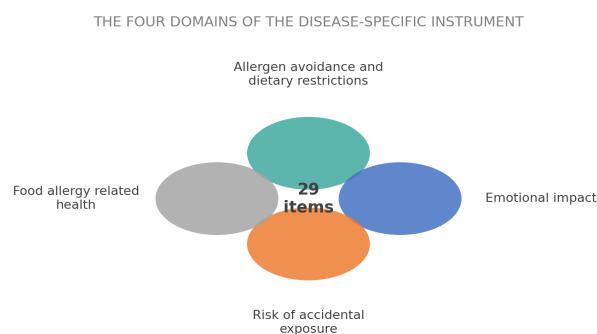
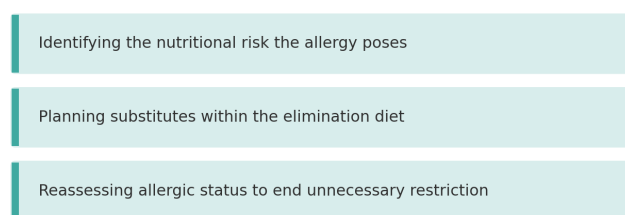


Figure 5: The four domains of the disease-specific instrument [7]

What the avoidance domain covers: Its items ask how troublesome the respondent finds needing constant vigilance about what is eaten, being able to eat fewer products, being limited in what can be bought, having to read labels, refusing things during social activities, being less able to accept an invitation spontaneously, and having to check personally whether something can be eaten when eating out [7]. The burden measured is therefore social and practical as much as nutritional.

Where dietetic input is described as acting: A dietitian can identify the nutritional risk posed by the allergy, and guidance to provide nutritionally appropriate substitutes within the context of the elimination diet is described as invaluable, with avoidance education alone stated to be insufficient (Figure 6) [1]. Optimal early dietary input, ideally from a registered dietitian or nutritionist, is described as capable of preventing and improving outcomes [2].

WHERE DIETETIC INPUT IS DESCRIBED AS ACTING



avoidance education alone is described as insufficient

Figure 6: Where dietetic input is described as acting [1,2]

Reassessment as part of management: Because some allergies resolve, regular reassessment of allergic status is recommended to avoid unnecessary prolonged restriction, and prolonged unnecessary avoidance may affect nutritional status and quality of life [2,8]. For certain immunoglobulin E mediated allergies including tree nuts, fish and shellfish, exclusion may be lifelong, with skin-prick and specific immunoglobulin E testing determining whether rechallenge is appropriate [2].

Element of management	Stated purpose
Confirming the diagnosis	Avoiding restriction without allergy [4]
Substitution planning	Replacing nutrients from excluded foods [1]

Periodic reassessment	Ending restriction that is no longer needed [2,8]
Multidisciplinary involvement	Nutritional and psychological burden [5]

How common the confirmed condition is: Prevalence of food allergy has been estimated by systematic review and meta-analysis in Europe [11] and internationally [12], and prevalence and severity among adults specifically have been surveyed at national scale [30], with the burden reviewed separately [31]. Diagnosis rests on skin testing, specific immunoglobulin E and oral food challenge [27], with double-blind placebo-controlled challenge described as the reference procedure [28] and challenge outcomes reported in children carrying a diagnosis [29]. Professional guidelines set out diagnosis and management [9,10].

The paediatric nutritional evidence: Growth and nutritional concerns in children with food allergy have been reviewed [16], with intake and growth reported directly [17,18]. Elimination diets in children with multiple allergies have been examined for their impact on growth and nutritional status [19], and nutrient intake in multiple immunoglobulin E mediated allergy assessed by systematic review [20]. Malnutrition among children with food allergies has been quantified in one health system [21]. Approaches to building a patient-specific exclusion diet have been described [13], alongside guideline updates for cow's milk allergy [14] and reviews of nutritional issues in allergic disease [15,33].

Burden beyond nutrition: The psychosocial impact of food allergy on children, adolescents and families has been reviewed [22], and quality of life in patients with food allergy examined as a topic in its own right [23]. The adult form of the disease-specific questionnaire was developed and validated separately [24], and impaired quality of life documented in adolescents allergic to staple foods [34]. Standardised diet history tools have been developed to support diagnosis [32].

Disorders with their own dietary protocols: International consensus guidelines address food protein-induced enterocolitis syndrome [25], and evidence-based recommendations cover eosinophilic oesophagitis in children and adults [26]. Both involve elimination protocols distinct from immunoglobulin E mediated allergy, and both appear among the disorder types listed as raising nutritional risk [1,25,26] (Table 2).

Question	What the evidence supports
Is restriction always indicated?	No; 24.2% against 4% in one series [4]
Does elimination carry risk?	Calcium, vitamin D, iron, protein [5]
Is the adult evidence direct?	Largely extrapolated from children [1,3]
Is the burden only nutritional?	No; a whole quality of life domain [7]

Does dietetic input help?	Consensus rather than trial evidence [1,2]
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Method

Search strategy: PubMed and the archives of the major allergy, clinical nutrition and dietetics journals were searched for studies of dietary management in food allergy. Search terms combined food allergy and elimination diet with nutritional risk, adults, quality of life, dietitian and unnecessary avoidance. Reference lists of the nutritional management review [1] and the adult clinic pilot study [3] were screened by hand for primary sources.

Eligibility: Studies were included if they reported dietary restriction, nutritional status or quality of life in populations with confirmed or perceived food allergy, or described the role of dietetic input. Studies in children are included where the adult literature is sparse and are identified as such throughout.

Data extraction and handling: Population, whether allergy was confirmed or perceived, the foods eliminated and the reported outcome were extracted as published. Whether a finding derives from adults or children is stated in every case, because most of the nutritional evidence in this field concerns growth in children and does not transfer directly to adults, in whom growth is not an endpoint. This review reports published findings and does not constitute dietary, elimination, reintroduction or diagnostic guidance for any individual; decisions about excluding or reintroducing a food belong with the treating allergist and dietitian, and food challenge is undertaken under medical supervision. No pooling or re-analysis was performed. Figures 1 to 6 and Tables 1 to 3 reproduce published values only. This is a narrative synthesis of published literature and was not registered as a systematic review.

Concluding Remarks

The first question in this field is not what to eliminate but whether elimination is warranted. More than 20 per cent of adults and children restrict their diets for perceived food allergy, and in one series 24.2 per cent were prescribed milk elimination against a confirmed prevalence of 4 per cent [4]. That ratio implies most of the restriction in that population was addressing something other than milk allergy.

It follows that a substantial share of the nutritional risk described in this literature falls on people who would tolerate the food. Unsupervised milk avoidance is associated with poor calcium intake and reduced bone mineral density [3], and someone incurring that without milk allergy has taken the cost of the treatment without its indication.

The household survey shows how the restriction propagates. Seventeen per cent of households reported adverse food reactions and close to three quarters of those changed how the whole family ate, without professional diagnosis or

recommendation [4]. The exposure is therefore wider than the number of people reporting symptoms, since household diets change together.

Where allergy is confirmed, the nutritional account is well characterised and mostly paediatric. Calcium, vitamin D, iron and protein are the nutrients named [5], and the listed risk factors are largely about how much is excluded and what replaces it rather than about the allergy itself [1]. For adults specifically the evidence is thinner, and the observation that growth is not an endpoint in adults is also a reminder that the most sensitive marker used in children is unavailable [3].

Two adult-specific considerations deserve more weight than they usually receive. A childhood allergy persisting into adult life produces cumulative exposure over decades rather than a period of risk [6]. And in older adults, avoiding milk, egg and fish removes major protein sources at an age when protein requirements are higher, which connects this literature to the sarcopenia evidence rather than to paediatric growth [6].

On quality of life, the instrument itself carries the argument. A validated questionnaire devotes one of four domains, within 29 items, to avoidance and dietary restriction, asking about vigilance, label reading, refusing food socially and checking before eating out [7]. That burden exists whether or not the diet is nutritionally adequate, and it applies in full to people restricting unnecessarily.

Three limitations belong with these conclusions. Much of the evidence cited concerns children, and the review states directly that growth is not an issue in adults, so transfer of the nutritional findings is an inference [1,3]. The prescribed-against-confirmed comparison comes from a single series in children with atopic dermatitis, a group in whom dietary attribution is particularly common, so it should not be read as a general rate [4]. And the statements about what dietetic input achieves are drawn from review and guidance rather than from trials randomising patients to dietetic input, so the described benefit is a professional consensus rather than a measured effect [1,2].

A practical implication follows that costs nothing to apply. Where a patient reports avoiding a food, establishing whether the allergy has been confirmed is a different question from asking what they avoid, and the two are frequently collapsed in a dietary history [4,32]. Standardised diet history tools developed to support diagnosis exist for exactly this purpose [32].

The reassessment point matters most for allergies acquired in childhood. Some resolve, regular reassessment is recommended to avoid unnecessary prolonged restriction, and for tree nut, fish and shellfish allergy exclusion may nonetheless be lifelong with testing determining whether rechallenge is appropriate [2,8]. An adult carrying a childhood diagnosis that was never revisited may be restricting for a condition they no longer have [6,8].

Finally, what would strengthen this evidence is narrow and specific. The claims about dietetic input rest on review and professional consensus rather than on trials allocating patients to dietetic involvement, and the nutritional outcomes described for adults are largely inferred from paediatric growth studies [1,2,3]. A cohort measuring nutrient intake in adults on confirmed elimination diets, with and without dietetic input, would address both gaps at once [3,33] (Table 3).

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Conflict of Interest

The authors declare no competing interests.

Ethics Statement

This article reviews previously published studies only. No new patient data were collected and no participants were recruited, so ethical approval was not required.

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