

Food Allergy in South Africa

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Abstract

Purpose of the Review Whilst food allergy seems to have increased significantly in many developed countries in the past few decades, quality data on the burden of food allergy in many developing countries is scanty. Until recently, South Africa had a dearth of robustly designed food allergy studies. This article summarizes some of the recent research and observations regarding food allergy from the South African setting.

Recent Findings South Africa has recently seen two important food allergy prevalence studies in selected and unselected populations. Both show allergy rates in keeping with those in several westernized countries. The major difference between sensitization and allergy rates in these studies emphasizes the vital role of the food challenge in differentiating true food allergy from asymptomatic sensitisation in equivocal cases. Eczema, young age and living in an urban population are important risk factors for food allergy in South Africa. Egg and peanut allergy are the most common food allergies in both selected and unselected populations in South Africa. In peanut allergy, Ara h 2 is the most useful component in differentiating true allergy from tolerance in peanut-sensitized patients. Use of internationally derived 95% positive predictive values for peanut and egg allergy produced many false positives in South African studies. Studies in South Africa show a trend towards more conservative

introduction of peanut in eczema patients, which needs to be addressed in the light of recent studies showing a protective effect of earlier introduction of peanut. “Novel” allergies such as galactose-alpha-1,3-galactose allergy, food protein-induced enterocolitis syndrome and eosinophilic oesophagitis are being described with increasing frequency in South Africa.

Summary The surprisingly high prevalence of food allergy in South Africa points towards possible involvement of South Africa in the so-called “food allergy epidemic”. This has major implications on the planning of health services in the allergy sector. Food challenges will form a vital role in allergy services. Ninety-five percent positive predictive values for peanut and egg allergy may need revision to be more applicable to the local population.

Keywords Food allergy · South Africa · Atopic dermatitis · Peanut allergy Ara h 2 · Alpha-gal allergy

Introduction

On an international scale, food allergies seem to have increased significantly over the past few decades, with studies in some westernized countries showing a prevalence of food allergy of up to 10% in the first 1–2 years of life [1•]. Indeed, allergies are the most common non-communicable disease, and many allergy sufferers are “co-allergic,” demonstrating more than one manifestation of allergy, for example eczema together with food allergy or respiratory allergies. Most food allergy prevalence studies have come from the westernized setting, and systemic reviews of food allergy prevalence have largely captured data from Europe and North America. There are relatively few studies from developing countries, although the EuroPrevall study, which predominantly focused on food allergy prevalence in Europe, included some emerging economies such as Russia, China and India [2].

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There is a dearth of food allergy studies from Africa. With the general trend of allergies seemingly becoming more common and more complex, the question arises as to what is happening in developing countries such as South Africa and whether happenings there can contribute towards better understanding of the so-called “food allergy epidemic”. This article summarizes some of the important research and observations regarding food allergy from the past 5 years in the South African setting.

Food Allergy Prevalence in South Africa

One of the most important considerations in food allergy prevalence studies is the method used to define allergy [3]. Questionnaire-based or sensitization studies may significantly overestimate the prevalence of food allergy as many subjects with a history of food allergy or raised specific IgE may be tolerant to those foods. The latter may be particularly important in developing countries where high allergen sensitization levels are seen in the absence of clinical reactivity.

Over the past 5 years, South Africa has seen two food allergy prevalence studies utilizing the gold standard in food allergy diagnosis, namely the incremental oral food challenge. The first of these studies was performed in a highly selected population with atopic dermatitis [4•], a population known to be at higher risk of food allergy. This was a proof-of-concept study which hypothesized that food allergy was low in South Africa, even in high-risk populations. The surprisingly high rate of food allergy demonstrated in this study led to a further large study in an unselected population of children, the South African Food Sensitisation and Food Allergy study (SAFFA study) [5•].

1. Food allergy prevalence in South African children with atopic dermatitis

In this study, 100 children aged 6 months to 10 years (median age 42 months), with moderate to severe atopic dermatitis, were investigated for allergies to cow's milk, hen's egg, peanut, wheat, soya and fish [4•]. The overall rate of sensitization to at least one common food allergen was 66%, and the prevalence of proven food allergy was 40%, most commonly to egg (25%) and peanut (24%) (Table 1). Food allergy rates were therefore high and equivalent to those found in similar population studies in westernized countries.

Ethnic differences were demonstrated in this study, with black African (Xhosa) patients showing lower allergy rates than children of mixed (African and Caucasian) race. Black African children showed lower food allergy rates (34 vs 49%) despite higher proportion of sensitization (69 vs 61%) than children of mixed ethnicity. In the case of peanut, egg and cow's milk, Xhosa children were less likely than children of mixed race to be truly allergic if they are sensitized (Table 1).

Table 1 Sensitization and allergy patterns in South African children with atopic dermatitis

	Overall sensitization and allergy to at least one food ^a		Egg		Peanut		Cow's milk		Soya		Wheat		Fish		Cashew nut	
	Sens	Allergy	Sens	Allergy	Sens	Allergy	Sens	Allergy	Sens	Allergy	Sens	Allergy	Sens	Allergy	Sens	Allergy
Overall (<i>n</i> = 100)	66%	40%	54%	25%	44%	24%	27%	2%	9%	0%	6%	0%	13%	1%	0	3%
Xhosa (<i>n</i> = 59)	69%	34%	59%	24%	41%	15%	22%	0%	8.5%	0%	7%	0%	7%	1.6%	0	0%
Mixed race (<i>n</i> = 41)	61%	49%	46%	27%	50%	38%	34%	5%	9.7%	0%	5%	0%	22%	0%	0	7%
Difference between ethnic groups ^b	Pr = 0.4	0.1	0.2	0.7	0.1	0.01	0.2	0.1	0.8	1	0.7	1	0.03	0.7	1	0.04

^a By screening tests—skin prick test (except cashew nut) or ISAC

^b By two-sided test of proportions

Young age, early-onset eczema (<6 months) and severe eczema were significant risk factors for food allergies. In keeping with recent guidelines, this study confirmed the importance of early referral of young children with moderate to severe atopic dermatitis for allergy assessment.

In this population, skin prick tests offered a sensitive screening test for food allergy, but in almost half of all participants, a food challenge was needed to clarify food allergy versus tolerance. This highlights the important role of food challenges in the investigation of equivocal cases of food allergy and the need to include food challenges as a vital part of an allergy service in South Africa.

2. Food allergy prevalence in an unselected population of 1–3-year-old children in South Africa

The SAFFA study aimed to study over 1200 young children from an unselected population of children from both urban and rural areas [5•]. The study is currently ongoing, with recruitment near completion. Preliminary results from the first 512 patients in the urban population showed a sensitization rate of 9.6% and a challenge proven allergy rate of 2.5%, most commonly egg allergy (1.8%) and peanut allergy (1.2%). There were no evident inter-ethnic differences. Similar food allergy prevalence rates to this have been demonstrated in studies including EuroPrevall in several countries such as Denmark [6], Korea [7], Turkey [8], Iceland [9] and Thailand [10].

The rural cohort in the SAFFA study showed a sensitization rate of 2.5% and an allergy rate of 0.5%: both sensitization and allergy being fivefold lower than the urban population. The reasons for the relative protective effect of living in a rural environment are being explored.

Peanut Allergy in South Africa

The increase in peanut allergy described in westernized countries, coupled with recent research on optimal timing of introduction of peanut from an allergy perspective, has sparked much international interest in peanut allergy.

Screening for peanut allergy is an important part of the management of the patient at risk of peanut allergy. However, sensitization does not equate to allergy in peanut-sensitized patients, and further specialized tests such as food challenges may be required to differentiate between asymptotically sensitized and truly allergic patients. Ninety-five percent positive predictive values have been established to more reliably predict food allergies and reduce the number of labour-intensive and potentially hazardous food challenges [11, 12]. However, these predictive values may be population and age specific.

Component testing for peanut proteins helps differentiate between non-specific cross reactive components such as Ara h 5, Ara h 8 and Ara h 9 and specific peanut components such as Ara h 1, 2, 3 and 6, which are heat-resistant storage proteins. Ara h 2 (2S albumin storage protein) has been shown to be the most important component in prediction of food allergy in several countries, including the UK [13], France [14], Japan [15] and the USA [16], with a positive result (>0.35 kU/L) to Ara h 2 having a high predictive value for peanut allergy. In Mediterranean countries, the lipid transfer factor Ara h 9 is an important peanut allergen [17]. Ara h 8, in the PR10 protein group of labile food allergens, is more prominent in those exposed to certain pollens such as birch and alder [18]. Thus, the pattern and relevance of peanut components may vary between geographical areas and possibly between ethnic groups.

Prior to 2010, there was extremely little data on peanut allergy patterns or prevalence in South Africa, and peanut allergy was thought to be rare. The eczema-food allergy study (2010–2013) was the first South African study to utilize food challenges to diagnose peanut allergy and also to look at component patterns [4•]. It showed a surprisingly high rate of sensitization (44%) and allergy (24%) to peanut in this high-risk population, including a 15% rate of peanut allergy in the Xhosa subpopulation, in whom peanut allergy had rarely been described preceding this study [19•, 20].

Skin prick test (SPT) and ImmunoCAP Ara h 2 produced the highest area under the receiver operating characteristic (ROC) curves for predicting peanut allergy in peanut-sensitized patients [20] (Fig. 1). Immuno Solid-Phase Allergen Chip (ISAC) testing was less sensitive, more specific and produced significantly lower median values than ImmunoCAP tests. Ara h 2 was the most useful component in differentiating allergy from tolerance in both ethnic groups, positive in 92% of allergic and 40% of sensitized but tolerant children in the group overall ($p < 0.001$). There was little additional contribution from Ara h 1 and 3. Ara h 8 and 9

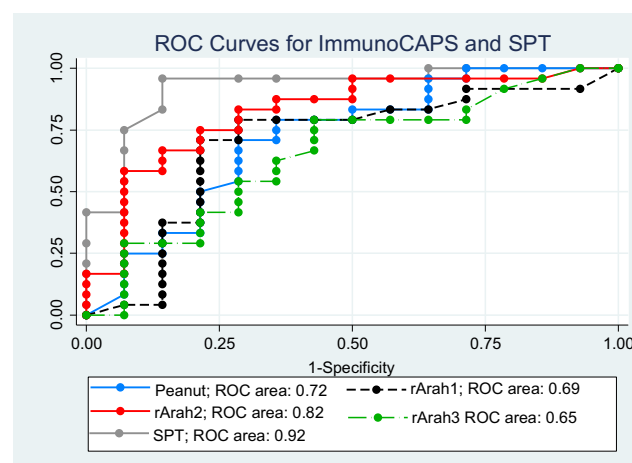


Fig. 1 ROC curves for ImmunoCAP tests and SPT in peanut allergy diagnosis, in peanut-sensitized patients ($n = 44$)

were associated with tolerance (Table 2). Widely used 95% positive predictive values (PPV) for SPT [11], peanut-specific IgE [12] and Ara h 2 levels [13] fared sub-optimally in this population (Table 3). Maximum PPVs for this study population were found at SPT 11 mm, peanut IgE 15 kU/L and ImmunoCAP Ara h 2 of 8 kU/L, but these adjusted levels still had suboptimal PPV in Xhosas. Severe peanut allergy was associated with higher median peanut IgE and Ara h 2.

In the SAFFA study looking at an unselected population, peanut allergy was the second highest allergy in the preliminary results, with a prevalence of 1.2%.

In conclusion, peanut allergy may be increasing in South African children. Asymptomatic sensitization is common, and the component Ara h 2 helped best to differentiate true allergy from possible asymptomatic sensitization. Widely used 95% PPVs for peanut allergy performed sub-optimally in this study population of children with atopic dermatitis (AD), particularly in Xhosa patients, and may well need revision.

Egg Allergy in South Africa

Egg allergy is one of the most common allergies in infants and young children. The estimated prevalence of egg allergy is 0.5–8.9% in early childhood [21–23]. Owing to the high degree of natural acquisition of tolerance to egg over time, the

prevalence of egg allergy is lower in older children and adults at less than 0.5%.

AD is a major risk factor for egg allergy. Egg allergy may comprise up to two thirds of food allergies in children with atopic dermatitis. Studies in Europe and the USA have shown the prevalence of egg sensitization in participants with atopic dermatitis to be 35–73% and egg allergy 16–22% [24–25].

Data from the two prevalence studies in South Africa in the past few years suggests that egg allergy seems to be the most common food allergy in at risk as well as unselected populations in South Africa [4•, 5•]. In eczema study, 54% were egg sensitized and 25% egg allergic [4•]. In the unselected population, 6.8% of patients were sensitized to egg and 1.8% had a proven allergy [5•]. Both studies demonstrate a high percentage of asymptomatic sensitization.

In the food allergy-eczema study, SPT to fresh (raw) egg white was significantly more sensitive in diagnosing egg allergy than SPT to the commercial egg white extract and produced the highest area under the receiver operator characteristic (ROC) curve of all the screening tests in predicting true egg allergy [26].

In those participants sensitized to egg, the component ovomucoid (ImmunoCAP nGal d 1) was best at differentiating true egg allergy from tolerance (Fig. 2).

Commonly used 95% positive predictive values (PPV) for SPT to egg and ImmunoCAP egg white produced low PPV of 53% (SPT for egg white extract), 57% (SPT for fresh egg

Table 2 Frequency of positive components by ImmunoCAP and ISAC test in peanut allergic versus tolerant patients, in peanut-sensitized patients ($n = 44$)

Immuno-CAP component (positive defined as ≥ 0.35 kU/L)	Xhosa allergic ($n = 9$) % (n)	Xhosa tolerant ($n = 15$) % (n)	Difference between Xhosa allergic and tolerant patients (p value)	Mixed race allergic ($n = 15$)	Mixed race tolerant ($n = 5$)	Difference between mixed race allergic and tolerant patients (p value)
ImmunoCAP rAra h 1	67% (6)	47% (7)	0.34	73% (11)	60% (3)	0.57
ImmunoCAP rAra h 2	89% (8)	47% (7)	0.04 ^a	93% (14)	20% (1)	0.001 ^a
ImmunoCAP rAra h 3	33% (3)	53% (8)	0.34	67% (10)	80% (4)	0.57
ImmunoCAP rAra h 8	22% (2)	33% (5)	0.56	33% (5)	60% (3)	0.29
ImmunoCAP rAra h 9	22% (2)	67% (10)	0.04 ^a	47% (7)	60% (3)	0.61
ImmunoCAP rAra h 1 and 2 positive	56% (5)	27% (4)	0.16	73% (11)	0% (0)	0.005 ^a
ISAC component (positive defined as ≥ 0.3 ISAC U/L)						
ISAC nAra h 1	33% (3)	33% (5)	1.0	60% (9)	0% (0)	0.02
ISAC nAra h 2	78% (7)	33% (5)	0.04	87% (13)	0% (0)	0.00
ISAC nAra h 3	11% (1)	13% (2)	0.87	53% (8)	0% (0)	0.035
ISAC nAra h 8	0% (0)	0% (0)	1	0% (0)	0% (0)	1
ISAC nAra h 1 and 2 positive	22% (2)	13% (2)	0.56	60% (9)	0% (0)	0.02
Bromelin (CCD)	0% (0)	13% (2)	0.56	33% (5)	20% (1)	0.58
Profilin	0% (0)	0% (0)	1	13% (2)	0% (0)	0.40

^a Statistically significant by two-sided test of proportions

Table 3 The value of widely used 95% PPVs in Xhosa versus mixed race patients

	Sensitivity % (confidence interval in %)	Specificity % (confidence interval in %)	Positive predictive value for allergy % (confidence interval in %)	ROC area under the curve AUC (confidence interval)
Skin prick test to peanut ≥ 8 mm				
Xhosa	89% (52–99)	96% (86–99)	80% (44–97)	0.92 (0.8–1)
Mixed race	100% (78–100)	92% (74–99)	88% (64–99)	0.96 (0.9–1)
Difference (<i>p</i> value) ^a	0.03 ^b	0.4	0.29	
ImmunoCAP peanut ≥ 14 kU/L				
Xhosa	44% (14–79)	80% (52–96)	57% (18–90)	0.62 (0.42–0.82)
Mixed race	60% (32–84)	80% (78–99)	90% (56–100)	0.7 (0.5–0.9)
Difference (<i>p</i> value) ^a	0.29	1.0	0.02 ^b	
ImmunoCAP rAra h 2 ≥ 0.35 kU/L				
Xhosa	89% (52–100)	53% (27–79)	53% (27–79)	0.71 (0.54–0.88)
Mixed race	93% (68–100)	80% (28–99)	93% (68–99)	0.87 (0.66–1)
Difference (<i>p</i> value) ^a	0.65	0.06	0.004 ^b	
ISAC nAra h 2 ≥ 0.3 ISAC U/L				
Xhosa	78% (40–97)	90% (78–96)	58% (28–85)	0.84 (0.7–1)
Mixed race	87% (59–98)	100% (86–100)	100% (75–100)	0.93 (0.84–1)
Difference (<i>p</i> value) ^a	0.44	0.04 ^b	0.001 ^b	

^a By chi-squared test^b Statistically significant

white) and 74% (ImmunoCAP egg white), respectively, in this population overall, with poorer predictive values amongst the black Africans than the mixed ethnicity participants for SPTs (Table 4). A SPT to fresh egg of 17 mm and ImmunoCAP egg white of 13 kU/L produced the best PPV for egg allergy in this population.

In conclusion, the prevalence of egg allergy is high in African children with atopic dermatitis, but history of egg allergy and sensitization to egg significantly overestimate the true egg allergy rate. SPT to fresh egg white was more sensitive than that to commercial egg white extract; hence, fresh egg white should be recommended in an egg allergy screening panel. The component ovomucoid was useful for differentiating allergy from tolerance in egg-sensitized participants. Population-specific 95% PPV for egg allergy tests may need to be established in developing world populations.

Patterns of Introduction of Complementary Foods in South Africa

The optimal timing of the introduction of solids to minimize the risk of food allergies is currently under study.

Some immunological and epidemiological evidence has suggested that early exposure of the immune system to allergens, especially via the enteral route, may enhance immunological tolerance. The Learning Early About Peanut Allergy

(LEAP) study showed a significant advantage of earlier peanut introduction (between 4 and 11 months age) in high-risk patients with eczema and/or egg allergy [27••].

The Enquiring About Tolerance (EAT) study showed a trend towards advantage of earlier introduction of egg and peanut [28]. Egg introduction studies have shown a trend towards lower egg allergy with earlier introduction but unexpectedly high rates of reactivity in high-risk patients (such as those with eczema) [29–31].

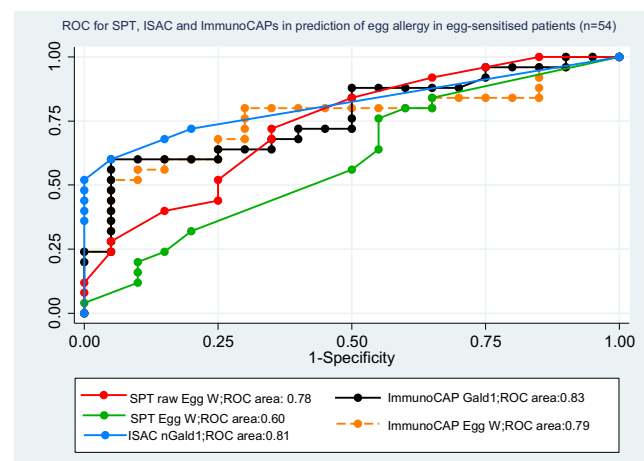


Fig. 2 ROC curves for SPT and ISAC components for predicting egg allergy in egg-sensitized participants

Table 4 Sensitivities, specificities and positive predictive values of tests in predicting egg allergy in egg-sensitized participants ($n = 54$)

	Overall (%)	Black African (%)	Mixed ethnicity (%)	Difference (p value) ^a
SPT egg white extract ≥ 7 mm				
Sensitivity	32	36	27	0.5
Specificity	75	68	89	0.09
PPV	53	46	75	0.04 ^b
NPV	55	59	50	0.53
SPT fresh egg white ≥ 7 mm				
Sensitivity	96	93	100	0.24
Specificity	36	37	33	0.77
PPV	57	52	65	0.34
NPV	91	88	100	0.12
RAST egg white ≥ 7 kU/L				
Sensitivity	68	64	73	0.50
Specificity	79	84	67	0.15
PPV	74	75	73	0.87
NPV	73	76	67	0.88

^a Chi-squared test^b Statistically significant

In general, delaying the introduction of solids beyond 6 months has not been shown to have any significant effect on reduction in allergies.

As part of the study investigating food allergy prevalence in 100 children with atopic dermatitis, parents were asked about dietary introduction patterns by questionnaire [4••]. They were asked about the timing of the first introduction of peanut, egg, cow's milk or dairy, soya, wheat, fish, tree nuts and sesame seed. For peanut, there was an additional questionnaire to ascertain the weekly intake of peanut.

The tendency was towards relatively late introduction of peanut (median 18 months), egg (median 12 months), tree nut (24 months) and fish (24 months) [32]. These foods are known to be allergenic, and atopic dermatitis patients may well deliberately delay the introduction of such solids to try and minimize allergic reactions. This is despite the increasing evidence that a delay in introduction of allergenic foods does not reduce allergy risk. Despite the delayed introduction of these solids, the prevalence of egg and peanut allergy in this cohort was particularly high.

Of particular interest is a possible shift in peanut consumption patterns amongst the Xhosa group. In a dietetic study in 2006, mothers ($n = 198$) of black infants aged 4–36 months in Cape Town were interviewed about their infants' peanut intake using a peanut consumption questionnaire [33]. In that study, the mean age of introduction of peanuts and peanut products was found to be 10 months, and 64% of subjects started eating peanuts before 1 year of age. The median total peanut intake was 12 g/day (one to two portions per day). No cases of peanut allergy were reported. In comparison, in the 59 Xhosa patients from our study cohort in 2010–2013, the median age of introduction of peanut was 24 months, and only 12% of children had consumed peanut before the age of one. Of those consuming peanut, the average consumption was three portions per week [32].

Although the eczema population may tend towards more cautious introduction of solids, the trend towards later and more conservative introduction of peanut products is concerning in the context of increasing prevalence of peanut allergy.

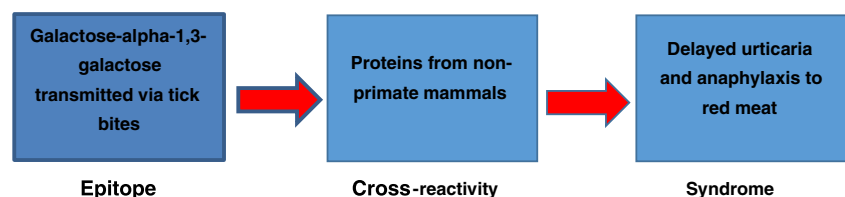
In conclusion, this study suggests the trend towards late introduction of certain allergenic foods, particularly peanut. We need to work hard at changing the perception that “later is better”. This is especially significant in children “at risk” for allergies: earlier testing and advice on appropriate timing of introduction of allergenic foods are vital as a potential allergy prevention strategy.

“New” Types of Allergies in South Africa

As the prevalence and awareness of food allergy increase in South Africa, so also have recently new types of allergy been described, including food protein-induced enterocolitis syndrome (FPIES), eosinophilic oesophagitis and galactose-alpha-1,3-galactose (alpha-gal) allergy.

Unusual presentations of FPIES have been described in South Africa, leading to such complications such as acute renal failure with the need for dialysis and unnecessary surgery for pyloric stenosis [34, 35].

A syndrome of delayed anaphylaxis to red meat was first described in 2009, occurring in geographical “clusters” initially identified in the USA [36]. A few years later, this enigmatic anaphylactic reaction was ascribed to IgE antibodies to alpha-gal, an oligosaccharide which is a major blood group substance in non-primate mammals.

Fig. 3 Pathogenesis of delayed reaction to meat in alpha-gal allergy

The syndrome of “midnight anaphylaxis” to red meat describes a delayed-onset allergic reaction 3–6 h after eating mammalian food products. Patients typically react to beef, mutton or pork but have no trouble with chicken or fish. Another syndrome involving alpha-gal is immediate-type hypersensitivity to monoclonal antibody cetuximab.

It seems that the predominant source of sensitization to alpha-gal is via bites from certain ticks (Fig. 3). Case reports (100–1000s) have been published worldwide, but very few from Africa.

Two cases of alpha-gal allergy from South Africa have recently been described in two different people living in the same golfing estate in George, Eastern Cape, adjacent to a cattle farm [37•]. Since this publication, local allergists have received several phone calls describing similar cases in South Africa. Colleagues have described possible case in the rural Transkei area (personal communication, Mike Levin) and in Cape Town (personal communication, Paul Potter and Di Harwarden).

As new allergies such as FPIES and alpha-gal allergy gain more prominence in South Africa, clinicians need to be familiarize themselves with these often “confusing” pictures.

Possible Reasons for the Evident Increase in Food Allergy in South Africa

The unexpectedly high prevalence of food allergy in selected and unselected populations in South Africa may herald an emerging allergy epidemic in this country. There are some reports that the rates of food allergy are following the step rate of economic transition/urbanization in rapidly developing countries [38]. The rapid urbanization, adoption of a westernized lifestyle and diet in South Africa simulate the characteristics of a large “migrant” population. In migrant populations, the change in environment and lifestyle may affect genotype expression, thus leading to the manifestation of an allergy [39].

Possible reasons for the rapid increase in food allergy may include dietary factors such as types and age of food introduction, increased intake of “junk foods/fast foods” and decreased ingestion of fibre, prebiotics, fat-soluble vitamins and polyunsaturated fatty acids [3]. Changes in birth practices, environmental factors and exposure to infections and vaccinations result in alterations of microbiome exposure. In South Africa, the intensity of infection exposure may be lessening with urbanization, more ready access to medical treatment and smaller family size.

In addition, helminthic infections, which are thought to have a protective effect on allergy development, are treated more readily and regularly. Populations that have co-evolved with parasites may have developed strong genetic predisposition towards Th2 immunity in order to defend themselves.

Such a “priming” of the immune system for IgE responses may lead to an even greater predisposition towards allergy as previous protective factors are lost. The possibility thus exists for a food epidemic in developing countries to be even more marked than that currently experienced in developed countries [40].

Summary and Conclusion

Robust food allergy prevalence studies in South Africa are fairly recent and ongoing. They are showing a surprisingly high prevalence of food allergy in selected and unselected populations, pointing towards possible involvement in the so-called food allergy epidemic.

Eczema is a major risk factor for food allergy: there is thus a need to target young patients with eczema for both food allergy prevention and screening. Ethnic and urban-rural differences may exist and suggest possible protective factors in certain groups which need urgent identification.

The major difference between sensitization and allergy rates in these studies reminds us not to interpret test results in isolation, of the importance of good history taking and the vital role of food challenges in cases of discrepancy between history and test results.

In *peanut allergy*, Ara h 2 has been found to be the component most useful in differentiating true allergy from tolerance in peanut-sensitized patients. The SPT is extremely useful, but 95% PPV may need revision.

Egg allergy is the most common allergy in selected and unselected populations in South Africa. Studies have shown great value in performing skin prick tests to fresh raw egg as a sensitive screening test for egg allergy. Ninety-five percent PPV may also need revision for SPT and ImmunoCAP-based specific IgE tests to egg.

Studies in South Africa show a trend towards more conservative introduction of peanut in eczema patients. This is concerning in the light of recent studies such as LEAP study. Evidence-based information on solid introduction will need to be distributed widely starting at primary care level.

New allergies such as alpha-gal allergy, FPIES and eosinophilic oesophagitis are gaining more prominence in South Africa, and clinicians need to be familiarize themselves with these confusing pictures.

Overall, better epidemiologic data on food allergy in South Africa will allow for better planning of services for diagnosing and managing food allergy, legislation on food labelling and treatment availability.

Compliance with Ethical Standards

Conflict of Interest The author declares no conflicts of interest relevant to this manuscript.

Human and Animal Rights and Informed Consent This article does not contain any studies with human or animal subjects performed by any of the authors.

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- Of major importance

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