Original Article

# Infant Diet Recommendations Reduce IgE-Mediated Egg, Peanut, and Cow's Milk Allergies

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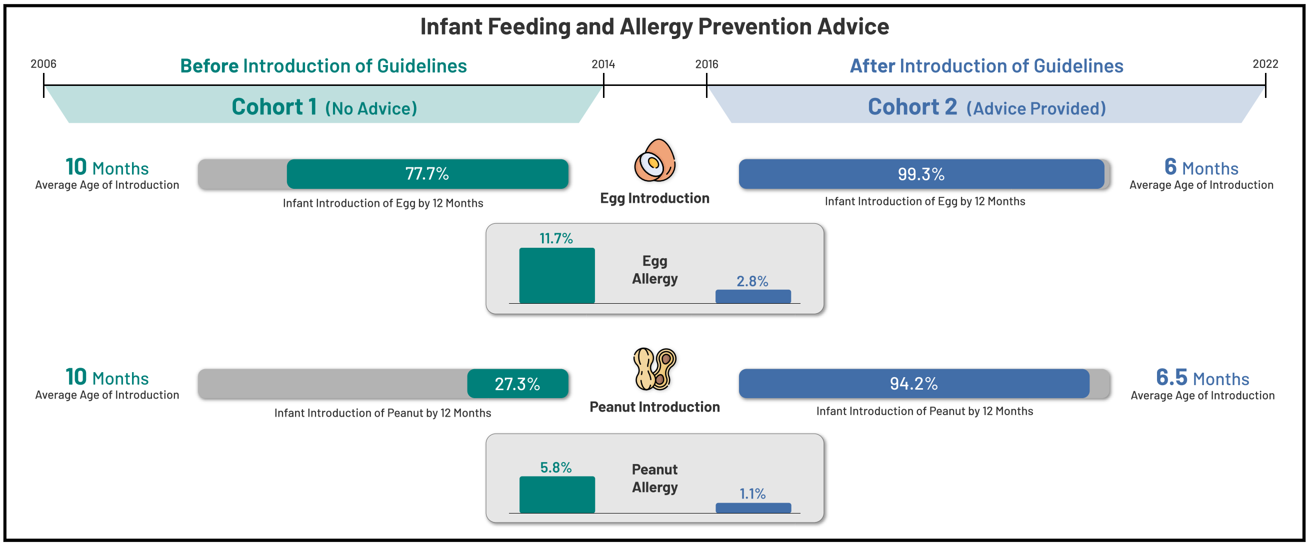
***What is already known about this topic?*** Globally over the last decade, infant feeding advice to reduce food allergy development has dramatically changed after trials found that introducing eggs and peanuts in infant diets earlier during infancy reduced egg and peanut allergies.

***What does this article add to our knowledge?*** This study is the first to demonstrate the reduced prevalence of multiple food allergies after implementation of updated infant feeding and allergy prevention guidelines recommending earlier introduction of peanut, egg, and cow's milk in infant diets.

***How does this study impact current management guidelines?*** Direct provision of food allergy prevention guidelines to families facilitated adherence and reduced the prevalence of infant food allergen sensitization and IgE-mediated food allergies to peanut, egg, and cow's milk.

**VISUAL SUMMARY**

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*Abbreviations used*
*CI- Confidence interval*
*IQR- Interquartile range*

**BACKGROUND: Meta-analyses of randomized controlled trials have found that introducing eggs and peanuts earlier during infancy reduced egg and peanut allergy risk. Hence, infant feeding advice has dramatically changed from previous recommendations of avoidance to current recommendations of inclusion of common food allergens in infant diets.**
**OBJECTIVE: To compare the prevalence of IgE-mediated food allergies at 1 year of age between 2 cohorts, before and after infant feeding and allergy prevention guidelines changed.**
**METHODS: In cohort 1 (506 infants born 2006-2014), no infant feeding advice was provided to participants. In cohort 2 (566 infants born 2016-2022), when the infants were 6 months of age, all families were provided with updated infant feeding and allergy prevention guidelines. All infants had a first-degree relative with a history of allergic disease. At 1 year of age, infant food allergen sensitization and IgE-mediated food allergy were assessed.**
**RESULTS: Peanut, egg, and cow's milk were introduced earlier in cohort 2 than in cohort 1 (all $P < .001$). The combined prevalence of IgE-mediated peanut, egg, and/or cow's milk allergies was 4.1% in cohort 2 compared with 12.6% in cohort 1 (adjusted odds ratio [aOR]: 0.28, 95% confidence interval [CI]: 0.16-0.48, $P < .001$). Specifically, the prevalence of peanut allergy was 1.1% versus 5.8% (aOR: 0.24, 95% CI: 0.08-0.76, $P = .015$), egg allergy 2.8% versus 11.7% (aOR: 0.23, 95% CI: 0.12-0.45, $P < .001$), and cow's milk allergy 0.5% versus 2.4%, respectively (aOR: 0.14, 95% CI: 0.04-0.55, $P = .005$).**
**CONCLUSION: Direct provision of updated food allergy prevention guidelines to families facilitated earlier introduction and reduced the prevalence of IgE-mediated peanut, egg, and cow's milk allergies.**  **(J Allergy Clin Immunol Pract 2025;13:3077-83)**

***Key words:*** *Allergy prevention; Cow's milk; Egg; Food allergens; Food sensitization; IgE-mediated food allergy; Infant diet; Peanut*

In 2000, the American Academy of Pediatrics Committee on Nutrition recommended that the introduction of allergenic foods be delayed until infants are 12 months old, with specific recommendations to avoid eggs until 2 years and peanuts, nuts, and fish until 3 years of age.[1] However, this approach to food allergy prevention was challenged in 2008 when concerns were raised about insufficient evidence supporting food allergen avoidance practices.[2] In countries where this delayed introduction advice was incorporated into practice (eg, in Australia, the United Kingdom, and the United States), food allergy rates were observed to be increasing. Thus, it was suggested that avoidance may have detrimental effects on food allergy prevention. Instead, it was proposed that earlier ingestion of food allergens may promote oral tolerance and prevent food allergies.[2]

In the following decade, multiple randomized controlled trials were conducted investigating the effects of earlier introduction of the more common allergenic foods to infants, particularly peanuts and eggs, on the incidence of food allergy development. In 2016, a meta-analysis of these trials by Ierodiakonou et al[3] found that introducing eggs to infants at 4 to 6 months of age decreased egg allergy development risk (risk ratio: 0.56, 95% confidence interval [CI]: 0.36-0.87), and introducing peanuts at 4 to 11 months of age reduced peanut allergy risk (risk ratio: 0.29, 95% CI: 0.11-0.74). Based on the findings of the randomized controlled trials on the introduction of food allergens, the Australasian Society of Clinical Immunology and Allergy infant feeding and allergy prevention guidelines were updated in 2016.[4] These updated guidelines recommended that all infants be given common allergenic foods, including peanut, egg, and cow's milk, in the first year of life, which was a major change from previous recommendations.

Our research group has been prospectively collecting infant feeding data, and infant food allergen sensitization and food allergy outcome data over the past 2 decades. In particular, we have data available from an earlier cohort of infants born between 2006 and 2014 and a later cohort of infants born between 2016 and 2022. Both cohorts were based in the same Australian city (Perth, Western Australia) and included infants at higher risk of developing allergies due to at least 1 first-degree relative with a history of allergic disease. Thus, the aim of this investigation was to compare infant food allergen introduction practices and the prevalence of food allergen sensitization and IgE-mediated food allergy at 1 year of age between 2 cohorts, before and after the updated Australasian Society of Clinical Immunology and Allergy infant feeding and allergy prevention guidelines were released in 2016.

## METHODS

### Study populations

Cohort 1 was set up to investigate multiple aspects of maternal and infant characteristics and infant allergic disease outcomes. Cohort 1 infants were born between March 2006 and May 2014. Part (n = 315) of cohort 1 infants participated in an infant fish oil supplementation trial; however, the fish oil intervention did not affect infant food allergen sensitization or food allergy outcomes.[5] All participants provided written informed consent, and ethical approval was granted by the Princess Margaret Hospital Human Research

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Cohort 2 was set up as a maternal prebiotics (compared with placebo) dietary supplementation trial.[6] However, the maternal prebiotics intervention had no effect on infant food allergen sensitization or food allergy outcomes.[6] Cohort 2 infants were born between November 2016 and April 2022. All participants provided written informed consent, and ethical approval was granted by the Joondalup Health Campus (approval number 1451r) and University of Western Australia (RA/4/1/8137) Human Research Ethics Committees.

For both cohorts, all infants had at least 1 first-degree relative (mother, father, or sibling) with a history of medically diagnosed allergic disease (asthma, allergic rhinitis, eczema, and/or food allergy). In addition, all infants had mothers ≥18 years old who were nonsmokers during pregnancy, and all infants were born in Perth, Western Australia. The infants were included in this analysis if they attended their 1-year-of-age clinical assessment appointment and had food allergen sensitization status determined by skin prick testing.

## Maternal and infant characteristics data collection

For both cohorts, maternal age, maternal self-reported race, maternal education (any further study after secondary school or not), birth mode of delivery (vaginal or cesarean section birth), birth order (first born child to mother or not), parent-reported infant sex, birth gestational age, and birth weight data were collected. Infant feeding data were also collected including breastfeeding duration, age of commencement of any solid foods, and age of introduction to common food allergens such as peanut (any form including peanut butter), egg (any form including boiled/fried/scrambled egg and/or egg in baked products), fish (any variety of fish but not other seafoods), wheat products (cohort 2 only), and cow's milk protein (from infant formula and/or any dairy foods). In cohort 1, infant feeding data were collected at 3, 6, and 12 months of age. In cohort 2, infant feeding data were collected at 1, 2, 3, 4, 5, 6, and 12 months of age.

## Infant feeding and allergy prevention advice provided

Cohort 1: no infant feeding and allergy prevention advice was provided to participants.

Cohort 2: when the infants were 6 months of age, all participating families were provided with the 2016 updated Australasian Society of Clinical Immunology and Allergy infant feeding and allergy prevention guidelines. These included the recommendations that:

(1) "When your infant is ready, at around 6 months, but not before 4 months, start to introduce a variety of solid foods, starting with iron rich foods, while continuing breastfeeding."
(2) "All infants should be given allergenic solid foods including peanut butter, cooked egg, dairy and wheat products in the first year of life. This includes infants at high risk of allergy."

There were no specific infant age(s) included in the 2016 updated guidelines for the introduction of these allergenic solid foods. Research team members provided written copies and verbal explanations (5-minute duration) of these guidelines to every participating family within the infant's 6-month-of-age review contact. Standardized practical tips were given for the introduction of cow's milk yoghurt, cooked egg (mashed boiled egg initially), and peanut butter into the infant diet. Families were advised to commence mixing approximately 1/8 teaspoon of yoghurt/egg/peanut butter in approximately 1 to 2 tablespoons of infant cereal, fruit, or vegetables, and then increase by doubling the amount as the infant consumes more solid foods and give the yoghurt/egg/peanut butter to the infant 2 to 3 times per week. As there were no scheduled study contacts between 7 and 11 months of age, the families were encouraged to contact research team members to ask questions as needed.

## Infant outcomes at 1 year of age—both cohorts

Food allergen sensitization was defined as a positive skin prick test (mean weal diameter ≥3 mm above the negative control weal size) to at least 1 food allergen. The participating infants were skin prick tested to peanut, egg, and cow's milk in both cohorts, and fish and wheat in cohort 2 only, with histamine and control solutions, using commercial extracts, and in accordance with standard clinical methods.

Medically diagnosed IgE-mediated food allergy was defined as a history of immediate IgE-mediated symptoms (within 60 minutes of food ingestion) including angioedema, urticaria, cough, wheeze, stridor, vomiting, diarrhea, and/or cardiovascular symptoms, and specific food allergen sensitization to the same food. If an infant was sensitized to a food allergen but had not commenced eating that same food allergen by 12 months of age, their IgE-mediated food allergy status could not be determined as oral food challenges were not conducted in either cohort.

Medically diagnosed eczema by 12 months of age was defined by typical eczema skin lesions[7] clinically observed by a medical practitioner. Parent-reported eczema symptoms data were also collected during infancy.

## Statistical analysis

Each analysis was conducted as a complete case analysis, using all records with no missing sensitization data. Participant characteristics and infant feeding practices were summarized throughout using frequencies and percentages for binary variables and means/medians for continuous variables, with the number of participants without missing data provided. Comparisons of participant characteristics and infant feeding practices between cohort 1 and cohort 2 were undertaken using independent $t$ tests and Mann-Whitney $U$ tests for continuous data and $\chi^2$ tests for categorical data. For duration of breastfeeding, age of introduction to any solid foods, and age of introduction to egg, comparisons of peanut and cow's milk protein between cohort 1 and cohort 2 were undertaken using Kaplan-Meier survival curves (with infant age censored at the time of the 12-month-of-age appointment).

Infant IgE-mediated food allergy and food allergen sensitization outcomes at 1 year of age were analyzed using binary logistic regression models, with the effect of providing earlier food allergen introduction advice (cohort 2) described by odds ratios with 95% CI. For the infant IgE-mediated food allergy outcome analyses, participants were excluded if not introduced to that food allergen before 12 months of age.

Analyses were adjusted for the maternal characteristics that were found to be significantly ($P < .05$) different between the 2 cohorts: history of allergic disease, education, race, birth mode of delivery, and birth gestational age. As there were significant correlations between infant birth weight and birth gestational age in both cohort 1 ($r = 0.36$, $P < .001$) and cohort 2 ($r = 0.42$, $P < .001$), only birth gestational age was included as a confounding factor for the adjusted analysis. Similarly, as there were significant correlations between infants born preterm and birth gestational age in both cohort 1 ($r = 0.32$, $P < .001$) and cohort 2 ($r = 0.65$, $P < .001$), only birth

**TABLE I.** Participant characteristics

| Characteristic | Cohort 1 (2006-2014) (n = 506) | Cohort 2 (2016-2022) (n = 566) | *P* value |
|---|---|---|---|
| Maternal allergic disease | 445 (87.9) | 433 (76.5) | <.001 |
| Maternal age (y)* | 33.2 ± 4.6 | 32.7 ± 4.2 | .083 |
| Maternal race | | | |
| White | 450 (88.9) | 505 (89.2) | .019 |
| Asian | 25 (4.9) | 43 (7.6) | |
| Aboriginal/Torres Strait Islander | 1 (0.2) | 3 (0.5) | |
| Other | 29 (5.7) | 15 (2.7) | |
| Maternal education postsecondary school | 370 (73.1) | 526 (92.9) | <.001 |
| Vaginal birth | 337/501 (67.3) | 274/564 (48.6) | <.001 |
| First born child to mother | 232 (45.8) | 270 (47.7) | .585 |
| Sex of child | | | |
| Male | 255 (50.4) | 281 (49.6) | .854 |
| Female | 251 (49.6) | 285 (50.4) | |
| Infant weight at birth (g)† | 3442 (3172-3750) (n = 504) | 3400 (3103-3668) (n = 565) | .019 |
| Infant gestational age at birth (wk)† | 39.0 (38.6-40.0) (n = 487) | 39.0 (38.0-39.7) (n = 565) | <.001 |
| Infant born preterm (<37 weeks' gestation) | 7/487 (1.4) | 42/565 (7.4) | <.001 |
| Medically diagnosed infant eczema | 193 (38.1) | 186 (32.9) | .082 |
| Parent-reported infant eczema | 269 (53.2) | 297 (52.5) | .822 |

Data are presented as n (%) or n/N (%) unless otherwise stated.
*Mean (standard deviation).
†Median (interquartile range).

gestational age was included as a confounding factor for the adjusted analysis. Maternal history of allergic disease, education, race, birth mode of delivery, and birth gestational age have previously been identified as confounders and effect modifiers that need to be considered in epidemiologic studies of child allergic disease outcomes.[8] Analyses were performed using SPSS Statistics for Windows (version 29; IBM Corp, Armonk, NY). All tests were 2-sided with a *P* value of <.05 indicating a significant difference.

## RESULTS

The 1-year-of-age assessment data collection was completed for cohort 1 (n = 506 infants) on April 21, 2015, and for cohort 2 (n = 566 infants) on May 31, 2023. A participant flow diagram for both cohorts is included as Figure E1 (available in this article's Online Repository at www.jaci-inpractice.org). Participant characteristics are described in Table I, and infant feeding practices are reported in Table II.

In cohort 2, by 12 months of age, 94.2% of infants had been introduced to peanut, 99.3% to egg, and 98.6% to cow's milk in infant formula and/or dairy foods. In cohort 2, peanut, egg, and cow's milk protein were all introduced to infants earlier than in cohort 1 (all *P* < .001). Figure 1 illustrates the infant ages of introduction of peanut, egg, and cow's milk protein. Fish was introduced in cohort 1 to 451 of 506 (89.1%) infants at a median (interquartile range [IQR]) age of 8.0 (7.0-10.0) months, compared with 542 of 566 (95.8%) infants in cohort 2 at 7.0 (IQR: 6.0-8.3) months (*P* < .001) (Figure E2, available in this article's Online Repository at www.jaci-inpractice.org). Wheat products were introduced in cohort 2 to 564 of 566 (99.6%) infants at a median (IQR) age of 6.0 (5.5-6.3) months. Data on infant age of wheat introduction were not collected in cohort 1.

All IgE-mediated food allergy outcome results reported only included infants who had been introduced to the specific allergenic food, and hence their food allergy (or tolerance) to that food allergen was known. Among the infants who by 12 months of age had commenced eating peanut, egg, and/or cow's milk/dairy foods, the combined prevalence of IgE-mediated peanut, egg, and/or cow's milk allergy in cohort 2 was 4.1% (23 of 566) infants compared with 12.6% (60 of 478) infants in cohort 1 (adjusted odds ratio: 0.28 [95% CI: 0.16-0.48], *P* < .001). As reported in Table III, individually IgE-mediated peanut, egg, and cow's milk allergy prevalence were all lower in cohort 2 (1.1% peanut, 2.8% egg, and 0.5% cow's milk) than in cohort 1 (5.8% peanut, 11.7% egg, and 2.4% cow's milk). Both combined and individual peanut, egg, and/or cow's milk sensitization were also lower in cohort 2 than in cohort 1 (Table III). Given that not all infants were introduced to peanut, egg, and cow's milk by 12 months of age, Table IV reports the infant food allergen sensitization outcomes divided between infants introduced to the same food allergen and infants not introduced to that food during infancy.

In cohort 2, two infants had fish sensitization (0.4%) and no infants (who had been introduced to fish by 12 months of age) had an IgE-mediated fish allergy. There was only 1 infant (0.2%) with wheat sensitization and IgE-mediated wheat allergy in cohort 2. In cohort 1, fish and wheat sensitization rates and IgE-mediated fish and wheat allergies in infants were unknown. There were no significant differences between the 2 cohorts for breastfeeding outcomes as reported in Table II, nor for infant eczema outcomes as reported in Table I.

## DISCUSSION

This study is the first to demonstrate the reduced prevalence of multiple food allergies after implementation of updated food allergy prevention recommendations.[4] After directly providing parents with guidelines that recommended that their infants should be given peanut butter, cooked egg, and dairy in the first year of life, by 12 months of age, more than 94% of infants had been introduced to peanut, egg, and cow's milk protein. The age of introduction of peanut, egg, and dairy foods was significantly

**TABLE II.** Infant feeding practices

| Infant feeding practices | Cohort 1 (2006-2014) (n = 506) | Cohort 2 (2016-2022) (n = 566) | *P* value |
|---|---|---|---|
| Ever breastfed | 500 (98.8) | 549/564 (97.3) | .130 |
| Breastfeeding beyond 12 months of age | 185 (36.6) | 224/563 (39.8) | .340 |
| Breastfeeding duration (mo)*,†,‡ | 10.0 (6.0-12.0) (n = 500) | 10.5 (5.0-12.0) (n = 538) | .416 |
| Infant age at introduction to solid foods (mo)* | 5.5 (5.0-6.0) | 5.3 (4.7-5.8) | <.001 |
| Infant age at introduction of egg (mo)*,† | 10.0 (8.0-11.0) (n = 393) | 6.0 (6.0-7.0) (n = 562) | <.001 |
| Infant introduction of egg by 12 months | 393 (77.7) | 562 (99.3) | <.001 |
| Infant age at introduction of peanut (mo)*,† | 10.0 (8.0-11.0) (n = 138) | 6.5 (6.0-8.0) (n = 533) | <.001 |
| Infant introduction of peanut by 12 months | 138 (27.3) | 533 (94.2) | <.001 |
| Infant age at introduction of cow's milk protein (mo)*,† | 5.0 (1.0-7.0) (n = 492) | 0.5 (0.3-5.5) (n = 558) | <.001 |
| Infant introduction of cow's milk protein by 12 months | 492 (97.2) | 558 (98.6) | .179 |

Data are presented as n (%) or n/N (%) unless otherwise stated.
*Median (interquartile range).
†Time-to-event variable calculated using the Kaplan-Meier survival curve (with infant age censored at 12 months).
‡Participants who never breastfed or with incomplete breastfeeding data were excluded from this analysis.

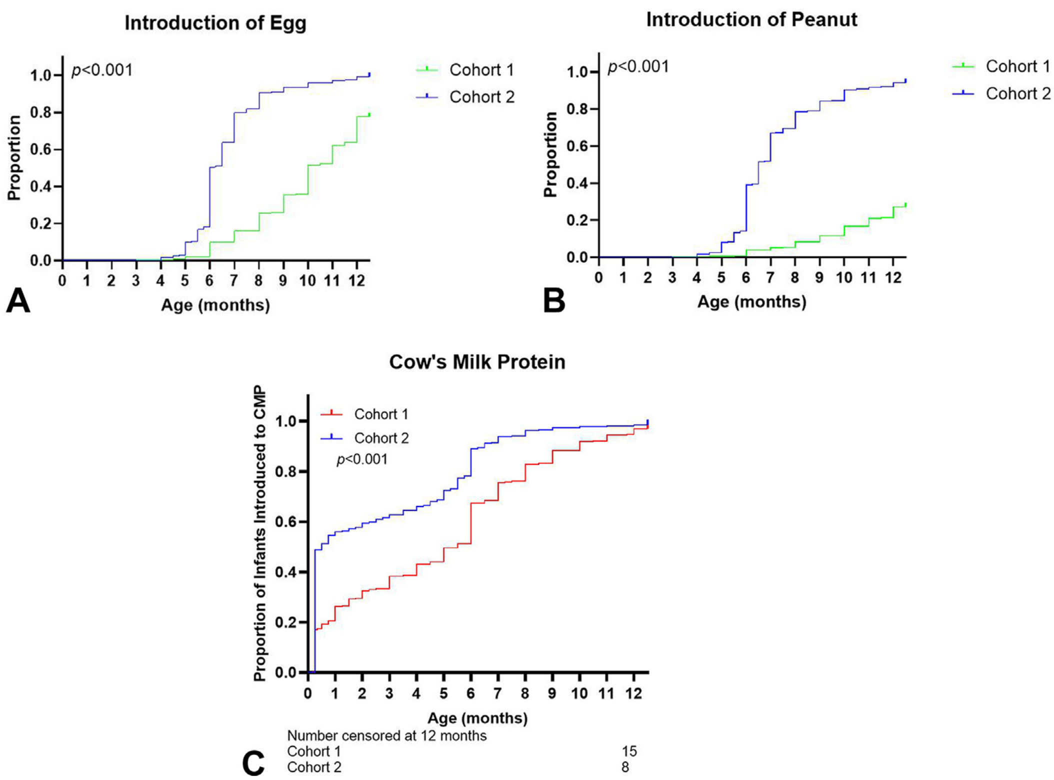


**FIGURE 1.** Illustration of the infant age (months) of dietary introduction of specific food allergens: (**A**) egg, (**B**) peanut, and (**C**) cow's milk protein (CMP), which includes infant formula and dairy foods. The Kaplan-Meier survival curves were censored for those infants who were introduced to these food allergens by 12 months of age.

earlier than in a previous cohort, with corresponding reductions in food allergen sensitization and food allergy rates.

The strengths of our study included that both cohorts had infants with a family history of allergic disease, infant feeding practices data were collected prospectively at multiple time points during infancy, and the infants were born in the same city (Perth, Australia). In addition, both cohorts had similar maternal age, White race predominance, breastfeeding commencement rates and duration, percentage of first-born child, infant sex ratios, and prevalence of infant eczema. The 2 cohorts differed for some maternal characteristics such as allergic disease, education level, race, birth delivery mode, and birth gestational age; however, adjusted analyses incorporating these maternal differences still determined a lower prevalence of peanut, egg, and cow's milk allergies in the recent cohort given current infant feeding and allergy prevention advice.

The observed differences between the 2 cohorts are consistent with Australian maternal characteristics trends between 2006-2014 and 2016-2022. Between 2007 and 2017, rates of women completing a university degree increased by 10% and women completing postsecondary school further training also increased by 15%.[9] In line with our findings, gestational age at birth has also

**TABLE III.** Infant IgE-mediated food allergy and food sensitization outcomes at 1 year of age

| | Cohort 1 (2006-2014) (n = 506), n/N (%) | Cohort 2 (2016-2022) (n = 566), n/N (%) | Unadjusted odds ratio (95% CI) | Adjusted odds ratio† (95% CI) | *P* value† |
|---|---|---|---|---|---|
| Egg allergy* | 46/393 (11.7) | 16/562 (2.8) | 0.22 (0.12-0.40) | 0.23 (0.12-0.44) | <.001 |
| Peanut allergy* | 8/138 (5.8) | 6/533 (1.1) | 0.19 (0.06-0.54) | 0.24 (0.08-0.76) | .015 |
| Cow's milk allergy* | 12/492 (2.4) | 3/558 (0.5) | 0.22 (0.06-0.77) | 0.14 (0.04-0.55) | .005 |
| Egg sensitization | 101/506 (20.0) | 36/566 (6.4) | 0.27 (0.18-0.41) | 0.26 (0.17-0.41) | <.001 |
| Peanut sensitization | 50/506 (9.9) | 13/566 (2.3) | 0.21 (0.12-0.40) | 0.19 (0.10-0.37) | <.001 |
| Cow's milk sensitization | 14/506 (2.8) | 8/566 (1.4) | 0.50 (0.21-1.21) | 0.35 (0.14-0.89) | .028 |
| Egg, peanut, and/or cow's milk sensitization | 121/506 (23.9) | 49/566 (8.7) | 0.30 (0.21-0.43) | 0.27 (0.18-0.39) | <.001 |

*CI*, Confidence interval.
*Participants excluded if not introduced to that food allergen before 12 months of age.
†Confounding factors used in adjusted odds ratio were maternal allergic disease, education level, race, birth mode of delivery, and birth gestational age.

**TABLE IV.** Infant food allergen sensitization outcomes divided between infants introduced to the same food allergen and infants not introduced to that food by 12 months of age

| | Cohort 1 (2006-2014) (n = 506) | | Cohort 2 (2016-2022) (n = 566) | |
|---|---|---|---|---|
| | Introduced to food allergen | Not introduced to food allergen | Introduced to food allergen | Not introduced to food allergen |
| Egg sensitization | 81/393 (20.6) | 20/113 (17.7) | 36/562 (6.4) | 0/4 (0.0) |
| Peanut sensitization | 19/138 (13.8) | 31/368 (8.4) | 12/533 (2.3) | 1/33 (3.0) |
| Cow's milk sensitization | 14/492 (2.8) | 0/14 (0.0) | 7/558 (1.3) | 1/8 (12.5) |

Data are presented as n/N (%).

decreased in Australia over the past decade, with the percentage of infants born between 37 and 39 weeks' gestation having increased by 11.6% and birth after 40 weeks' gestation having decreased by 7%.[10] Furthermore, maternal participant recruitment in cohort 2 commenced earlier in pregnancy from 18 weeks' gestation, compared with from 36 weeks' gestation in cohort 1, with resulting higher rate of infants born preterm in cohort 2. In addition, there were more cesarean births in cohort 2, consistent with a 7.5% increase in cesarean births in Australia from 2010 to 2022.[10] Although not always consistent, some previous cohorts[11,12] have found associations between cesarean births and increased risk of infant food allergy; however, cohort 2 in our cohort comparison study had an increased cesarean birth rate but lower food allergy prevalence. The higher rate of preterm births, lower gestational age at birth, and higher rate of cesarean births in cohort 2 likely contributed to the lower median age of cow's milk protein introduction via the use of supplemental cow's milk protein–based infant formula in the first few weeks of life.

Another recent Australian cohort comparison study, based in a different Australian city (Melbourne), failed to detect a reduction in peanut allergy since the introduction of the 2016 updated Australian infant feeding and allergy prevention guidelines.[13] At 1 year of age, the earlier Melbourne cohort (n = 5276, 2007-2011) found 3.1% peanut allergy compared with 2.6% (adjusted difference, −0.5, 95% CI: −1.4 to 0.4, $P = .26$) in a more recent cohort (n = 1933, 2018-2019).[13] It is important to note that in this Melbourne cohort comparisons study, the infants were recruited at 12 months of age; hence the infant feeding data were collected retrospectively, and infant feeding advice was not provided directly to the parents by the research team. The Melbourne cohorts included infants of general population at risk of developing allergic diseases, whereas our Perth cohorts included infants at higher risk of developing allergies due to at least 1 first-degree relative with a history of allergic disease. Another difference to highlight between our Perth cohorts and the previously published Melbourne cohorts was the higher maternal White race predominance of 89% in both Perth cohorts. However, different methodologies were used when reporting race between the Melbourne and Perth cohorts, making direct comparison difficult. We do acknowledge that a limitation of our Perth cohort comparison study was a lack of ethnic diversity; however, our study ethnic diversity is comparable to data from the Australian Bureau of Statistics for the Perth metropolitan area.[14] Interestingly in 2021, in the Perth metropolitan area, 88% of residents were White and 10% were Asian, compared with 51% White and 32% Asian in Melbourne.[14] As the Melbourne cohort study has identified that the earlier introduction of peanut was not associated with lower peanut allergy, especially in infants of East Asian ancestry,[13] it would be important for future studies to investigate food allergy outcomes after infant feeding and allergy prevention advice was directly provided to parents and caregivers within the East Asian ancestry community. Both of our Perth cohorts involved families with a history of allergic diseases and who were willing to take part in allergy prevention research studies. Hence, it remains uncertain whether directly providing caregivers in the general community with infant feeding and allergy prevention advice will have the same degree of impact in reducing food allergies. Future large-scale, diverse community, general population studies are needed to further assess this.

The development of tolerance to food allergens may depend on age of first introduction in the infant diet, as well as the frequency of consumption thereafter and amounts eaten regularly. We acknowledge that another limitation of our Perth cohort comparison study was that we did not capture data on frequencies nor amounts of consumption and recommend that these data be regularly captured in future prospective studies.

In summary, our study results highlight the benefits of directly providing parents and caregivers updated guidelines recommending the earlier introduction of the common allergy causing foods into the infant diet during the first 12 months of life. These guidelines could be widely distributed and individually explained to families throughout the community by varied health care professionals, such as child health nurses and general medical practitioners at routine health check appointments around the time of solid food introduction. Individual explanation to parents and caregivers, with the opportunity to ask questions and provide reassurance if required, should enable good community adherence to food allergy prevention recommendations and result in a decline in food allergy rates within the wider population.

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## ONLINE REPOSITORY

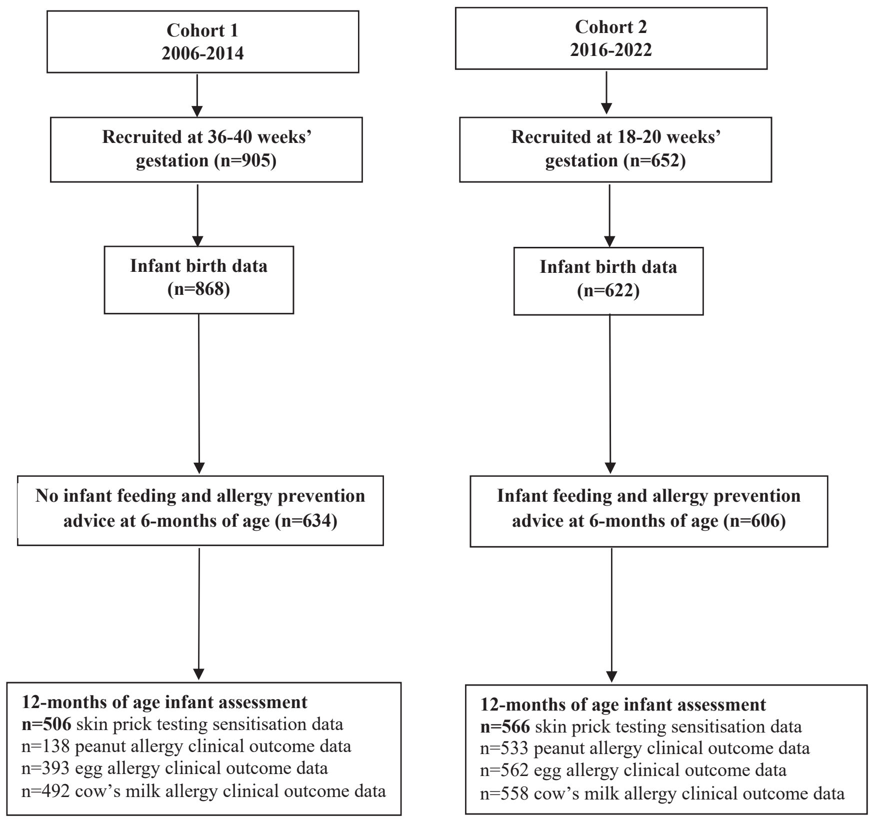


**FIGURE E1.** The participant flow in both cohorts.

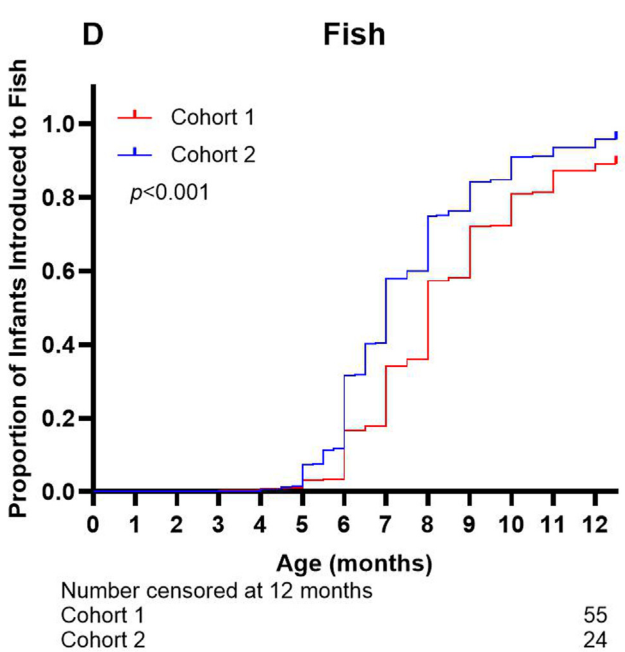


**FIGURE E2.** The infant age (months) of dietary introduction of fish. The Kaplan-Meier survival curve was censored for those infants who were introduced to fish by 12 months of age.