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Food Allergy among Children and Adults: A Comparative Analysis



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ABSTRACT

A survey on self-reported food allergy has been carried out from data collected through diagnostic laboratories in Bangalore during 2013-2015. Blood samples of a total of 168 individuals are screened using the Food Detective TM IS Professional (Product code: CNSFDIS/CNSFD5IS) kit. The individuals are divided into three categories for the purpose of evaluation, such as 5-15 yrs, 16-45 yrs and > 45 yrs. Among these, the age group of 16-45 yrs was found to be the most affected group, followed by the group of 5-15 yrs and the 45 yrs. Major food items eliciting allergic response varied among different categories.



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INTRODUCTION

Food is an essential part of the personal and social life of human beings. Consequently, food allergy often disrupts the daily life of the people concerned ^[1]. Food intolerance involves immune reactions of the body against incompletely digested food entering the blood stream. Mainly, there are two types of food allergy, namely, IgE-mediated anaphylactic type and IgG mediated delayed responses called food intolerance ^[2,3]. IgG-mediated delayed allergic reactions have been identified as an important cause of chronic diarrhea among children ^[3]. The food allergy is exemplified by the wide range of symptoms among children comprising poor weight gain, abdominal pain, vomiting, malabsorption, cough, rhinitis, wheeze, atopic dermatitis, angioedema and urticaria^[4,5]. In an analysis of the population studies on food allergy from different countries, Keil^[6] has identified, the need for standard methodological surveys for evaluating the correlation of ethnicity and food allergy in a multi-ethnic population and food allergy among the elderly population. A study on the prevalence of food intolerance and food allergy in adult Dutch population^[7] has reported the occurrence of these disorders among 2.4% of the adult population. Prevalence of food allergy among Indian population is less investigated and hence an attempt has been made in this study to analyze the self-reported food allergy among children and adults.

MATERIALS AND METHODS

Patient data on food allergy included in the current survey are self-reported cases of food allergy/intolerance from outpatients from different hospitals referred to the diagnostic center during 2013 to 2015. The patient population comprised both sexes with the age above 5 s. The blood samples of 168 patients were collected and tested using the Food Detective TM IS Professional (Product code: CNSFDIS/CNSFD5IS) kit. This kit identifies food-specific IgG antibodies for foods which may be involved in various conditions such as food intolerance, irritable bowel syndrome, eczema, and arthritis. The reaction tray is spotted with food protein extracts. A small blood sample is taken from a finger-prick and is then diluted and added to the tray. In subsequent steps, the use of Detector and Developer solution identifies the presence of food antibodies through the appearance of one or more blue spots on the tray. Reference to the food layout plan allows the foods causing antibody production to be identified. Food Detective results do not indicate any specific medical condition. This test is not intended to replace medical advice; it does not diagnose

allergies; it is a qualitative test and the results are a guide to diet only reactions in sensitized and allergic individuals.

RESULTS

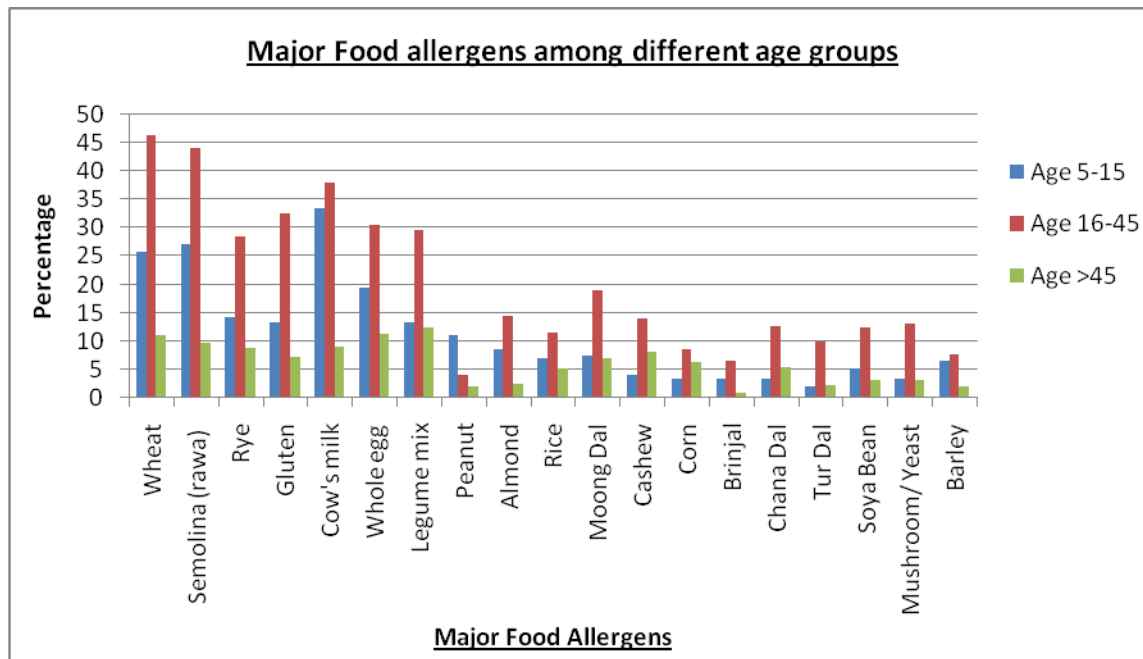


Figure I(a). Major food allergens.

A total of 33 food items were subjected to evaluation as a source of antigens eliciting allergic reactions. The food items found causing allergic symptoms in more than 5% of the patients, at least in one of age groups tested have been categorized as major food allergens and those found eliciting allergic reactions in less than 5% across all the age groups have been considered as minor food allergens. Percentage of the patient population showing allergy for the major and minor food allergens is presented in Figs. Ia and Ib respectively. Except for peanut, all major allergic food showed the highest incidence among 16-45 age group (Fig. Ia.). Wheat, semolina and cow's milk have been identified as the top most allergic food items in this group. Cow's milk, semolina, and wheat have been found as the three major allergic food items among the children (age 5-15 yrs). Legume mix, whole egg, and wheat were found as the top 3 food items causing allergy among people aged > 45 s. Peanut was found more allergic to children aged between 5-15 s unlike all other food items, which were found to be affecting the adults (16- 45 yrs) (Fig. Ia.). the food items categorized as minor allergens and their extent of allergic activity

among the study population are illustrated in Fig. I(b). Similar to the trend in major food allergens, the majority of them were found eliciting allergic reactions among the adults (16- 45 yrs). A small group of food items comprising, potato, tomato, carrot family mix and fruits were found to elicit allergic responses among the children aged 5-15 yrs (Fig. Ib.).

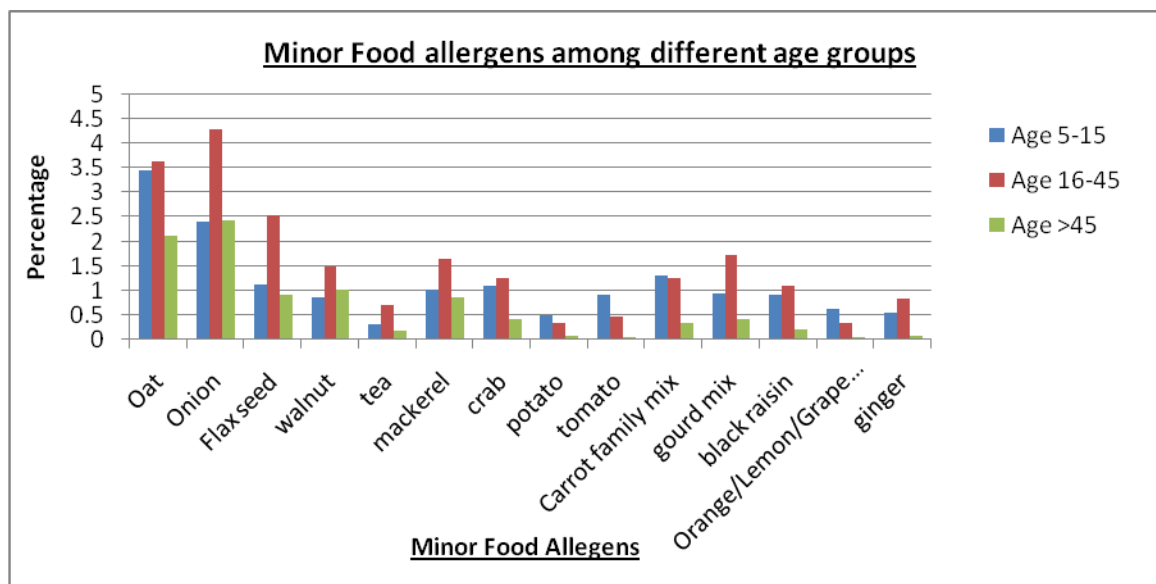


Figure Ib. Less Often allergy causing Foods.

DISCUSSION

Despite being a common health concern among the general public, food allergy/intolerance has not been investigated and addressed among the Asian population^[8]. Considering the gap of knowledge on food allergy/intolerance among Indians, this study has been carried out. The survey has identified 33 common food items causing allergic reactions among the study population, with 19 items as major allergens and 14 as minor allergens. The allergic trends among the 3 age groups of the study population in descending order has been recorded as 16-45yr > 5-15 yr > above 45 yr. This observation confirms the earlier report from eastern India on predominance for food allergy and higher susceptibility among the people of the age group of 15- 40 yrs^[9]. There is a general understanding that food allergies are more common in infants and children than in adults. However, food intolerance is more prevalent in adults. In general, adults have more compromised digestive function due to stress, the intake of alcohol and the use of drugs like NSAIDS such as aspirin^[10].

The major food allergens identified among the age group of 5-15 yrs were Cow's milk, semolina, and wheat followed by peanut. This observation differs from the earlier report of Sullivan^[11], from India, where peanut ranked the top most position. Cow's milk, hen's egg, wheat, and soy have been reported as the major food allergens of children from Poland^[12]. Another survey of food allergy among children from Hong Kong^[8] has reported shellfish, egg, milk and peanut as the major allergens. Survey on food allergens among adults in the Netherlands has reported 2.4% adults get affected by this problem and pork, white wine and menthol as the major causatives of allergic responses. In our study wheat, semolina and cow's milk have been identified as the major source of food related allergies among the age group of 16-45 yrs, the most affected group of individuals.

CONCLUSIONS

The current study has recorded the prevalence of food allergies among all age groups of the population, with the highest incidence in the age group of 16 - 45 yrs and lowest among people aged over 45yrs. Comparison of the food allergens among earlier reports from India and reports from other countries indicate different food items as the major cause of the problem. Therefore it can be concluded that the allergic reactions are influenced by different environmental factors and hence highly dynamic in nature. Repeated, long-term sampling on large population is required for arriving at a more reliable conclusion.

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