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Food Allergies among College Students, the need for nutrition education

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Abstract

Currently, 5% of the adult and 8% of pediatric populations are experiencing food allergies. Prevention of allergies can be difficult but may be achieved through reading food labels and eliminating allergen-containing ingredients in a household. However, young adults living away from home have greater responsibilities and may be at a higher risk for allergic reactions. Due to the higher risk for fatal food allergy-induced anaphylaxis during college time, public health awareness and education is imperative to decrease this problem. The aim of current short communication is to inform the dietitians and nutritionists on the need of nutrition education intervention in local college campuses.

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1. Background

Forty years ago the term food allergy was not common vernacular. Minimal public awareness, research studies, and cases of food allergies existed due to skepticism of health professionals. Then, the prevalence of food allergies was reported to be at 20%, but now actual research estimates it was 1% of the total population. Currently, 5% of the adult and 8% of pediatric populations are experiencing food allergies. Cases are so prevalent that allergic reactions are the leading cause of anaphylaxis treated in American emergency departments. Allergies to cow's milk, egg, or soy in comparison to peanut and tree nut allergens, resolve within the first 6 years of life in up to 60% of cases. The process of this is not well understood, but most likely related to the natural tolerance development of the individual (Ponce et al. 2016; Sampson 2016).

Oral tolerance of a food is deemed if the antigen or food can be ingested without problems despite prolonged periods of avoidance. This occurs over a period of time while the status of desensitization is strictly dependent on regular ingestion of the trigger food and no allergic reactions. Currently, treatment for those with food allergies includes avoidance of trigger, having an emergency plan, and understanding of treatment. It is important to note that there is no cure or specific treatment that has reached the ability to re-induce the symptom eliciting food as a treatment option. The aim of this quantitative study is to investigate the prevalence of common food allergens including, peanuts, tree nuts, milk, eggs, wheat, soy, fish and shellfish among West Chester University undergraduate students and age of onset (Land et al. 2011).

2. Prevalence and prevention of allergy

The National Health and Nutrition Examination Survey (NHANES), conducted the United States most recent study, which determined the prevalence of allergic sensitizations occurs most dominantly in pediatrics, which can follow the child into adulthood. In the NHANES study, participants aged 1 year and older were tested for serum specific IgEs to inhalant and food allergens; participants 6 years or older were tested for 19 IgEs, and children 1 to 5 years were tested for 9 IgEs (Salo et al. 2014). Then, serum samples were analyzed by using the ImmunoCAP System. NHANES used a questionnaire to obtain information on participant's characteristics and demographics [3]. The results from this particular study concluded that the overall prevalence of sensitization does not differ across census regions, except in early childhood. This study demonstrated that biological cross-reactivity is equally important, however, not the primary contributor to the clustering of allergen-specific IgEs [3]. Additionally, NHANES noted, "monitoring the prevalence and patterns of IgE-mediated sensitization in populations over time is important because allergic sensitization is a significant risk factor for the development of atopic disease" (Salo et al. 2014).

Anaphylaxis prevention can be difficult but can be achieved through reading food ingredient labels and eliminating allergen-containing ingredients in a household (Gavorek and Mistry 2014). However, young adults living away from home have greater responsibilities and may be at a higher risk for allergic reactions. This is due to the fact that typically on a college campus setting, many students depend on college dining services for all of their dietary needs. According to Food and Culinary Professionals dietetics practice group, 40 out of 1000 college students have a food allergy (Gavorek and Mistry 2014). Of these 40 students, only 10 will disclose their allergy and dietary needs to dining staff and 16 will experience an allergic reaction within a 6-month period. In order to comply with the Americans with Disabilities Act and prevent allergic reactions in students who dine on campus, an allergen program should be put in place. For example, Eastern Michigan University accommodates students with food allergies, intolerances, and special diets through a Food Intolerance and Allergen Program (FIAP) that ensures food allergy safety for those students (Gavorek and Mistry 2014).

Food allergies can newly arise in adulthood, or persist following a food allergy that occurred in childhood. Allergy symptoms in adults can be observed immediately, or after a period of delay such as indigestion, contact eczema, or flares of atopic dermatitis (Werfel and T. 2016; D'Auria et al. 2019). The same principles to diagnosing a child's food allergy apply for adults including skin prick tests and in vitro tests. The most frequent food allergies in adults are nuts, fruits, and vegetables, which can cross react with pollen, wheat, and shellfish (Werfel and T. 2016; D'Auria et al. 2019).

3. Dietary plans for prevention of allergies and allergic reactions

There are detailed dietary plans that are available with avoidance strategies and instructions for suitable food substitutes. It has been discovered that the transition from childhood dependence to adult independence presents many challenges in those who experience a food allergy because social interactions are changing. A study called "Food Allergy and Food Allergy Attitudes among College Students" aimed to assess food allergy trends and behavioral attitudes on a large university campus. In order to do this, an online survey was distributed by email to local university undergraduate students. A total of 513 college students responded with 57% reporting an allergic reaction to food. Among these students, allergy to milk, tree nut, shellfish, and peanut were significantly associated with anaphylaxis. The study also states that 47.7% of these students who reported having a food allergy maintained some form of emergency medication, including self-injectable epinephrine (Greenhawt et al. 2009).

Another study sponsored by the Allergy and Respiratory Research Group in the United Kingdom, aimed to discover adolescents' attitudes, behaviors, and experiences with food allergies and then develop strategies for them and their parents to make their food allergy more manageable. This study used topic guides along with a detailed face to face interview with the adolescent and their parents. Only twenty six individuals agreed to participate in the study, which resulted in mixed data results. The study found that most participants were actively involved in managing their allergy, even though it does create a barrier for them when socializing. The individuals who conducted the study, suggested implementing a management plan for the adolescent's allergy, however, many of the adolescents stated that the plan would not be effective for long-term management (Gallagher et al. 2012).

An interesting study went more in depth into determining if individuals really "outgrow" food allergies. For decades, many allergists and clinicians believed that young infants would outgrow their allergies, especially to intolerances involving milk, eggs, soy and wheat. Allergies to foods such as peanuts, tree nuts and seafood they felt were more likely to persist throughout life [9]. Recently, it was found through allergy mapping of IgE-binding epitopes on food proteins that these immunological mechanisms are based on antibodies within the individual, thus determining the length of the food allergy, not the food itself. For example, studies showed that children who outgrew their egg or milk allergies produced IgE antibodies primarily to conformational or 3 dimensional epitopes. Individuals who had food allergies that persisted throughout life, such as peanut allergies, generated significant quantities of IgE antibodies that were sequential, or linear epitope [9, 10]. Therefore, it is the shape of the IgE antibodies and epitopes that determine the length of the allergic reactions throughout the lifecourse. Previous research suggested strict allergen avoidance to "outgrow" these allergic reactions. The mindset behind this concept was that avoidance would prevent boosting of the IgE response, but this was advised before research surfaced concerning individual IgE directed conformational and sequential epitopes was determined. With current research, it is clear that this is not the case and the individual's IgE antibodies play a large role in the development of allergies and the length of time throughout the life course (Sampson 2016; Licari et al. 2019).

4. Conclusion

There are many new studies evolving with the development of food allergies. To avoid anaphylaxis or reaction, one needs to avoid the trigger food if they know they have a food allergy. It is also important to note that allergies can develop into adulthood, so there is always a chance to have a negative reaction to an allergen. With the high prevalence of food allergies from birth throughout adulthood, more research in these areas are essential.

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