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Prevalence of food allergies in students of a medicine course: a prospective observational cross-sectional cohort study

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Abstract

Food allergy can be defined as an adverse reaction to a food antigen mediated by fundamentally immunological mechanisms. It is a nutritional problem that has grown in recent decades, probably due to the greater exposure of the population to a greater number of available food allergens. It is becoming a worldwide health problem, associated with a significant negative impact on quality of life. Therefore, the assessment of the prevalence of food allergies in medical students in UNIFIPA is to identify the foods with the highest incidence of allergy and their clinical manifestations.

Keywords: Food Hypersensitivity. Allergens. Signs and symptoms.

Introduction

Currently considered a public health problem, food allergy is characterized by a set of clinical manifestations resulting from immunological mechanisms resulting from ingestion, inhalation, or contact with a certain food that results in the release of histamine and other substances in the body, causing various symptoms, depending on where in the body they are released **[1-3]**.

In the last 10 years, there has been an increase in allergic diseases, including food allergies. Food allergy affects more than 1% to 2% and less than 10% of the population, but it is still unclear whether the prevalence is increasing **[1,4]**. Changes in the population's lifestyle or new eating habits may be responsible for the increased prevalence of food allergies **[5]**.

The subject comprises a huge range of factors that may be involved, such as an abnormal response to some protein ingredient in ingested foods, immunological processes, genetic inheritance, or metabolic abnormalities **[6]**. More than 170 foods as allergens have been identified. However, about 90% of cases of food allergy are caused by just eight foods: eggs, milk, fish, crustaceans, nuts, peanuts, wheat, and soy **[7-9]**.

Therefore, knowing that food allergy is caused, in most cases, by specific food, and that several studies are broadening the perspective for this field, it becomes pertinent to assess the prevalence of food allergy and identify the foods with the greatest incidence of this type of allergy and its clinical manifestations in medical students from UNIFIPA. Thus, this study analyzed the quality of food of medical students in Catanduva, along with their food allergies, and how much this affects their routine.

Methods

Study Design and Participants

This is a prospective observational cross-sectional cohort study (STROBE rules) with a quantitative approach. This study was carried out with 105 medical students from the UNIFIPA faculty of medicine (Padre Albino University Center), Catanduva, Sao Paulo, Brazil, of both sexes and aged 17 years and over. Through an online form (Google Forms platform), the study opted to use information about food allergies easily recalled by the participants.

Ethical Approval

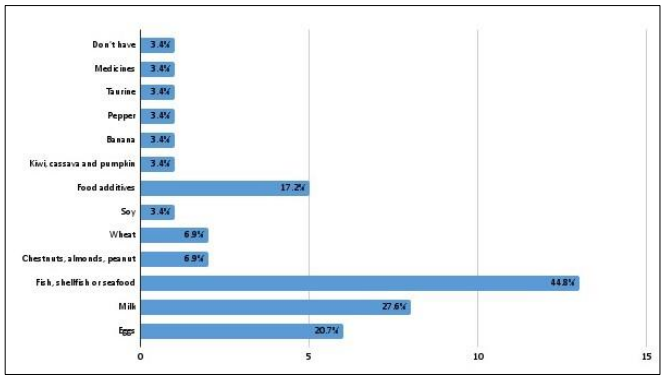
This study was analyzed and approved by the Research Ethics Committee of UNIFIPA, Catanduva, Sao Paulo, according to a substantiated opinion number of 5,494,737. The term consent does not apply because it

is an observational study.

Results

A total of 54 male and 51 female students were evaluated. Among them, 89 say they follow the precept of healthy eating and 16 do not. Regarding food allergies, 74.3% do not have it and 25.7% have it. The most frequent types of food allergies were: Fish, crustaceans, and seafood (44.8%); Milk (27.6%); Eggs (20.7%); Food additives (preservatives and dyes) (17.2%) (Figure 1).

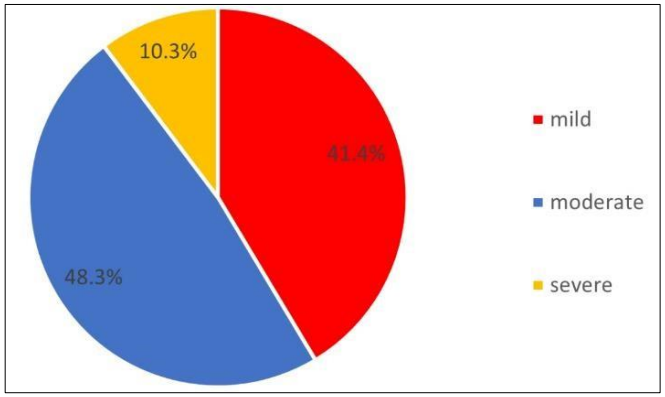
Figure 1. General clinical findings of types of food consumption by medical students.



Source: Own authorship.

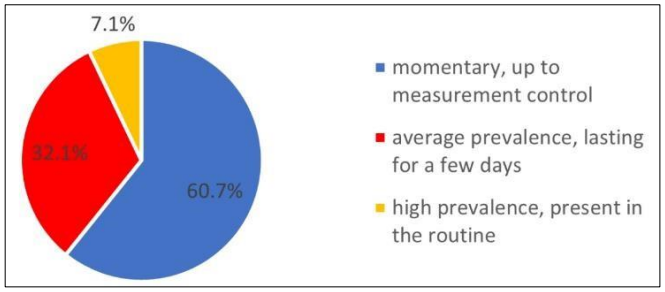
For the intensity of the allergy and the time of prevalence of the allergy, see Figures 2 and 3.

Figure 2. Clinical findings on allergy intensity.



Source: Own authorship.

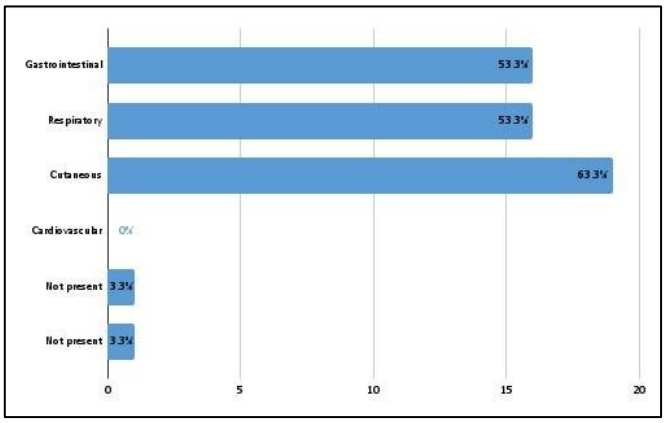
Figure 3. Clinical findings on time of prevalence.



Source: Own authorship.

The most frequent clinical manifestations were cutaneous (63.3%), gastrointestinal (53.3%) and respiratory (53.3%) (Figure 4).

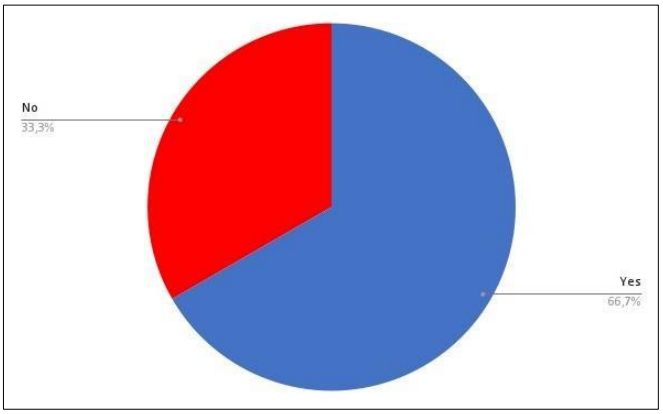
Figure 4. Clinical findings on the most frequent clinical manifestations.



Source: Own authorship.

Finally, the emotional state and its influence on allergy were:

Figure 5. Clinical findings on emotional state.



Source: Own authorship.

Discussion

Based on the objective of the present study to assess the prevalence of food allergy and identify the foods with the highest incidence of this type of allergy and its clinical manifestations in medical students, the results showed, in general terms, that the description of the participants was "allergy gets more intense"; "intensified allergic process when I am in periods of greater anxiety or stress", "potentializes", "my dermatitis is more attacked".

In this sense, it is known that adverse food reactions include immune-mediated food allergies and non-immune-mediated intolerances **[7,10]**. However,

this distinction and the involvement of different pathogenetic mechanisms are often confused. Furthermore, there is a discrepancy between the perceived versus actual prevalence of immune-mediated food allergies and nonimmune reactions to foods that are extremely common **[11-13]**. The risk of an inadequate approach to its correct identification can lead to inadequate diets with serious nutritional deficiencies. It is necessary to address specific nutritional concerns for each of these conditions from the combined standpoint of gastroenterology and immunology in an attempt to provide a useful tool for practicing physicians in discriminating against these divergent disease entities and planning their correct management **[1-3]**.

In this regard, a correct diagnostic approach and dietary control of immune-mediated and non-immune-mediated food-induced illnesses can minimize nutritional gaps in these patients, helping to improve their quality of life and reduce the economic costs of their treatment **[14]**.

Therefore, the improvement in the knowledge of the pathophysiological mechanisms underlying tolerance and sensitization to food antigens has recently led to a radical change in the clinical approach to food allergies. Environmental and nutritional changes have partially changed the epidemiology of food allergic reactions, and new food allergic syndromes have emerged in recent years. The deepening of the study of the intestinal microbiota highlighted important mechanisms of immunological adaptation of the mucosal immune system to food antigens, leading to a revolution in the concept of immunological tolerance. As a consequence, new models of prevention and innovative therapeutic strategies have emerged that aim at a personalized approach to the patient affected by food allergies **[15]**.

Conclusion

The present study made it possible to obtain current data on the prevalence of food allergies in medical students in UNIFIPA. Considering that in recent years there has been an increase in food allergies, it was found that fish, crustaceans, and seafood were the food class that most caused allergies among students, with skin manifestations being the most prevalent. However, the emotional state and its influence on allergy did not show the expected relevance.

Acknowledgement

Not applicable.

Ethical Approval

This study was analyzed and approved by the Research Ethics Committee of UNIFIPA, Catanduva, Sao Paulo, according to a substantiated opinion number of 5,494,737. The term consent does not apply because it is an observational study.

Informed consent

Not applicable.

Funding

Not applicable.

Data sharing statement

No additional data are available.

Conflict of interest

The authors declare no conflict of interest.

Similarity check

It was applied by Ithenticate@.

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