Implementation of a teaching resource on food allergies in primary care

Implementación de un recurso docente sobre alergias alimentarias en atención primaria

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Abstract

Introduction: Food allergy is on the rise. Primary care providers are called upon to diagnose and treat these patients.

Objective: to develop and test an educational resource on food allergy in primary care.

Methods: An observational study was conducted based on a 23-item structured written questionnaire on food allergy and self-reported knowledge.

Results: Almost all physicians (98%) indicated that they see patients with food allergies and half of these physicians treat ten or more patients annually.

Conclusions: A flexible educational program was developed that can be an effective teaching tool for primary care providers to diagnose and manage food allergies.

Keywords: food allergy, anaphylaxis, primary care, general practitioners source: DeCS

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Resumen

Introducción: la alergia a los alimentos está aumentando. Los proveedores de atención médica de atención primaria están llamados a diagnosticar y tratar a estos pacientes

Objetivo: desarrollar y poner a prueba un recurso educativo sobre alergia alimentaria en atención primaria

Método: Se realizó un estudio observacional basado en un cuestionario escrito estructurado de 23 ítems sobre alergias alimentarias y el conocimiento autoinformado.

Resultados: Casi todos los médicos (98%) indicaron que atienden a pacientes con alergias alimentarias y la mitad de estos médicos tratan a 10 o más pacientes al año.

Conclusiones: Se desarrolló un programa educativo flexible que puede ser una herramienta de enseñanza efectiva para los proveedores de atención primaria para el diagnóstico y manejo de alergias alimentarias

Palabras Clave:alergia a alimentos, anafilaxia, atención primaria, médicos generales. fuente: DeCS

Introduction

It is estimated that 3-4% of adults have a food allergy, and 20% of adults avoid a portion of food based on a perceived allergy. Adolescents and young adults appear at increased risk for life-threatening food allergies[1]. Food allergy appears to rise, at least for peanut allergy. Primary care providers are called upon to diagnose and treat these patients, but previous studies indicate a significant deficit in proper diagnosis and treatment[2]. One survey identified deficits in the knowledge base where nearly half of respondents failed to recognize and adequately treat food-induced anaphylaxis[3]. A study by Wang et al. similarly identified that half of the respondents failed to treat hypothetical anaphylaxis with the appropriate dose of epinephrine, and more than one-third of respondents selected an inappropriate observation period after a reaction[4]. In addition, most respondents were unable to identify risk factors for anaphylaxis. A study on the ability to correctly demonstrate the use of epinephrine autoinjectors revealed that most general practitioners could not correctly use epinephrine devices[5]. Finally, a study of 21 emergency rooms revealed deficiencies in treating persons with food allergies, including lack of referral, avoidance training, and emergency department treatment[6].

To improve the management of food allergy and anaphylaxis by non-allergist healthcare providers, the educational needs of these stakeholders were identified to create educational materials thataddress these needs effectively. The study focused on primary care and emergency medicine physicians likely to care for those most at risk for fatal anaphylaxis (adolescents and young adults). A needs assessment survey was created and administeredand those results were used to form an educational program tested for effectiveness and satisfaction.

Method

An observational study was conducted based on a 23-item structured written questionnaire that collected information on physician demographics, type of practice, previous exposure to food allergy education, and self-reported knowledge of food allergy and anaphylaxis management in the city of Ambato. In addition, individual comments on specific educational needs in food allergy and learning style preferences were also obtained. The survey results were used to develop a teaching program that was tested with primary care and emergency medicine physicians. This study was approved by the Universidad Regional Autónoma de Los Andes (UNIANDES).

A live demonstration of how to use the auto-injectable epinephrine device, Epipen®,followingthe manufacturers' guidelines, was integrated into the discussion on the treatment of anaphylaxis. The slide deck concluded with a series of interactive clinical case scenarios highlighting key concepts. The information was presented in a one-hour session with individual participants, who were administered a written knowledge pre-and post-test and graded on their use of epinephrine autoinjectors before and after the presentation. The written test, consisting of 10 multiple-choice questions with a single best answer, was reviewed by healthcare providers who care for patients with food allergies and nonallergic primary care physicians and revised to optimize the clarity of the questions and establish an appropriate level of difficulty. A satisfaction survey (5-point Likert scale) was administered after the presentation.

Database and statistical processing of the data were performed and analyzed in SPSS 26 statistical software (SPSS Inc., Chicago, IL, USA.).Descriptive statistics were used for the results collection, presentation and interpretation. Categorical variables were assessed using the χ test^2; test scores and epinephrine demonstration skills scores were analyzed using the Wilcoxon signed-rank test. A $p < 0.05$ was considered statistically significant.

Results

Participants included a total of 82 participants representing a convenience

sample of primary care physicians. The median years of clinical practice were 10 years (1-53 years). Nearly all physicians (98%) indicated that they see patients with food allergies, and half of these physicians treat ten or more patients annually. In addition, most (80%) indicated that they had treated patients during an acute food-induced allergic reaction.

In an open-ended question, physicians (77%) most frequently mentioned auto-injectable epinephrine as part of the management plan for an otherwise healthy patient with a documented, life-threatening allergy to peanuts or shrimp. Physicians who did not mention epinephrine only listed dietary advice, other treatments, and referral to an allergist as their management plan.

Two-thirds of respondents reported feeling comfortable teaching a patient how to use an auto-injectable epinephrine device. However, only 32% had epinephrine training devices available at their practice site. In addition, only one-quarter of physicians provided detailed education on food allergen avoidance or patient education handouts on food allergies.

Regarding previous food allergy training, cumulative clinical experience was the most common mode of education (59% of participants). Written articles (29%), emergency department rotations (29%) or allergy clinics (15%), and online (1%) and print (6%) courses were also used as sources of information. Twenty percent of participants indicated that they had never received a good presentation on food allergy. On a 4-point Likert scale ranging from "very comfortable" to "uncomfortable," only about half of the respondents were "comfortable" to "very comfortable" with food allergy diagnosis (54%) and ongoing food allergy treatment (48%). Referral guidelines (59 %), diagnosis (52 %) and patient education (52 %) were the areas where physicians wanted more information (Table 1).

Table 1. Educational preferences indicated by the needs assessment survey.

Educationpreferences	# ofrespondents	% ofrespondents
Topicneeding more information		
Reference guidelines	48	59
Diagnosis	43	52
Provide an emergency action plan for food allergies.	43	52
Educating patients on how to avoid food allergens	43	52
Use and indications of autoinjectable epinephrine	40	49
Anaphylaxismanagement office	33	40
Learningstylepreferences		
Smaller on-site training session	43	52
Printedmaterials	31	38
Review article in a major journal every 2 years	28	34
Self-paced online training modules	22	27
Sessions at the large annual professional conference	14	17
Self-paced self-paced computer-based training modules on CD	9	11

Self-paced printed training modules	6	7
Other	0	0

Source: statistical analysis, p≤ 0.05 Respondents indicated that one or more of the listed food allergy topics required more information and preferred learning modalities (n = 82).

Approximately 75 physicians were asked to participate in the pilot test and 26 were accepted (35% response rate). Participants were board certified in one or more of the following: pediatrics (27%), internal medicine (50%), emergency medicine (8%), and other specialties (35%), such as occupational medicine and pediatric emergency medicine. These participants indicated that the Internet is the most commonly used source of information on food allergy, especially websites such as UpToDate, Google, Emedicine and MD Consult. In addition, general medicine or allergy and immunology textbooks from the same specialty colleague or allergy and immunology colleagues were also mentioned as sources of information.

Participants achieved an overall mean test score of 38 % (SD = 19 %) correct on the pretest with an increase to 64 % (SD = 16 %) correct on the posttest ($p < 0.001$). On the pretest, more than half of the participants correctly answered questions related to the natural history of food allergy, other adverse reactions to food, the role of serum IgE antibody testing in food allergy, and the clinical presentation of anaphylaxis. There was an overall improvement in the post-test in the number of correct answers per question, with most healthcare providers answering 7 of the 10 questions correctly. The fewest number of correct answers on the pretest and post-test were recorded for questions specifically related to risk factors for anaphylaxis, management of anaphylaxis, and current food allergen labeling laws.

Most participants (81%) indicated they did not have epinephrine device trainers available at their clinical practice site. Before the demonstration, 23% of participants demonstratedthe correct use of the Epipen® device and 85% administered it correctly after the demonstration.

Discussion

Nearly all of the primary care healthcare providers we surveyed treat patients with food allergies. Many of these healthcare providers received most of their previous food allergy training through their personal clinical experience rather than structured educational programs[7]. Although many participants indicated that they relied on this experience for clinical decision-making, most reported that they did not feel comfortable managing food allergies [8].

Physicians' management plans for life-threatening food allergies were deficient in multiple areas, especially: the prescription of auto-injectable epinephrine (23% did not include this in a management plan), dietary counseling (61% provided none), and referral to an allergist (28% indicated that "never," "rarely," or only "many participants distinguished explicitly between mild and severe wheezing as criteria for prescribing auto-injectable epinephrine, although any severity of wheezing in a past reaction is considered a current risk for a severe reaction. Furthermore, most physicians did not employ educational brochures on epinephrine use, and many practices lacked training devices. In addition, there was considerable variation in patient selection and consideration of clinical criteria for initiating an allergy referral, which may represent a barrier to timely referral to specialty care[9].

The results show that there is suboptimal comfort with food allergy diagnosis and management among primary care and emergency physicians, and many providers indicated a clear interest in additional education, particularly regarding referral guidelines, diagnosis, and patient education. In addition, the study showed that most healthcare providers currently use many different reference sources for information on food allergy management, including other colleagues and medical textbooks. In particular, healthcare

providers most frequently turned to the Internet for information, reflecting the current trend of increased reliance on the Internet as an educational resource for physicians[10].

Improving the education of healthcare providers and better delivery of that education through currently employed forms of learning would certainly improve the continuity and quality of care for patients with food allergies [11]. However, there are currently limited formal food allergy educational programs designed for and easily accessible to primary care physicians[12]. The survey results revealed that the preferred education methods were small lectures, printed materials, and online training. To address these varied learning styles, we selected a PowerPoint slide format, as this could ultimately be adapted to a small lecture, one-on-one instruction, or an online tutorial setting.

The study demonstrated that this program increased physician knowledge of food allergy, as evidenced by improved test scores and auto-injectable epinephrine devices[13,14]. Furthermore, most participants indicated that the teaching module was presented in a practical format, addressed their educational needs, and increased their knowledge of food allergy and anaphylaxis management. In addition, many respondents (96%) would recommend a similar educational program to their colleagues.

The small size affects the statistical power of our study, but our data provide compelling observations about food allergy management in primary care[15,16]. The response rate was generally high in certain settings (staff meetings), whereas it was lower when surveys were conducted during conferences or mailed between offices. It is difficult to know whether physicians with greater interest and knowledge on the topic or physicians with a poor knowledge base who sought additional education were more likely to participate[17,18].

Further validation of this program could include administration in other practice sites and settings and for a larger group of physicians and other health care providers, such as nurse practitioners and physician assistants[19,20]. In addition, longitudinal validation is also needed.

Based on feedback from the study, several modifications to the original slide deck were implemented and a list of the various relevant websites was designed to accompany the program's core components.

Conclusions

A flexible educational program was developed that can be an effective teaching tool for primary care providers to diagnose and manage food allergies. Further testing and validation of this training module will help maintain its educational value and relevance

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