



The Level of Knowledge of Dietitians About Dietary Management of Children with Food Allergy

Besin Allerjisi Bulunan Çocukların Diyet Yönetimi Hakkında Diyetisyenlerin Bilgi Düzeyleri

Tayfur GİNİS¹, Nevra KOÇ², Hakan GÜVENİR¹, Cansu ÇETİN³, Müge TOYRAN¹, Ersoy CİVELEK¹, Can Naci KOCABAŞ⁴

¹ Department of Pediatric Allergy, Ankara Children's Hematology Oncology Education and Research Hospital, Ankara, Turkey
Ankara Çocuk Sağlığı Hastalıkları Hematoloji Onkoloji Eğitim Araştırma Hastanesi, Çocuk Alerjisi Bölümü, Ankara, Türkiye

² Department of Nutrition and Dietetics, Ankara Children's Hematology Oncology Education and Research Hospital, Ankara, Turkey
Ankara Çocuk Sağlığı Hastalıkları Hematoloji Onkoloji Eğitim Araştırma Hastanesi, Beslenme ve Diyetetik Bölümü, Ankara, Türkiye

³ Department of Nutrition and Dietetics, Hacettepe University, Faculty of Health Sciences, Ankara, Turkey
Hacettepe Üniversitesi, Sağlık Bilimleri Fakültesi, Beslenme ve Diyetetik Bölümü, Ankara, Türkiye

⁴ Department of Pediatric Allergy, Muğla Sıtkı Koçman University Faculty of Medicine, Muğla, Turkey
Muğla Sıtkı Koçman Üniversitesi Tıp Fakültesi, Çocuk Alerjisi Bölümü Muğla, Türkiye

ABSTRACT

Objective: The aim of this study was to evaluate the knowledge of dietitians and dietetic students about food allergy in order to develop suggestions for educational activities.

Materials and Methods: Dietitians and dietetics students were surveyed via a questionnaire aimed to document their knowledge about food allergy management.

Results: Of the 150 questionnaires distributed, 122 valid questionnaires were returned. The response rate was 81.3%. Of all the respondents, 51.4% were working in a hospital. About sixty percent of respondents rated themselves 'moderate' for identifying some clinical manifestations of FA, developing elimination diets, providing avoidance education, managing the dietary needs of children with cows' milk allergy (CMA). Only 72.1% of respondents answered the questions about foods that can cause anaphylaxis correctly. About forty percent of respondents did not recognize that food allergens could be transmitted by means of tools used for service such as knives and spoons and thought that smoke of the cooking food does not cause allergy. About sixty percent of respondents also thought that touching the food never causes allergic reactions. Of all the respondents, only about 18.9% suggested amino acid based formulas for children with CMA, 23% suggested fully hydrolyzed formulas and 39.3% thought that lactose free formulas can be given to patients with CMA.

ÖZ

Giriş: Çalışmada beslenme ve diyet uzman ve öğrencilerinin besin allerjisi ile ilgili bilgi düzeyleri değerlendirilmiştir.

Gereç ve Yöntem: Diyetisyenler ve diyet bölümü öğrencilerinin besin allerjisi yönetimi konusunda bilgileri bir anket yoluyla incelenmiştir.

Bulgular: Dağıtılan 150 anketin, 122'si geçerli anket olarak döndü. Yanıtlama oranı %81.3 idi. Tüm katılımcıların %51.4'ü hastanede çalışmaktaydı. Katılımcıların yaklaşık %60'ı kendilerini besin allerjisinin bazı klinik belirtilerini ayırt etme, eliminasyon diyetleri geliştirme, allerjenlerden sakınma eğitim bilgilerini ve inek sütü allerjili çocukların diyet yönetimi konusundaki bilgi düzeylerini orta derece olarak değerlendirmişti. Katılımcıların sadece %72.1'i besinlerin anafilaksiye neden olabileceğini doğru cevaplandırdı. Katılımcıların yaklaşık %40'ı gıda allerjenlerinin bıçak ve kaşıklar gibi servis araçları vasıtasıyla iletilebileceğini bilmiyordu ve pişirilirken gıda buharının allerjik reaksiyonlara neden olmayacağını düşünmüştü. Katılımcıların yaklaşık %60'ı da gıdalara dokunmanın asla allerjik reaksiyonlara neden olmadığını düşünmüştü. İnek sütü allerjili çocuklar için tüm katılımcıların sadece %18.9'u aminoasit bazlı formüle, %23 tam hidrolize formüle, %39.3 laktöz içermeyen formüle verilebileceğini önermişti.

Address for Correspondence/Yazışma Adresi

Can Naci Kocabaş
Muğla Sıtkı Koçman Üniversitesi Tıp Fakültesi, Çocuk Alerjisi Bölümü Muğla, Türkiye
e-mail: cankocabas@yahoo.com

Conclusion: This study revealed that there are some gaps in the knowledge of dietitians about food allergy. Dietitians should be given training on this subject and there should be a re-evaluation of health policies with a wider global perspective.

Key words: Dietitians, food allergy, children, knowledge, education

Received: 06/01/2016 • **Accepted:** 25/03/2016

Sonuç: Çalışma, besin allerjisi konusunda diyetisyenlerin bilgisinde bazı eksiklikler olduğunu ortaya koymuştur. Diyetisyenlere bu konuda eğitim verilmeli ve daha geniş bir küresel bakış açısı ile sağlık politikaları yeniden değerlendirilmelidir.

Anahtar kelimeler: Diyetisyenler, besin allerjisi, bilgi, çocuk, eğitim

Geliş Tarihi: 06/01/2016 • **Kabul Tarihi:** 25/03/2016

INTRODUCTION

Food allergies (FA) constitute an important health problem as they can cause mortality and a significant decrease in health-related quality of life. This problem is reported to affect 5-6% of children and the frequency seems to be increasing at least some countries (1). Recent studies also indicate that a considerable number of children cannot outgrow their allergies in early childhood and the problem can persist into school age and beyond (2-4). In some cases, trace amounts of food can trigger an allergic reaction. Currently, strict avoidance of the food allergen is the only therapeutic option.

Successful avoidance of food allergens depends on appropriate education and an individual's ability to identify the foods that caused the reactions, ability to read food labels, ability to prevent allergen contamination through cross-contact (5). Patients also need instruction on obtaining safe meals in restaurants, school cafeterias, and other public eating venues (6). Studies show that food-allergic consumers experience allergic reactions caused by errors in avoidance (7,8).

Dietitians have a wide range of responsibilities for a patient/family with FA (9). Medical nutrition therapy plays an integral role in the health of those with FA and consists of a nutritional assessment, comprehensive avoidance education, individualized alternative food sources, allergen-free supplemental feedings and continued follow-up counseling.

If poorly managed, food allergy affects normal growth in children, and causes an additional economic burden to society. In a recent study it was shown that children with milk allergy or 2 or more FA were shorter based on height-for-age percentiles than their nonallergic peers (10). Therefore, extensive education should include not only how to avoid specific allergens, but also how to safely and

appropriately substitute for eliminated food items and the nutrients inherent in those food items.

Although the importance of the role of dietitians in managing food allergy is well understood, the knowledge of dietitians about food allergy is not well studied. The few studies we could find in the literature show a great need for food allergy knowledge amongst dietitians (11,12).

The aim of this study was to evaluate the knowledge of dietitians about food allergy in order to develop suggestions for educational activities.

METHODS

Study Design

The study population consisted of dietitians working in different settings and a group of final year dietetics students in Ankara. Generally, nutrition and dietetic education is four years in all institutions in our country. In a four months period, between March and June 2014, approximately 125 participants were interviewed using a self-administered questionnaire. Participants did not have prior knowledge on the objectives of the study. The survey consisted of some questions that were mainly based on the validated questionnaire and guidelines (13,14). The questionnaires included questions on the demographic characteristics of the participants and their knowledge and attitudes regarding the symptoms, severity, triggers, some hidden food content such as dairy, eggs and management of food allergies including the effects of cooking methods on food allergenicity and procedures causing cross-contact. It also included questions related to symptoms of anaphylaxis and their suggestions about what formulas should be given for children with cow's milk allergy (CMA).

The study was approved by the local ethics committee and informed consent was obtained from the participants.

Statistical Analysis

Results are presented using descriptive statistics. The definitions were provided as number and percentage for discrete variables and as median and interquartile range (IQR) for continuous variables. Chi-square tests were applied for subgroup analyses. A p value less than 0.05 was considered significant. Percentage responses are calculated per question based on the number of respondents answering. All statistical analyses were conducted using SPSS (version 15.0, SPSS, Inc., Chicago, IL, USA, 2006).

RESULTS

A total of 122 participants with female predominance returned completed questionnaires. Eighty-six respondents (70.4%) were dietitians and 36 (29.5%) were dietetic

students. The median age was 23 years (IQR: 23-36 years). Of all the respondents 51.4% (n=70) were working in a hospital. The median duration of experience working as a dietitian was 5 (IQR:3-19.25) years. Seventy-one dietitians (58.2%) defined their knowledge on food allergy and managing the dietary needs of patients with FA as “moderate.” Of all the respondents, only 42.6% reported that they asked their patients whether they had any allergic reaction to food in their daily practice (Table I).

Almost all of the respondents had some information about food allergies. The majority of respondent agreed correctly that FA can be fatal reaction whereas only 72.1% of those answered correctly to the questions about foods that can cause anaphylaxis. Dietitians answered these questions correctly more frequently than dietetic students

Table I. Experience of participants on food allergy

	Overall n=122 n (%)	Dietitian n=86 n (%)	Dietetic students n=36 n (%)	p
How would you describe your level of knowledge about food allergies?				0.492
Good	40 (32.8)	26 (30.2)	14 (38.9)	
Moderate	71 (58.2)	53 (61.6)	50 (18)	
Inadequate	11 (9)	7 (8.1)	4 (11.1)	
Would you ask patients whether they had any allergic reaction to food in daily practice?				< 0.001
Always	52 (42.6)	46 (53.5)	6 (16.7)	
Sometimes	61 (50)	33 (38.4)	28 (77.8)	
Never	9 (7.4)	7 (8.1)	2 (5.6)	
How often do you see patients who have any allergic reaction to food ?				< 0.001
At least one in every month	41 (33.6)	34 (39.6)	2 (5.6)	
Less than the other	54 (44.3)	44 (51.2)	10 (27.8)	
Never	27 (22.1)	8 (9.3)	19 (52.8)	
Have you ever had patients having any allergic reaction to food in your working setting ?				< 0.001
Yes	26 (21.3)	25 (29.1)	1 (2.8)	
No	96 (78.7)	61 (70.9)	35 (97.2)	
Is there an equipment to be used in the event of a serious allergic reaction in your working setting?				< 0.001
Yes	56 (45.9)	56 (65.1)	-	
No	12 (9.8)	10 (11.6)	2 (5.6)	
No idea	54 (44.3)	20 (23.3)	34 (94.4)	
How adequate do you find yourself on the preparation of food allergy diet list to someone?				0.158
Good	30 (24.6)	25 (30.1)	5 (13.9)	
Moderate	71 (58.2)	47 (56.6)	24 (66.7)	
Inadequate	21 (17.2)	11 (13.3)	7 (19.4)	

($p < 0.001$). On the other hand, nearly 60% of respondents recognized that cardiovascular and rhinitis symptoms can predict anaphylaxis. The responses of participants on questions about of their knowledge regarding the symptoms, severity, and triggers of food allergy are shown in Table II.

While the majority of respondents (82.8%) agreed correctly that small amounts of allergen is unsafe for food allergic individuals, about 52 respondents (43%) did not recognize that food allergens could be transmitted by

means of tools used for service such as knives and spoons. About sixty percent of respondents thought that touching the food never causes allergic reactions and 42.6% thought that smoke of the cooking food does not cause allergy. Most of the respondents (92.6%) recognized that cooking or washing the food may not make the food “non-allergic”. Nearly half of the respondents (47.5%) did not know that margarine contains milk protein and most of them (99.2%) did not know that sausages can contain milk protein. Approximately half of the respondents (53.3%) also did not know that puddings can contain egg protein.

Table II. Participants’ knowledge about management of food allergy

Number of participants who answered “yes” to the following items.	Overall n= 122 n (%)	Dietitian n= 86 n (%)	Dietetic students n= 36 n (%)	p*
Perceptions of susceptibility and prevalence				
FA are not seen only in children	116 (95.1)	83 (96.5)	35 (97.2)	0.652
FA can go away with age in children	70 (57.4)	47 (54.7)	23 (63.9)	0.419
Symptoms and severity				
FA can be fatal	104 (85.2)	73 (84.9)	31 (86.1)	0.907
FA can cause anaphylaxis	88 (72.1)	72 (83.7)	16 (44.4)	< 0.001
FA can cause urticaria	82 (67.2)	66 (76.7)	16 (44.4)	< 0.001
FA can cause hypotension, syncope, shock	82 (67.2)	62 (72.1)	20 (55.6)	0.076
FA can cause sneezing, runny nose, itchy nose	96 (78.7)	67 (77.9)	29 (80.6)	0.745
Triggers and environmental risk				
A trace amount of the food can trigger an allergic reaction	101 (82.8)	71 (82.6)	30 (83.3)	0.757
Touching the food causes allergic reactions	74 (60.7)	49 (57)	25 (69.4)	0.251
Washing the foods don’t make the food “non-allergic	113 (92.6)	79 (91.9)	34 (94.4)	0.639
Cooking the food don’t make the food “non-allergic	105 (86.1)	76 (88.4)	29 (80.6)	0.087
Tools used for food service may transfer allergenic protein	70 (57.4)	45 (52.3)	25 (69.4)	0.106
Smoke of the cooking food may cause allergy	52 (42.6)	28 (32.6)	24 (66.7)	0.01
Transported in the same food package may transfer allergenic protein	81 (66.4)	54 (62.8)	27 (75)	0.285
Sausages may contain milk protein	1 (0.8)	1 (1.2)	-	
Pudding can contain eggs protein	65 (53.3)	49 (57)	16 (44.4)	0.183
Margarine can contain milk protein	58 (47.5)	41 (47.7)	17 (47.2)	0.964
Treatment and utilization of healthcare				
Daily medical treatment can not prevent FA	67 (54.9)	19 (22.1)	15 (41.7)	0.041
Amino acid based formulas are recommended for children with CMA	23 (18.9)	20 (23.3)	3 (8.3)	0.074
Fully hydrolyzed formulas are recommended for children with CMA	28 (23)	14 (16.3)	14 (38.9)	0.025
Lactose free formulas can not be given to patients with CMA	48 (39.3)	43 (50)	5 (13.9)	< 0.001
Elimination diet was needed for lactating mothers of FA babies.	113 (92.6)	81 (94.2)	32 (88.9)	0.236

* P < 0.05.

According to management of food allergy section, half of the respondents (45.1%) believed that daily medical treatment can prevent FA. Of all the respondents, only about 18.9% suggested amino acid based formulas for children with CMA, 23% suggested fully hydrolyzed formulas and 39.3% thought that lactose free formulas can be given to patients with CMA. Most of respondent (92.6%) reported that diet was needed for lactating mothers of food allergic babies.

DISCUSSION

This study revealed that there are some critical gaps in the knowledge of dietitians about food allergy in children. The overall study population of dietitians responding to the survey performed only moderate proficiency in a number of important subjects about food allergy management. Moreover, many of them did not have knowledge about formulas that could be given to patients with CMA and the effects of indirect exposures to food and cross contamination of materials used for cooking.

Food-allergic children experience allergic reactions in schools, restaurants, and at home resulting from insufficient knowledge about avoidance and cross-contact with allergens during meal preparation. In some patients, these reactions may have fatal consequences. Families rely on detailed instructions to avoid errors, and the dietitian is in a key role to provide the information necessary to ensure safety. In 2001, the US Food and Drug Administration reported an investigation of food companies in which it was found that 25% of products contained undeclared allergenic ingredients, often from cross-contamination (7). In a 2-year period, 50% of food-allergic individuals will have an unintentional exposure that leads to an adverse clinical reaction (15). Therefore, there is a need for dietitians to receive training on evaluating safe food items and providing avoidance education.

The treatment of food allergy is based on avoidance of the responsible food. This hard challenge includes learning products containing the allergenic food, reading labels, informing schools and places serving food and preventing cross contact. Also the management includes preventing unnecessary avoidance of food and providing appropriate alternatives for the excluded food. A balanced healthy diet is especially important for children who need good nutrition for healthy growing. The patient and caregivers need professional help in this difficult mission

and the dietitian must be the most qualified professional to address the food-allergic patient's medical nutrition therapy needs.

World Allergy Organization guidelines on the diagnosis and management of cow's milk allergy (DRACMA guidelines) (16) and the UK NICE guidelines (17) on the diagnosis of food allergies in children consider the important role of dietitians in the management of food allergy. A recent study by Berni et al. (18) has reported that energy and protein intakes of children with food allergy were low and improved after dietetic counseling. The report also stated that dietary counseling also resulted in a significant improvement of their anthropometric and laboratory biomarkers of nutritional status.

Although the important role of the dietitian is recognized, there are not many studies evaluating the knowledge and attitudes of dietitians on food allergy. We could find only one study on the subject. Maslin et al. (19) determined self reported proficiency on managing food allergy among dietitians working in UK, USA and Australia. They revealed that 69-88% of dietitians rated their competency as moderate to high on "education on avoidance" whereas only 41-54% of them rated their proficiency on "developing elimination diet" as moderate to high and 32-56% of attendants rated their proficiency on "managing feeding problems" moderate to high. Authors concluded that there is a need amongst dietitians to increase their knowledge in food allergy management. In another study conducted in South Africa, knowledge and practices of medical practitioners and dietitians about food allergy was evaluated. This study also highlighted a need for better education about food allergy. Results of our study also support the need for education about food allergy management (20).

Hidden egg proteins have been reported in candies, pastry; hidden milk proteins may be in jam, boiled ham, sausage, cereals, biscuits, candies, chocolate, proteins, coffee, vegetarian soy cheese (21-23). Hidden allergens in foods represent a major health problem for sensitized persons. One study showed that hidden allergens were the cause of a quarter of all food allergic reactions, mainly as a result of contamination and carelessness (24). Our study supported that dietitians had a lack of knowledge about some hidden allergens, and measures to avoid cross contamination. Although, guidelines recommend amino acid and extensively hydrolyzed cow's milk protein

formulas in the treatment of infants diagnosed with CMA, few participants answered correctly what formulas should be given for them (25,26).

Both undergraduate and postgraduate education may help better dietetic counseling for food allergy. Online training courses were shown to be effective for other subjects in dietetics about obesity and infant feeding (27-29). They may be very useful as they can provide distant learning education to many dietitians internationally. Also dietitians claim that they need standardized handout sheets for food allergic patients (30).

Having realized this problem, the International Network for Diet and Nutrition in Allergy (INDANA) was established in 2009. The aim of this organization is to bring together people with a professional nutritional qualification, who are working in the field of food allergy (29). The importance of diet and nutrition in allergic disease and the role of the dietitian/nutritionist are also officially acknowledged by the European Academy of Allergy and Clinical Immunology (EAACI). Also recently INDANA was officially incorporated in the American Academy of Allergy, Asthma and Immunology (AAAAI) (30).

Although there is insufficient knowledge about the clinical aspect of anaphylaxis, this situation should not be perceived as a sign of professional incompetence as dietitians may not need detailed information about the diseases. However, detailed knowledge about the avoidance of food is extremely important. While the majority of respondents agreed correctly that small amounts of allergen is unsafe for food allergic individuals, about forty percent of respondents did not recognize that food allergens could be transmitted by means of tools used for service and thought that smoke of the cooking food does not cause allergy.

Food allergy is more common during childhood and our study did not include mostly dietitians dealing with children. This may be one of the reasons of insufficient knowledge on the subject but food allergy can be experienced also during adulthood and education on the subject must include dietitians dealing with all age groups. Dietetic students may not have learned about the subject yet but we have included them in order to emphasize the importance of education on food allergy both pre and post graduation.

A limitation of this study is related to the small number of participants. On the other hand, the use of a non-validated questionnaire and reliance on the dietitians' self-reports might pose another limitation to assess for management of food allergy. More studies are needed to develop better strategies for placing dietitians to the point they are needed in the management of food allergy.

In conclusion, our study showed that dietitians have very limited knowledge about food allergy management. Food allergy is a serious and growing public health issue in children. Dietitians who are trained to support families and children with FA are greatly needed. Therefore, dietitians should be given training on this subject and there should be a re-evaluation of health policies with a wider global perspective.

REFERENCES

1. Sicherer SH, Sampson HA. Food allergy: Epidemiology, pathogenesis, diagnosis, and treatment. *J Allergy Clin Immunol* 2014;133:291-307.
2. Savage JH, Kaeding AJ, Matsui EC, Wood RA. The natural history of soy allergy. *J Allergy Clin Immunol* 2010;125: 683-6.
3. Savage JH, Matsui EC, Skripak JM, Wood RA. The natural history of egg allergy. *J Allergy Clin Immunol* 2007;120: 1413-7.
4. Wood RA. The natural history of food allergy. *Pediatrics* 2003;111:1631-7.
5. Joshi P, Mofidi S, Sicherer SH. Interpretation of commercial food ingredient labels by parents of food-allergic children. *J Allergy Clin Immunol* 2002;109:1019-21.
6. Ahuja R, Sicherer SH. Food-allergy management from the perspective of restaurant and food establishment personnel. *Ann Allergy Asthma Immunol* 2007; 98:344-8.
7. Altschul AS, Scherrer DL, Munoz-Furlong A, Sicherer SH. Manufacturing and labeling issues for commercial products: Relevance to food allergy. *J Allergy Clin Immunol* 2001;108:468.
8. Sicherer SH, Furlong TJ, Munoz-Furlong A, Burks AW, Sampson HA. A voluntary registry for peanut and tree nut allergy: Characteristics of the first 5149 registrants. *J Allergy Clin Immunol* 2001;108: 128-32.
9. Mofidi S. Nutritional management of pediatric food hypersensitivity. *Pediatrics* 2003;111:1645-53.
10. Christie L, Hine RJ, Parker JG, Burks W. Food allergies in children affect nutrient intake and growth. *J Am Diet Assoc* 2002;102: 1648-51.
11. Flammarion S, Santos C, Guimber D, et al. Diet and nutritional status of children with food allergies. *Pediatr Allergy Immunol* 2011;22:161-5.

12. Cho HN, Hong S, Lee SH, Yum HY. Nutritional status according to sensitized food allergens in children with atopic dermatitis. *Allergy Asthma Immunol Res* 2011;3: 53-7.
13. Gupta RS, Springston EE, Kim JS, et al. Food allergy knowledge, attitudes, and beliefs of primary care physicians. *Pediatrics* 2010;125: 126-32.
14. Lack G. Clinical practice. Food allergy. *N Engl J Med* 2008;359:1252-60.
15. Plaut M, Sawyer RT, Fenton MJ. Summary of the 2008 National Institute of Allergy and Infectious Diseases-US Food and Drug Administration Workshop on Food Allergy Clinical Trial Design. *Journal of Allergy and Clinical Immunology* 2009;124:671-78.
16. Fiocchi A, Brozek J, Schünemann H, Bahna SL, von Berg A, Beyer K, et al. World Allergy Organization (WAO) Diagnosis and Rationale for Action against Cow's Milk Allergy (DRACMA) Guidelines. *World Allergy Organ J* 2010;3:57-161.
17. Walsh J, O'Flynn N. Diagnosis and assessment of food allergy in children and young people in primary care and community settings: NICE clinical guideline. *Br J Gen Pract* 2011; 61:473-5.
18. Berni Canani R, Leone L, D'Auria E, et al. The effects of dietary counseling on children with food allergy: A prospective, multicenter intervention study. *J Acad Nutr Diet* 2014;114: 1432-9.
19. Maslin K, Meyer R, Reeves L, Mackenzie H, Swain A, Stuart-Smith W, et al. Food allergy competencies of dietitians in the United Kingdom, Australia and United States of America. *Clin Transl Allergy* 2014;4:37.
20. Stear GIJ, Labadarios D, Motala C. Management of food allergies in children in South Africa - determining aspects of the knowledge and practices of dietitians and medical practitioners. *Curr Allergy Clin Im* 2011; 24: 145-55.
21. Gern JE, Yang E, Evrard HM, Sampson HA. Allergic reactions to milk-contaminated "nondairy" products. *N Engl J Med* 1991;324:976-9.
22. Cantani A. Hidden presence of cow's milk proteins in foods. *J Investig Allergol Clin Immunol* 1999; 9:141-5.
23. Kocabaş CN, Sekerel BE. Cow's milk allergic patients should be informed of the sources of caseinate. *Turk J Pediatr* 2003;45:165-6.
24. Anibarro B, Seoane FJ, Mugica MV. Involvement of hidden allergens in food allergic reactions. *J Investig Allergol Clin Immunol* 2007;17:168-72.
25. Lifschitz C, Szajewska H. Cow's milk allergy: Evidence-based diagnosis and management for the practitioner. *Eur J Pediatr* 2015;174:141-50.
26. Luyt D, Ball H, Makwana N, et al. BSACI guideline for the diagnosis and management of cow's milk allergy. *Clin Exp Allergy* 2014; 44:642-72.
27. Stark CM, Graham-Kiefer ML, Devine CM, Dollahite JS, Olson CM. Online course increases nutrition professionals' knowledge, skills, and self-efficacy in using an ecological approach to prevent childhood obesity. *J Nutr Educ Behav* 2011; 43:316-22.
28. Stark CM, Pope J. Massive open online courses: how registered dietitians use MOOCs for nutrition education. *J Acad Nutr Diet* 2014;114:1147-55.
29. INDANA, "International Network for Diet and Nutrition in Allergy (INDANA)," 2012, <http://www.indana-allergy-network.org>
30. Venter C, Laitinen K, Vlieg-Boerstra B. Nutritional aspects in diagnosis and management of food hypersensitivity-the dietitians role. *J Allergy (Cairo)* 2012;2012:269376.