

Clinical Communications

Apps for food allergy: A critical assessment

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Clinical Implications

- Patients use apps to help track their health, but no study has been conducted to analyze the available apps for food allergy management. This study highlights the need for the medical community to engage in app creation and aids physicians in guidance regarding accurate social media tools for patient health care information.

TO THE EDITOR:

IgE-mediated food allergy affects between 2% and 10% of the population¹ and continues to increase.² Studies performed in patients with chronic diseases demonstrated that up to 35% of Americans use the Internet to obtain medical information.³ Apps for smartphones and tablets have emerged as tools used to access health-related information.⁴ Their accessibility and convenience allows information to easily reach large populations.⁵ Despite their potential as interactive tools, app features are still in early stages of development and are presently unregulated, which may change in the future. In this study, we analyzed the most commonly available IgE-mediated food allergy apps from the Apple iTunes App Store to identify apps that provided educational information and interactive tools for patients with food allergy.

We performed an online search in the Apple iTunes App Store from October 3 to 5, 2014, using the keywords “food allergy” and “food allergens.” A total of 701 apps for iPhone and iPad were found. Apps not related to IgE-mediated food allergy were excluded. Apps were analyzed for type (information, tool, or both), price, features, and content. Tool apps were those that allowed interactive data entry (eg, symptom tracker). App features included connection with a Web site, social media network support, e-mail account requirement, and link to professional society or allergen database. Food scanner functionality was assessed by scanning 3 common allergenic products. If the scanner correctly identified all the products, it was deemed functional. A scoring system was created by the authors *a priori* (Table 1) to assess app content on the basis of current 2014 Food Allergy Practice Parameters² and presence of tools. These included 8 common points commonly discussed during a food allergy evaluation in the office (eg, avoidance measures) and were given a percentage on the basis of importance by author consensus. The research group decided this subjectively. Three medical reviewers analyzed each app.

A total of 77 food allergy apps were analyzed. Tool apps were the most common type (67.5%), followed by apps exclusively providing information (24.6%). Only 6 apps contained both food allergy education material and tools (7.7%). Tools apps included food scanners (27.5%), food diaries (23.5%), and

TABLE 1. Scoring system to evaluate food allergy apps

Content	Percentage given
Definition of food allergy vs intolerance	15
Describes symptoms (cutaneous, gastrointestinal, respiratory, cardiovascular)	15
Discuss avoidance measures	15
Food allergy plan	15
Diagnosis food allergy (skin prick test/IgE/challenge)	8
Making other caregivers aware of the condition (eg, schools)	8
Epinephrine use	8
Mentions at least 8 common allergens*	8
Use of app tools (eg, food journals)	8
Total	100

*Peanut, tree nuts, milk, egg, soy, fish, shellfish, and wheat.

symptom trackers (21.5%). Additional tools included allergy-friendly restaurant locators and educational games for children. However, no app enabled the creation of a personalized Food Allergy Action Plan. The median app price was 99 cents (price ranged from US \$0 to US \$5.99). The most common app feature was social media network support (43.6%) such as Facebook or Twitter. An e-mail account was required for registration in 16%, and 23.1% worked in conjunction with a Web site. None was linked to a medical society Web site. Educational information provided by apps included the listing of 8 most common allergens in 35.2% of the apps, followed by description of food allergy symptoms in 19.7%. Only 5 apps (7.0%) mentioned the need for a Food Allergy Action Plan. The median app score was 8.00% (mean, 17.84 ± 21.81). Of 77 apps analyzed, only 2 apps had a score of 90% or more (Figure 1). Figure 1 summarizes overall scores from all apps included in the study. A minority of applications contained misleading information including encouraging heart rate monitoring during food exposure as a method to diagnose food allergy and acupuncture to treat acute allergic reactions. App malfunction was frequently encountered, with prolonged loading times, constant rebooting, nonfunctional scanners, and not user-friendly software (see Table E1 in this article's Online Repository at www.jaci-inpractice.org).

To our knowledge, this is the first study that analyzed the content of food allergy-related apps. Our review indicates that most of the available food allergy apps were a poor source of information for patients. This finding is consistent with previous studies conducted to evaluate apps for asthma self-management,⁶ smoking cessation,⁷ and weight loss,⁸ which have also shown that apps infrequently follow clinical practice guidelines.

Most of the apps scored poorly, and only 6 apps had a score above 60%. Most contained only 1 tool and lacked educational information. These apps are adequate for users with specific needs but are not ideal when recommending a food allergy app for patients with IgE-mediated food allergies.

Scanners have the potential of decreasing accidental exposures by identifying hidden allergens. However, most exhibited limited databases and poor function. Most apps had incomplete

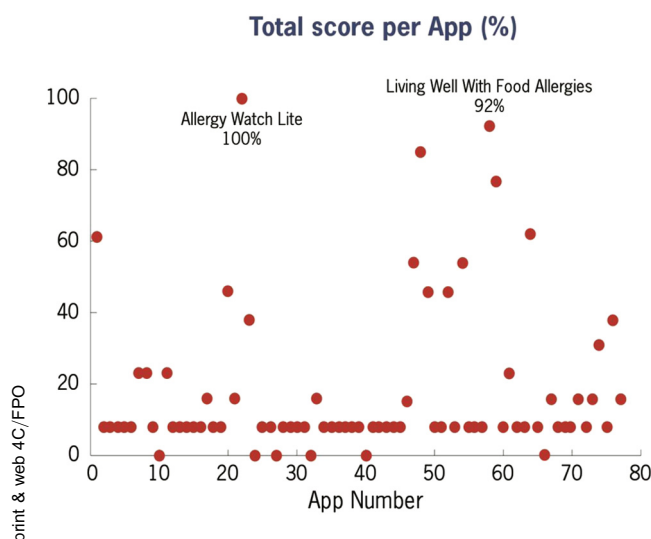


FIGURE 1. Plot graph with scores for all the apps.

information and were not linked to medical society Web sites. This could be explained by the current lack of standardized measures for app creation. No apps had the ability to scan an ingredient list for potential allergens. This would be a useful tool that would not require constant updating or linking to a central source of information.

Currently, apps interactive features are used for symptom tracking in multiple illnesses such as asthma, heart failure, inflammatory bowel disease, and fibromyalgia. Overall, apps' capability to support self-management in chronic conditions has been recognized⁹ and is currently used in asthma management.⁵

There are several limitations to our study. Our scoring system has not been validated. However, this was based on the concept of a health app from a previous review on self-management apps for asthma⁵ that define them as those with capabilities to communicate information, provide interactive experience, and collect information for patients. The appraisal of health apps is still in its early stages. Last, we acknowledge that high quality, comprehensiveness, and evidence base from a social media tool may be expecting too much from an app.

Most available food allergy apps are poor sources of information for patients. The increasing number of patients using

media to acquire information raises the need for the medical community to engage in the creation and improvement of current social media tools that adhere to evidence-based practice parameters, offering patients easy access to accurate information and tools. It also stresses the importance of in-office teaching and guidance regarding accurate social media tools for patient health care information.

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TABLE E1. All food apps

App name	App type	Score (%)	Price (\$)
Allergy Watch Lite	Both	100	0.00
Living Well With Food Allergies	Information	92	0.99
Allergy Watch	Both	85	0.99
Allergies and Cures	Information	77	0.99
AllergySense	Tools	62	5.99
WebMD Allergy	Information	61	0.00
Food Allergies Guide	Information	54	0.99
Allergy Relief Sourcebook	Information	54	0.99
Food Allergy Info	Information	46	0.00
Allergies 101 by WAGomb	Information	46	0.00
Anaphylaxis	Tools	46	0.00
Food Allergy facts	Information	38	0.99
The Bugabees	Both	38	4.99
iM Allergic: Peanut Edition	Both	31	3.99
Allergy Caddy	Tools	23	1.99
Immune Disorders: The Immune	Information	23	0.00
iAvoid Food Allergy	Information	23	0.00
Jext Global	Information	23	0.00
AllergyEatsMobile	Tools	16	0.00
Gipsee	Tools	16	0.00
Holf the Allergen	Both	16	0.99
iAllergens	Tools	16	0.99
MyMenu Dinning	Tools	16	0.00
Ingredient1	Tools	16	0.00
Allergy Scan	Tools	16	0.00
Allergy Mate	Information	15	0.99
MyFood	Tools	8	1.99
Allergy Assassin	Tools	8	0.99
Healthy Diet & gluten Free	Tools	8	4.99
FoodYouCanUS	Tools	8	0.00
ContentChecked USA	Tools	8	2.99
ContentCheckedLUSA	Tools	8	0.00
Food and Symptom Log	Tools	8	3.99
Food and Moods	Tools	8	0.00
Foodergy	Tools	8	0.00
Hughs Allergy Scan	Tools	8	0.00
FoodWatch	Information	8	0.99
Allergy Ally	Tools	8	2.99
Neocate	Tools	8	0.00
FoodWiz	Tools	8	0.00
UPC Food Acner	Tools	8	0.99
YoDish: Gluten, Allergy, Vegan	Tools	8	0.00
ipiit, The Food Ambassador	Tools	8	0.00
Allergy Journal	Tools	8	0.99
Allergy Guard Lite	Tools	8	0.00
Substitutions	Tools	8	0.99
Baby Food Allergy Tracker	Tools	8	0.99
Your Food Intolerance	Tools	8	1.99
Does it Contain Nuts?	Tools	8	0.00
Allergy Card	Tools	8	0.99
Baby Food guide	Information	8	0.00

(continued)

TABLE E1. (Continued)

App name	App type	Score (%)	Price (\$)
Checkfood Allergy	Tools	8	0.00
Food Allergy Emergenc Contacts	Tools	8	0.00
Bulletproof Food Detective	Tools	8	0.00
iEatOut Gluten free & Allergy	Both	8	4.99
Bellyaches	Tools	8	2.99
Fast Food Allergies	Tools	8	0.99
mySymptoms Food & Symptoms	Tools	8	2.99
Healthy Pantry Non-Member	Tools	8	3.99
Gluten Free and Allergy Free	Tools	8	2.99
My Food Allergies	Tools	8	0.99
FiDoMi	Tools	8	0.00
iCanEat	Tools	8	4.99
Allergy FT: Allergy Food	Tools	8	2.99
Allerglobal	Tools	8	0.00
Food Allergy Translate	Tools	8	1.99
FoodGraph	Tools	8	0.00
MFFLite	Tools	8	0.00
For Eat's Sake	Tools	8	0.00
Allergy Scanner	Tools	8	4.99
Food Allergy Translate Free	Information	8	0.00
SafeEats: Allergen Alert	Tools	0	0.00
The Allergy, Asthma and Sinus Center	Information	0	0.00
NO ALLERGY - Instant	Information	0	2.99
Allergy Guard	Information	0	0.99
INRFOOD	Tools	0	0.00
NO ALLERGY - Instant	Information	0	0.00
Mean $\pm$ SD across apps		8.00 $\pm$ 21.90	0.99 $\pm$ 1.62